

Civil Aviation Organization ATPL Written Exam

Jul 2017





IRANBOOKLET

مرجع آزمون های شبیه سازی شده هوانوردی

**مطالعه گر گرامی فایل پیش رو از وب سایت
ایران بوکلت دانلود شده است.
ایران بوکلت مدرن ترین و اقتصادی ترین سامانه
شبیه سازی آزمون برای تمامی رشته های
هوانوردی اعم از خلبانی ، دیسپچری ،
مهماننداری ، تعمیر و نگهداری هواپیما می باشد.
از شما دعوت میکنیم حتما از سامانه ما به نشانی
IranBooklet.ir بازدید فرمایید**

IN THE NAME OF GOD

This book shares new upcoming issues and questions regarding nowadays ongoing aviation knowledge.

By developing aviation industry, continuously control for updating this question bank is highly in need of attention.

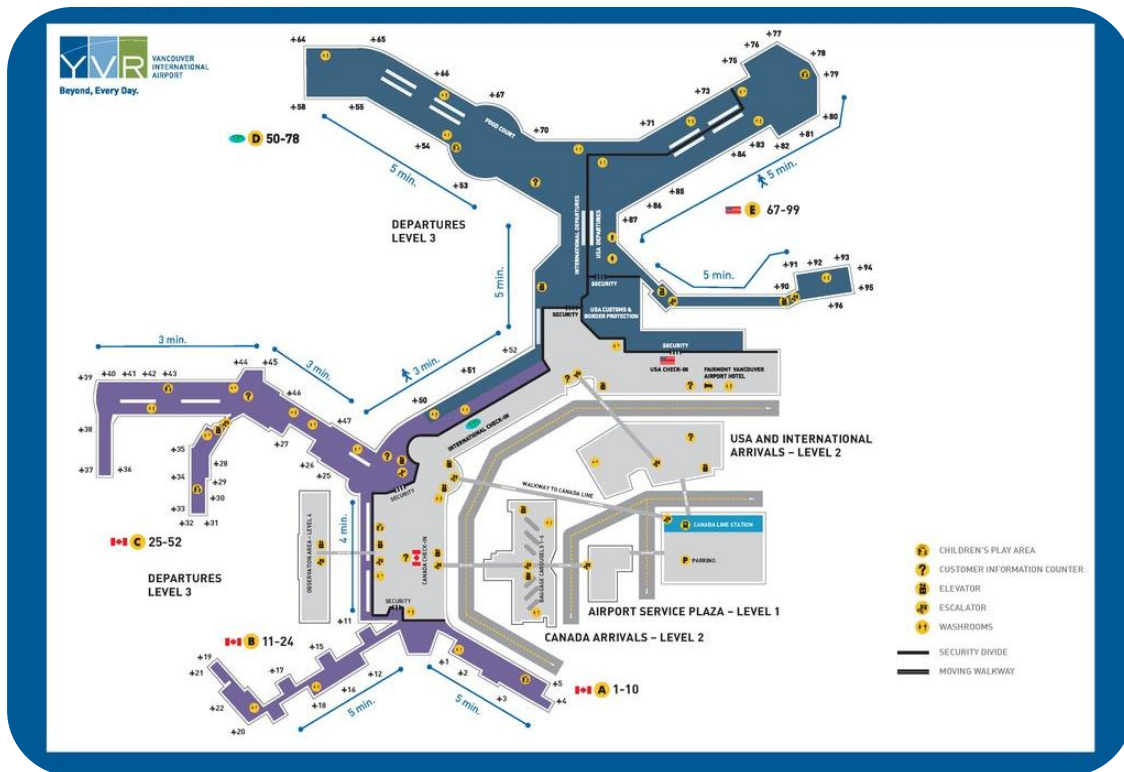
Please do not hesitate to contact us, if there is any suggestion for implementing in 3rd edition.

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AERONAUTICAL INFORMATION PUBLICATION





1- What are the lower and upper vertical limits of Tehran UIR?

- A) 28500 ft – Unlimited
- B) FL285 – Unlimited
- C) FL290 – FL410
- D) Nil

2- What is the unusable area for ANARAK VOR/DME below 18000 ft AMSL?

- A) 200°-180° clockwise
- B) 130°-360° counterclockwise
- C) 200°-180° counterclockwise
- D) 130°-360° clockwise

3- What is transponder code for indicating transponder malfunction in Tehran FIR?

- A) 2000
- B) 0000
- C) 7500
- D) 1200

4- What is the altitude error between level readout and the reported level for verifying transponder Mode C malfunction?

- A) 200 ft
- B) Less than 200 ft
- C) More than 200 ft
- D) Less than 150 ft

5- Which type of flight(s) in Tehran FIR can use Code 0000 in transponder?

- A) Domestic flights
- B) International flights
- C) Controlled flights
- D) Uncontrolled and controlled flights

6- Which of the following statements regarding Air Move Display (AMD) is incorrect?

- A) Improving efficiency and traffic observation.
- B) AMDs are suitable for radar vectoring.
- C) The information provided by AMD is derived from enroute radar service.
- D) It is used as supplementary facility.

7- What is the magnetic direction from NABOX to DAVEP on ATS route A453?

- A) 238°
- B) 058°
- C) 246°
- D) 066°



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8- What is the call sign of ATS unit within Sector 6 of Tehran FIR?

- A) Tehran Radar
- B) Tehran Radar / Control
- C) Tehran Control
- D) Tehran ACC

9- What is (are) the airspace(s) classification of Bandar Abbass CTA?

- A) A, D
- B) C
- C) A
- D) D

10- What is the center of Rasht CTA?

- A) Rasht NDB
- B) Aerodrome Reference Point
- C) Rasht VORTAC
- D) Rasht DVOR

11- Which unit does control the Ahwaz CTR?

- A) Ahwaz Tower
- B) Ahwaz Approach
- C) Ahwaz Radar
- D) Ahwaz Ground

12- Calculate ASDA RWY25 Ardabil airport.

- A) 2600 ft
- B) 3659 m
- C) 3528 ft
- D) 2600 m

13- What is the minimum take off visibility when runway is equipped with center line lighting and marking according to Iran AIP?

- A) 500 m
- B) 400 m
- C) 300 m
- D) 200 m

14- What is the aerodrome fire fighting category at which 27300 liters water available for production of level A foam?

- A) 6
- B) 7
- C) 8
- D) 9



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15- How many enroute holding are established over Saveh NDB/DME?

- A) 3
- B) 2
- C) 1
- D) Withdrawn

16- According to Iran Air Traffic Flow Management (ATFM) criterias all departures should not be made EOBT.

- A) More than 15 minutes after
- B) More than 10 minutes after
- C) More than 15 minutes before
- D) More than 10 minutes before

17- Which of the following aerodrome is not belong to major international aerodromes in Iran?

- A) Bandar Abbass
- B) Yazd / Shahid Sadooghi
- C) Kish Island / Kish
- D) Tehran / Imam Khomeini

18- Calculate the total mileage of ATS route UT211.

- A) 217.6 NM
- B) 271.6 NM
- C) 200.8 NM
- D) 208.0 NM

19- On which frequency DARBAND VOR/DME operates?

- A) 113.700 MHz
- B) 114.500 MHz
- C) 117.300 MHz
- D) 115.400 MHz

20- What is the time of activity of "OI R74" in Tehran FIR?

- A) Continuous day and night service
- B) Sunset to sunrise
- C) Sunrise to sunset
- D) No specific working hours

21- Regular amendments to Iran AIP will be issued:

- A) Once a year
- B) Two times in a year
- C) Four times in a year
- D) Six times in a year



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22- What is the width of RWY 14R in Abadan airport?

- A) 35 m
- B) 60 m
- C) 55 m
- D) 45 m

23- Which ATS route is passing through significant points ALROT and ALKUP?

- A) A416
- B) UP567
- C) UL333
- D) UL223

24- What is the PCN of RWY13 in Persian Gulf airport?

- A) 80
- B) 85
- C) 90
- D) 95

25- Which type of fuel(s) is (are) available in Esfahan / Shahid Beheshti International airport?

- A) Jet A1
- B) Jet A1 – 100LL
- C) Jet A1 – JP4
- D) Jet A1 – JP4 – 100LL

26- Choose the correct definition of “Damp”.

- A) The surface is soaked but there is no standing water.
- B) The significant patches of standing water are visible.
- C) The surface shows a change of color due to moisture.
- D) None.

27- What is the ATS unit call sign controlling OISS CTR?

- A) Shiraz Tower
- B) Shiraz Approach / Radar
- C) Shiraz Information
- D) Shiraz Ground

28- What is the lower limit of Shiraz TMA?

- A) FL245
- B) 24500 ft AMSL
- C) 11500 ft AMSL
- D) FL115



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29- Each flight plan either submitted individually or based on RPL criteria has a validity time of:

- A) 30 minutes after EOBT for IFR flight
- B) 60 minutes after EOBT for VFR flight
- C) 60 minutes after EOBT for all controlled and uncontrolled flight
- D) A and B are correct

30- How many times a flight plan can be modified?

- A) One
- B) Two
- C) Three
- D) Not applicable

31- What is the last AIRAC effective date on 2019?

- A) 5th December
- B) 6th December
- C) 7th December
- D) 8th December

32- What is the time (UTC) of sunset on 28th March at OITT?

- A) 19:45
- B) 16:15
- C) 19:39
- D) 15:15

33- What is the purpose of “Persian Gulf DVOR/DME”?

- A) Aerodrome facility
- B) Enroute facility
- C) Aerodrome and Enroute facility
- D) Off route facility

34- What is the magnetic variation at ARDABIL VOR/DME?

- A) 5°E
- B) 4.5°E
- C) 4°E
- D) 5.5°E

35- What is the firefighting category at OIHH during Hadj flights?

- A) CAT 5
- B) CAT 6
- C) CAT 7
- D) CAT 8



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36- What is the minimum rate of climb when executing TULGU 1A DEP after crossing overhead VOR/DME at OITZ?

- A) 375 ft/NM
- B) 250 ft/NM
- C) 310 ft/NM
- D) 300 ft/NM

37- What is the OCH on straight approach RWY11 Jam airport?

- A) 2800 ft
- B) 701 ft
- C) 1278 ft
- D) 668 ft

38- The highest obstacle within 25 NM from YASOUJ NDB is

- A) 13819 ft AMSL
- B) 15500 ft AMSL
- C) 13984 ft AMSL
- D) 11510 ft AMSL

39- What is the speed restriction within Tehran TMA?

- A) Maximum 250 KT TAS
- B) Maximum 270 KT IAS
- C) Maximum 250 KT IAS
- D) Maximum 270 KT TAS

40- What is the speed restriction within Tehran CTR?

- A) Maximum 230 KT TAS
- B) Maximum 200 KT IAS
- C) Maximum 230 KT IAS
- D) Maximum 200 KT TAS

41- What is the minimum rate of climb during missed approach ILS 1 RWY29R at OIIE?

- A) 350 ft/NM
- B) 300 ft/NM
- C) 250 ft/NM
- D) 200 ft/NM

42- On which radial from ESFAHAN DVOR/DME the north initial approach fix is established?

- A) R298
- B) R348
- C) R328
- D) R289



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43- What is the OCA in ILS 1 RWY29L OIII, when glide path is inoperative?

- A) 4040 ft
- B) 246 ft
- C) 4450 ft
- D) 656 ft

44- Where can you find the abbreviations used in AIS publication?

- A) GEN 2
- B) GEN 3
- C) ENR 1
- D) ENR 3.1

45- Which part of AIP contains the list of radio navigation aids?

- A) ENR 1
- B) ENR 4
- C) GEN 2.5
- D) GEN 3

46- Which part of AIP contains the radio navigation aids/systems?

- A) ENR 4
- B) ENR 1
- C) GEN 2.5
- D) GEN3

47- What is the accuracy of the location of navigational aids measured by GPS in Iran?

- A) ± 10 meters.
- B) ± 5 m.
- C) Within 8 meters.
- D) B, C are correct.

48- What is the accuracy of sunrise and sunset time published in AIP?

- A) Less than 3 min
- B) Less than 2 min
- C) 2 min
- D) 3 min

49- What is the color of regular AIP amendment cover sheet?

- A) Light blue
- B) Pink
- C) Red
- D) Yellow



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50- What is the color of AIRAC amendment cover sheet?

- A) Blue
- B) Pink
- C) Red
- D) Yellow

51- The color of AIP supplement papers are

- A) Blue
- B) Pink
- C) Red
- D) Yellow

52- Which temporary changes may be included in AIP supplement?

- A) 2 months
- B) 3 months and longer
- C) 1 month
- D) 4 month & longer

53- Which section of AIP contains the information of "NOTAM"?

- A) GEN 2.4
- B) ENR 3.5
- C) GEN 3.1
- D) ENR 1.7

54- The series of international NOTAM is.....

- A) A
- B) B
- C) C
- D) R

55- Which class of VDF antenna has bearing accuracy $\pm 10^\circ$?

- A) A
- B) B
- C) C
- D) D

56- What is the series of domestic NOTAM?

- A) A
- B) B
- C) C
- D) S



57- Name the chapter in the AIP where one can find a list of significant differences between national regulations and practices of the State and the related ICAO Standards, Recommended Practices and Procedures:

- A) GEN 1.7
- B) AD 1.2
- C) ENR4
- D) GEN 2.5

58- Detailed description of meteorological information provided at the aerodrome and an indication of which meteorological office is responsible, is in the following part of the AIP:

- A) ENR
- B) GEN
- C) MET
- D) AD

59- In which section of AIP are contained information elements relating to refueling facilities and limitations on refueling services?

- A) ENR
- B) GEN
- C) SAR
- D) AD

60- Each AIRAC AIP amendment page shall display:

- A) Page number only.
- B) Date of issue only.
- C) The effective date, page number and date of issue.
- D) Color coding.

61- Which section of the AIP contains information relating to the provision of Communication Services?

- A) ENR
- B) AD
- C) SUPP
- D) GEN

62- Prohibited, Danger, Restricted and caution areas must be designated by:

- A) Country identifier, followed by P/D/R/C, followed by the identifier.
- B) Country identifier followed by P/D/R/C, followed by assigned number.
- C) P/D/R/C followed by the identifier.
- D) Country identifier followed by numbers.



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63- According to AIP “FBL” is the abbreviation of:

- A) Fixed Beacon Location
- B) Forecastable
- C) Light
- D) Forecast based level

64- What is the purpose of “KAZ NDB”?

- A) Aerodrome & Enroute
- B) Enroute
- C) Aerodrome
- D) Airway fan marker

65- What is the fire fighting category of Dezful airport?

- A) CAT 7
- B) CAT 8
- C) CAT 5
- D) CAT 6

66- All flights before entering Iran ADIZ (Tehran FIR) are required to contact the appropriate air defense radar station on or, at least 10 minutes prior to entering Tehran FIR.

- A) 121.500 MHz – 243.000 MHz
- B) 121.000 MHz – 243.000 MHz
- C) 127.000 MHz – 135.000 MHz
- D) 127.800 MHz – 135.100 MHz

67- What is the location name of “OISR”?

- A) Fasa
- B) Jahrom
- C) Lar
- D) Lamerd

68- What is the time of sunrise in Ramsar city on 27th of April?

- A) 06:25
- B) 06:18
- C) 06:23
- D) 06:21

69- What is the radius of Esfahan / Shahid Beheshti international airport CTR?

- A) 40 NM
- B) 5 NM
- C) 15 NM
- D) 30 NM



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70- What types(s) of fuel is (are) available in Abadan Airport?

- A) 100 LL
- B) Jet A1, 100LL, JP4
- C) Jet A1
- D) Jet A1, JP4

71- What is the vertical limit of Nowshahr CTR?

- A) 6000 ft
- B) 15500 ft
- C) FL155
- D) B & C are correct

72- What is the upper vertical limit of "OI D66"?

- A) FL200
- B) FL240
- C) FL120
- D) FL150

73- What is the transition altitude of Kerman airport?

- A) 11000 ft MSL
- B) FL120
- C) 12000 ft MSL
- D) FL130

74- What is the upper vertical limit and radius of Bandar abbas TMA?

- A) 6500 ft – 60 NM
- B) FL275 – 70 NM
- C) FL065 – 70 NM
- D) FL245 – 60 NM

75- What is the minimum flight altitude for entering Tehran FIR?

- A) FL150
- B) 10000 ft MSL
- C) 16000 ft MSL
- D) FL100

76- What is the ADIZ frequency?

- A) 127.800 MHz
- B) 135.100 MHz
- C) 118.400 MHz
- D) A & B are correct



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77- How long before entering Tehran FIR an aircraft shall report to ADIZ?

- A) At least 20 minutes
- B) At least 15 minutes
- C) At least 10 minutes
- D) At least 5 minutes

78- What is the time zone (difference between local time and UTC) during summer period?

- A) 03:30
- B) 04:30
- C) 05:30
- D) 02:30

79- Where can we find clearway information?

- A) AD 2
- B) ENR
- C) GEN
- D) AD 1

80- Where can we find information about danger area?

- A) GEN 4
- B) ENR 5
- C) AD 1
- D) ERN 6

81- What is the speed limitation for IFR flights within class "C" airspace below 10000 ft AMSL?

- A) 250 KT IAS.
- B) 260 KT IAS.
- C) 250 KT TAS.
- D) Not applicable.

82- Which type of separation is provided for VFR flights within class "C" airspace?

- A) IFR from VFR.
- B) VFR from IFR.
- C) IFR from SVFR.
- D) VFR from VFR.

83- Within which class of airspace in Tehran FIR, IFR and VFR flights receive flight information service only?

- A) A, C, D, G.
- B) A, C, D.
- C) G.
- D) F.



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84- In Iran, VFR flights are not authorized to fly within:

- A) B airspace.
- B) A airspace.
- C) G airspace.
- D) E airspace.

85- Which airspaces are not available in Iran?

- A) A, C, D, G.
- B) B, E, F.
- C) A, B, E, F.
- D) C, E, F.

86- What is the ATS route classification within TMA in Iran?

- A) A, C, D, G.
- B) B, E, F.
- C) D, A
- D) A, C.

87- Issued start up clearance by ATC unit is valid up to ----- from the time of startup clearance.

- A) 10 to 15 minutes.
- B) 20 minutes.
- C) 15 minutes.
- D) 10 minutes.

88- According to Iran AIP, flight plan is required for:

- A) VFR flight.
- B) IFR flight.
- C) IFR flight only.
- D) A & B are correct.

89- What is the lateral limit of ATS ROUTE UR660 between TABRIZ and RAKED?

- A) 10 NM.
- B) 15 NM.
- C) 20 NM.
- D) 25 NM.

90- What is the distance between SHIRAZ and VAVAS on ATS route G665?

- A) 60.5 NM.
- B) 78.3 NM.
- C) 70.0 NM.
- D) 106.6 NM.



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91- What are the entry and exit point on ATS route R205?

- A) DEHNAMAK and EGLUL.
- B) BUBUX and BOJNORD.
- C) ANARAK and BIRJAND.
- D) BUBUX and EGLUL.

92- What is MOCA on ATS route UN440?

- A) 13340 ft.
- B) 9100 ft.
- C) 10700 ft.
- D) 8100 ft.

93- On which ATS route(s) significant point "SIVIM" is (are) used?

- A) W8.
- B) W8, UP574.
- C) L124.
- D) W8, UL124.

94- When will the critical snow banks outside runway and taxiway be reported?

- A) Its height exceeds 20 cm.
- B) Its height exceeds 30 cm.
- C) Its height exceeds 60 cm.
- D) Its height exceeds 70 cm.

95- Which of the following meteorological watch office(s) can issue SIGMET?

- A) OIII.
- B) OIIE.
- C) OIFM.
- D) A and B are correct.

96- What is the aerodrome elevation of Mashhad international airport?

- A) 3423 ft.
- B) 3266 ft.
- C) 3254 ft.
- D) 3662 ft.

97- The reported QNH is valid up to in Iran.

- A) CTR.
- B) 25 NM.
- C) 15 NM.
- D) TMA.



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98- Within which control airspace in IRAN the VFR flights are not authorized to fly?

- A) Airway.
- B) TMA.
- C) TMA above FL200.
- D) TMA below FL200.

99- Night in IRAN is:

- A) 15 min after sunrise up to 15 min before sunset.
- B) 15 min before sunset up to 15 min before sunrise.
- C) 15 min after sunset up to 15 min before sunrise.
- D) 15 min before sunset up to 15 min after sunrise.

100- In which chart you can find transition altitude?

- A) Instrument approach
- B) SID
- C) STAR
- D) All answers are correct



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	D	26	C	51	D	76	D
2	C	27	B	52	B	77	C
3	B	28	C	53	C	78	B
4	C	29	D	54	A	79	A
5	A	30	A	55	C	80	B
6	B	31	A	56	B	81	D
7	A	32	D	57	A	82	B
8	C	33	A	58	B	83	C
9	C	34	D	59	D	84	B
10	D	35	C	60	C	85	B
11	A	36	B	61	D	86	D
12	D	37	B	62	B	87	D
13	C	38	C	63	C	88	D
14	C	39	B	64	C	89	C
15	B	40	C	65	A	90	C
16	D	41	D	66	D	91	C
17	C	42	B	67	D	92	B
18	B	43	C	68	B	93	A
19	A	44	A	69	D	94	C
20	C	45	C	70	C	95	A
21	A	46	A	71	C	96	B
22	D	47	B	72	D	97	B
23	C	48	B	73	C	98	C
24	D	49	A	74	D	99	C
25	B	50	B	75	A	100	D



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AIRCRAFT PERFORMANCE





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1- What is the maximum operation speed during flight?

- A) V_{FE}
- B) V_{MO}
- C) V_{NE}
- D) V_{LS}

2- Density altitude increase when:

- A) Temperature decrease
- B) Pressure increase
- C) Temperature increase
- D) Altitude decrease

3- The primary reason for computing density altitude is to determine A/C performance.

- A) True
- B) False

4- When the aircraft will obtain the maximum grade of its performance?

- A) High density altitude
- B) High Temperature
- C) High weight
- D) A, B & C are incorrect

5- High density altitude cause

- A) Engine power out decrease
- B) Propeller efficiency decrease
- C) Aerodynamic lift decrease
- D) All answers are correct

6- In high humid air the piston engine performance decrease approximately as:

- A) 10%
- B) 7 %
- C) 19%
- D) 21%

7- In high relative humidity condition, takeoff and climb performance for piston engine aircraft reduce approximately as:

- A) 7%
- B) 10%
- C) 14%
- D) 19%



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8- The most adverse effect on aircraft performance occur at

- A) High altitude, hot, humid
- B) High altitude, cold, humid
- C) Low altitude, hot, humid
- D) Low altitude, cold, humid

9- “Humidity has most effect on density altitude.”

- A) True
- B) False

10- “Humidity “causes to

- A) Increase density altitude at lesser degree
- B) Decrease piston engine power output
- C) Decrease takeoff efficiency performance
- D) All answers are correct

11- The maximum rate of climb that can be maintained at the absolute ceiling is:

- A) 125 ft/min.
- B) 0 ft/min.
- C) 500 ft/min.
- D) 100 ft/min.

12- Minimum drag speed (V_{MD}) is:

- A) Proportional to weight.
- B) A function of pressure altitude.
- C) A function of density altitude.
- D) Proportional to temperature.

13- Which statement is correct for glide with maximum lift to drag ratio speed?

- A) A tailwind component decreases the ground distance.
- B) A headwind component increases the ground distance.
- C) A tailwind component increases fuel and time to descent
- D) A headwind component decreases the ground distance.

14- Which one gives the shortest gliding time?

- A) Lower mass.
- B) A headwind.
- C) A tailwind.
- D) Higher mass.



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15- Flying the “backside of thrust curve” means:

- A) The thrust required is independent of the airspeed.
- B) A lower airspeed requires more thrust.
- C) A thrust reduction results in an acceleration of the aeroplane.
- D) A lower airspeed requires less thrust because drag is decreased.

16- In a glide by jet aeroplane the maximum range will be obtained by flying at:

- A) V_{NE}
- B) $1.32 V_{MD}$
- C) V_{MD}
- D) V_{MO} / M_{MO}

17- What condition is found at the intersection of the thrust available and the drag curve?

- A) Un-accelerated flight in a climb.
- B) Accelerated climb.
- C) Un-accelerated level flight.
- D) Accelerated level flight.

18- An aeroplane is flying at its maximum speed in level flight. Which of the following statements is correct?

- A) Thrust is set for minimum drag.
- B) Aeroplane is flown at the best Lift to Drag ratio.
- C) Aeroplane has reached to maximum drag condition.
- D) Aeroplane has reached to minimum drag condition.

19- Density altitude is the:

- A) Pressure altitude corrected for nonstandard temperature.
- B) Altitude reference to the standard datum plane.
- C) Altitude read directly from the altimeter.
- D) Height above the surface.

20- A reduction in air density causes:

- A) An increase in C_L .
- B) An increase in takeoff distance.
- C) A decrease in takeoff distance.
- D) A decrease in C_L .



- 21- Which one of the following statements is true concerning the effect of changes of ambient temperature on an areoplane's performance, assuming all other performance parameters remain constant?**
- A) An increase will cause a decrease in the landing distance required.
 - B) An increase will cause a decrease in takeoff distance required.
 - C) A decrease will cause an increase of the climb gradient.
 - D) A decrease will cause an increase in the takeoff ground run.
- 22- An aeroplane is climbing at a speed 10 kts lower than the speed for best rate of climb:**
- A) Angle of climb will decrease.
 - B) Angle of climb will increase.
 - C) Angle of climb will not change.
 - D) Rate of climb will not change.
- 23- In a power-off glide with piston engine aircraft in still air, to obtain the maximum glide range, the aircraft should be flown:**
- A) At a speed corresponding to the maximum lift to drag ratio.
 - B) At a speed close to the stall.
 - C) At a speed corresponding to the minimum drag coefficient.
 - D) At a speed close to V_{NE} .
- 24- If cruising into a 15 kts headwind and a 180° turn is made so the wind is directly behind the aircraft, the IAS would:**
- A) Be the same and the ground speed would increase by 30 kts.
 - B) Be the same and the ground speed would increase by 15 kts.
 - C) Decrease by 15 kts and the ground speed would increase by 15 kts.
 - D) Increase by 30 kts and the ground speed would remain the same.
- 25- How does the indicated airspeed for best angle of climb and best rate of climb vary with increasing altitude in jet aeroplane?**
- A) Both decrease.
 - B) Both increase.
 - C) Best angle of climb speed will constant while best rate of climb speed decreases.
 - D) Best angle of climb decreases while best rate of climb increases.
- 26- Considering TAS for maximum range and maximum endurance, if other factors remaining constant:**
- A) TAS for maximum range will increase with increased altitude while TAS for maximum endurance will decrease with increased altitude.
 - B) Both will decrease with increasing altitude.
 - C) Both will stay constant regardless of altitude.
 - D) Both will increase with increasing altitude.



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27- Maximum endurance for jet aircraft:

- A) Can be achieved in level unaccelerated flight with minimum fuel consumption.
- B) Can be achieved by flying at the best rate of climb speed in straight and level flight.
- C) Can be achieved in a steady climb.
- D) Can be achieved by flying at the absolute ceiling.

28- Climbing to cruise altitude with a headwind will:

- A) Increase time to climb.
- B) Decrease ground distance covered to climb.
- C) Decrease time to climb.
- D) Increase ground distance covered to climb.

29- Suppose an aircraft is flying straight and level at specified height. If the mass were increased what actions would be necessary to maintain a constant angle of attack and altitude?

- A) Decrease speed, increase power.
- B) Decrease speed, decrease power.
- C) Increase speed, decrease power.
- D) Increase speed, increase power.

30- Climbing to cruise altitude in a tailwind will:

- A) Decrease the time taken.
- B) Increase the ground distance covered.
- C) Increase the time taken.
- D) Increase the fuel flow rate.

31- The effect of a decrease in air density is to:

- A) Increase the takeoff distance and reduce the rate of climb.
- B) Decrease the takeoff distance and reduce the rate of climb.
- C) Decrease the takeoff distance and increase the rate of climb.
- D) Increase the takeoff distance and increase the rate of climb.

32- Jet aeroplane is in a glide (power off descent) at the V_{MD} , if the pitch angle is increased the glide distance will:

- A) Increase.
- B) Decrease.
- C) Remain constant.
- D) Depend on the aircraft.



33- A higher temperature causes ___ in air density and ___ in lift.

- A) Increase; decrease
- B) Decrease; increase
- C) Increase; increase
- D) Decrease; decrease

34- How does an increase in aircraft mass affect the gliding range?

- A) Has no effect on gliding range.
- B) Decreases gliding range.
- C) Increases gliding range.
- D) Decrease glide angle but gliding range increase.

35- Uphill slope:

- A) Increases the takeoff distance more than the accelerate stop distance required.
- B) Decreases the accelerate stop distance only.
- C) Decreases the takeoff distance only.
- D) Increases the allowed takeoff mass.

36- A constant headwind component:

- A) Increases the best rate of climb.
- B) Decreases the angle of climb.
- C) Increases the maximum endurance.
- D) Increases the angle of flight path during climb.

37- The margin between the power available and the power required for jet engine aircraft:

- A) Increases when the aircraft climbs.
- B) Decreases when the aircraft climbs.
- C) Decreases when the aircraft descends.
- D) Remains the same.

38- What is the effect of increasing weight on V_s ?

- A) Increases.
- B) Decreases.
- C) Remains constant.
- D) Increases or decreases, depending on the amount of weight which increase.

39- Relative to the ground, a headwind the effective climb angle and a tailwind the effective climb angle.

- A) Increases, decreases
- B) Decreases, increases
- C) Increases, increases
- D) Decreases, decreases



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40- When does THRUST is equal to DRAG during flight?

- A) Climbing at a constant IAS.
- B) Descending at a constant IAS.
- C) Flying level at a constant IAS.
- D) All answers are correct.

41- Two identical aircraft, one with a light load and one with a heavy load, are in a glide descent from the same height in the same atmospheric conditions, the heavy aircraft will:

- A) Require a faster speed to achieve the same descent angle as the lighter aircraft.
- B) Descend at the same angle with the same time in the descent but at a faster speed.
- C) Descend steeper, at a faster speed with a greater rate of descent.
- D) Descend at a steeper angle at a faster speed at the same rate of descent.

42- What is the influence of the mass on maximum rate of climb (ROC) speed if all other parameters remain constant?

- A) The ROC speed increases with increasing mass.
- B) The ROC speed decreases with increasing mass.
- C) The ROC is affected by the mass, but not the ROC speed.
- D) The ROC and the ROC speed are independent of the mass.

43- For a given power setting in the climb, if the speed is increased:

- A) The ROC will decrease if the speed is below V_y .
- B) The ROC will increase if the speed is below V_y .
- C) The gradient of climb will increase if the speed is above V_x .
- D) The gradient of climb will decrease if the speed is below V_x .

44- What happens to the speeds, V_x and V_y , when lowering the aircraft's landing gear?

- A) V_x increases, V_y decreases.
- B) V_x decreases, V_y decreases.
- C) V_x increases, V_y increases.
- D) V_x decreases, V_y increases.

45- What happens to V_x and V_y in terms of TAS as altitude increases?

- A) V_y remains constant and V_x decreases.
- B) V_y remains constant and V_x increases.
- C) Both will increase.
- D) Both remain constant.



46- If the aircraft mass increases, how does the (i) rate of climb, and (ii) rate of climb speed change?

- A) (i) Decreases, (ii) Increases.
- B) (i) Increases, (ii) Decreases.
- C) (i) Decreases, (ii) Decreases.
- D) (i) Increases, (ii) Increases.

47- What effect has a downhill slope on the takeoff speeds? The slope:

- A) Decreases the takeoff speed V_1 .
- B) Decreases the TAS for takeoff.
- C) Increases the IAS for takeoff.
- D) Has no effect on the takeoff speed V_1 .

48- When in a gliding maneuver, in order to achieve maximum endurance, the piston engine aircraft should be flown at:

- A) The speed for maximum lift.
- B) The speed for minimum drag.
- C) The speed for maximum lift/drag.
- D) The speed for minimum power.

49- If the headwind is ... of takeoff speed the takeoff distance will decrease by ...

- A) 19% - 10%
- B) 10% - 7%
- C) 10% - 19%
- D) 14% - 10%

50- If tailwind is take off speed the takeoff distance will increase by

- A) 10% - 19%
- B) 14% - 21%
- C) 7% - 19%
- D) 10% - 21%

51- What is the maximum allowable crosswind component of aircraft for which the V_{SO} is 70 kts?

- A) 120 kts
- B) 15 kts
- C) 12 kts
- D) 14 kts



52- Which statement is not correct about effect of increase weight an aircraft performance?

- A) Increase service ceiling
- B) Increase takeoff distance
- C) Decrease climb performance
- D) Decrease acceleration

53- Which of the following item has adversely effect on takeoff performance but is beneficial for landing performance?

- A) Increase weight
- B) Positive runway gradient
- C) Negative runway gradient
- D) Humidity

54- Negative runway gradient is good for landing but is not preferable for takeoff.

- A) True
- B) False

55- The maximum amount of friction is on

- A) Wet runway
- B) Slushy runway
- C) Dry runway
- D) Grass runway

56- “Hydroplaning “ is caused by

- A) Thin layer of water that decrease braking action.
- B) Thin layer of snow that increase braking action.
- C) Thin layer of snow that separate the tires from runway.
- D) Thin layer of water that separate the tires from runway.

57- “Dynamic Hydroplaning “ is defined as:

- A) Standing water about one-tenth of one inch or more.
- B) Standing water or slush about one-thousands inch.
- C) A thin film of water, more than one-thousands inch.
- D) A thin film of water, not more than one- tenth of an inch.

58- A lower temperature causes _____ in air density and _____ in drag.

- A) Increase, decrease
- B) Decrease, increase
- C) Increase, increase
- D) Decrease, decrease



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59- Which runway has a minimum amount of braking action?

- A) Dry
- B) Grass
- C) Wet
- D) All answers are correct

60- One which Runway braking action completely lost?

- A) Dry
- B) Slushy
- C) Wet
- D) Ice

61- On which runway, aircraft roll-out increase:

- A) Ice
- B) Slushy
- C) Wet
- D) All answers are correct

62- Which statement is correct?

- A) V_x is best angle of climb speed.
- B) V_x increase by altitude increase for piston engine aircraft.
- C) V_x increase engine temperature.
- D) All answers are correct.

63- Which statement is correct?

- A) V_x use for climb and obstacle clearance
- B) V_x is best angle of climb speed
- C) V_y decrease by altitude increase for piston engine aircraft
- D) All answers are correct

64- Which statement is correct?

- A) V_x is difference between thrust horse power and thrust required.
- B) V_y is difference between thrust horse power available and thrust horse power required.
- C) Max altitude gains in short distance when climb by V_x .
- D) B and C are correct.

65- Which statement is correct?

- A) Thrust required is constant by altitude increase.
- B) Maximum rate of climb in service ceiling is 100 ft/min for piston engine aircraft.
- C) Maximum rate of climb at absolute ceiling is zero.
- D) All answers are correct.



66- Which statement is correct about absolute ceiling?

- A) The point that V_x is equal to V_y
- B) The rate of climb is zero
- C) The speed of aircraft in absolute ceiling is V_{ZRC}
- D) All answers are correct

67- High temperature reduces gas turbine engine performance about:

- A) 7%
- B) 14%
- C) 20%
- D) 40%

68- "Humidity" effects on:

- A) Reciprocating engine more than jet engine.
- B) Reciprocating engine but has no effect on jet engine.
- C) Jet engine but has no effect on reciprocating engine.
- D) Jet engine more than reciprocating engine.

69- Which symbol indicates minimum steady flight speed when airplane is still controllable?

- A) V_S
- B) V_{S1}
- C) V_{S0}
- D) V_{SC}

70- At which speed the pilot can control the airplane when critical engine is in operative but other engine is in Take-Off power.

- A) V_S
- B) V_{MC}
- C) V_1
- D) V_{MV}

71- " V_1 " is the speed defined as:

- A) Lift off speed
- B) The safety speed
- C) Take off must be aborted when engine failure below V_1
- D) All answers are correct

72- " V_R " is the speed defined as:

- A) Rotation speed
- B) V_R may not be less than V_1
- C) Wake turbulence commence from V_R
- D) All answers are correct



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73- Which speed represents the takeoff safety speed?

- A) V_{MC}
- B) V_{LOF}
- C) V_{MU}
- D) V_2

74- At which speed the aircraft first becomes airborne?

- A) V_{MC}
- B) V_{LOF}
- C) V_{MU}
- D) V_2

75- Profile drag is:

- A) Inversely proportional to the square root of the speed.
- B) Directly proportional to the square of the speed.
- C) Inversely proportional to the square of the speed.
- D) Directly proportional to the square root of the speed.

76- What is the effect of head wind on angle and rate of climb during departure with constant IAS?

- A) Improves angle and rate of climb.
- B) Does not have any effect on the angle of flight path during climb.
- C) Has no effect on rate of climb.
- D) Decreases angle and rate of climb.

77- As speed is reduced below V_{MD} :

- A) Drag decreases and speed stability increases.
- B) Drag decreases and speed stability decreases.
- C) Drag increases and speed stability increases.
- D) Drag increases and speed stability decreases.

78- In jet engine aeroplane achieve the maximum range over ground with headwind the airspeed should be:

- A) Reduced to the gust penetration speed.
- B) Equal to the speed for maximum range cruise with no wind.
- C) Lower compared to the speed for maximum range cruise with no wind.
- D) Higher compared to the speed for maximum range cruise with no wind.



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79- For a jet engine aircraft, the rate of climb is maximum when:

- A) Angle of climb is maximum.
- B) Excess thrust is maximum.
- C) Lift is maximum.
- D) Excess power is maximum.

80- What does density altitudes signify?

- A) Pressure altitude.
- B) Flight levels.
- C) ISA altitude.
- D) An accurate indication of aircraft and engine performance conditions.

81- In order to achieve the maximum rate of climb, jet aircraft should be flown at the indicated airspeed which:

- A) Gives the best lift to drag ratio.
- B) Gives maximum excess power.
- C) Gives the best thrust to drag ratio.
- D) Give the best speed to drag ratio.

82- For an aircraft gliding at its best glide range speed if angle of attack is reduced:

- A) Glide distance will increase
- B) Glide distance will remain unaffected
- C) Glide distance will decrease
- D) Glide distance

83- A change in aeroplane weight affects:

- A) Glide angle.
- B) Glide speed.
- C) Glide angle and glide speed.
- D) Neither glide angle nor glide speed.

84- Which of the following factors lead to the maximum flight time of a glide?

- A) High mass.
- B) Headwind.
- C) Tailwind.
- D) Low mass.

85- The landing distance required will be decreased as a result of:

- A) Higher aircraft mass, higher air density, uphill runway slope.
- B) Higher aircraft mass, higher air density, downhill runway slope.
- C) Low aircraft mass, lower air density, uphill runway slope.
- D) Low aircraft mass, high air density, uphill runway slope.



86- In term of indicated airspeed for jet aeroplane, the V_x and V_y with takeoff flaps will be:

- A) Same as that for clean configuration.
- B) Higher than that for clean configuration.
- C) Lower than that for clean configuration.
- D) Changed so that V_x increases and V_y decreases compared to clean configuration.

87- The pilot of a single engine aircraft has established the climb performance. The carriage of additional pieces of baggage will cause the climb performance to be:

- A) Unchanged, if a short field takeoff is adopted.
- B) Improved.
- C) Unchanged.
- D) Degraded.

88- Any acceleration in climb, with a constant power setting:

- A) Decreases rate of climb and increases angle of climb.
- B) Improves the climb gradient if the airspeed is below V_x .
- C) Improves the rate of climb.
- D) Decreases the rate of climb and the angle of climb.

89- Which of the following factors will lead to an increase of ground distance during a glide, while maintaining the appropriate minimum glide angle speed?

- A) Decrease of aircraft mass and head wind.
- B) Increase of aircraft mass.
- C) Tailwind.
- D) Headwind.

90- A headwind will:

- A) Increase the flight path angle.
- B) Increase the angle of climb.
- C) Increase the rate of climb.
- D) Shorten the time of climb.

91- A decrease in ambient temperature causes the absolute ceiling to:

- A) Decrease.
- B) Increase.
- C) Remain unchanged.
- D) Increase subject to its relation to ISA.



92- To maintain climb airspeed following an increase in temperature the rate of climb is:

- A) Reduced
- B) Increased
- C) Zero
- D) Unaffected

93- Which of the following will decrease the value of V_S in jet aeroplane?

- A) The CG in an aft position within the CG envelope.
- B) Decrease altitude.
- C) Decreased weight.
- D) All answers are correct.

94- With increasing altitude, the rate of climb:

- A) Decreases because power available decreases and power required is constant.
- B) Increases because density and drag decrease.
- C) Decreases because power available decreases and power required increases.
- D) Decreases because power available is constant and power required increases.

95- On a jet engine aeroplane, with increasing altitude at constant gross mass, angle of attack and configuration, the power required:

- A) Increases and the TAS increases by the same percentage.
- B) Increases but TAS remains constant.
- C) Decreases slightly because of the lower air density.
- D) Remains unchanged but the TAS increases.

96- An upward runway slope:

- A) Decreases the accelerated stop distance available.
- B) Increases the accelerated stop distance available.
- C) Increases the takeoff distance required.
- D) Decreases the takeoff distance required.

97- A higher outside air temperature:

- A) Does not have any noticeable effect on climb performance.
- B) Increases the angle of climb but decreases the rate of climb.
- C) Reduces the angle and the rate of climb.
- D) Reduces the angle of climb but increases the rate of climb.

98- As you accelerate in level flight from the speed at V_S to V_{MO} the total drag:

- A) Decreases.
- B) Increases then decreases.
- C) Increases.
- D) Decreases then increases.



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99- The induced drag of an aeroplane:

- A) Is independent of the airspeed.
- B) Increases with increasing airspeed.
- C) Decreases with increasing airspeed.
- D) Decreases with increasing gross weight.

100- The best rate of climb speed at a constant gross mass:

- A) Decreases with increasing altitude since the thrust available decreases due to the lower air density.
- B) Increases with increasing altitude since the drag decreases due to the lower air density.
- C) Increases with increasing altitude due to the higher true airspeed.
- D) Is independent of altitude.

101- The angle of climb with flaps extended, compared to that with flaps retracted, will normally be:

- A) Not changed.
- B) Larger.
- C) Smaller.
- D) Increase at moderate flap setting, decrease at large flap setting.

102- Which of the following combinations adversely effect on takeoff and initial climb performance?

- A) Low temperature and low relative humidity.
- B) Low temperature and high relative humidity.
- C) High temperature and low relative humidity.
- D) High temperature and high relative humidity.

103- What is the minimum power required for jet engine aircraft?

- A) Usually a constant at all altitudes.
- B) Minimum drag speed (V_{MD})
- C) Above V_{MD}
- D) Below V_{MD}

104- In a power-off glide, an increase in aircraft mass will:

- A) Increase the glide angle and increase the speed for minimum glide angle.
- B) Not affect the glide angle, but increase the speed for minimum glide angle.
- C) Increase the glide angle, but not affect the speed for minimum glide angle.
- D) Not affect the glide angle, and not affect the speed for minimum glide angle.



105- To obtain the maximum rate of climb:

- A) Power available must be less than the power required.
- B) Power required must be less than the power available.
- C) Power available must be equal to power required.
- D) Thrust must exceed drag by the greatest margin.

106- To maintain the same angle of attack and at a higher gross weight an aeroplane needs:

- A) Less airspeed and same power.
- B) Same airspeed.
- C) More airspeed and less power.
- D) More airspeed and more power.

107- Compared to (V_x and V_y) in lower mass, (V_x and V_y) in higher mass will be:

- A) Lower.
- B) Same.
- C) Higher.
- D) V_x higher and V_y lower.

108- During a climb with jet engines aircraft, the altitude where the rate of climb reduces to 500 ft/min is called:

- A) Absolute ceiling.
- B) Service ceiling.
- C) Thrust ceiling.
- D) Maximum transfer ceiling.

109- When flying in a headwind, the speed for maximum range should be:

- A) Slightly decreased.
- B) Slightly increased.
- C) Unchanged.
- D) Should be increased or decreased depending on the strength of the wind.

110- For a jet engine aeroplane, the speed for maximum range is:

- A) That which gives the maximum value of lift.
- B) 1.32 times of V_{MD} .
- C) That which gives the minimum lift to drag ratio.
- D) 1.4 times the Stall speed in clean configuration.

111- If the thrust available exceeds the thrust required for level flight:

- A) The aeroplane decelerates if the altitude is maintained.
- B) The aeroplane descends if the airspeed is maintained.
- C) The aeroplane decelerates if it is in the region of reversed command.
- D) The aeroplane accelerates if the altitude is maintained.



112- Which of the equations below expresses approximately the unaccelerated percentage climb gradient for small climb angles?

- A) $\text{Climb Gradient} = ((\text{Thrust} - \text{Drag}) \div \text{Weight}) \times 100$
- B) $\text{Climb Gradient} = ((\text{Thrust} + \text{Drag}) \div \text{Lift}) \times 100$
- C) $\text{Climb Gradient} = ((\text{Thrust} - \text{Mass}) \div \text{Lift}) \times 100$
- D) $\text{Climb Gradient} = (\text{Lift} \div \text{Weight}) \times 100$

113- The TODA is:

- A) Declared runway length plus clearway and stopway.
- B) Declared runway length plus stopway.
- C) Declared runway length plus clearway.
- D) Declared runway length only.

114- V_1 has to be:

- A) Higher than V_R .
- B) Equal to or higher than V_2 .
- C) Equal to or higher than V_{MCG} .
- D) Equal to or higher than V_{MCA} .

115- V_R must be:

- A) Between $1.05 V_{MCA}$ and V_1 .
- B) Greater than V_{MCA} and greater than $1.1 V_1$.
- C) Greater than $1.05 V_{MCA}$ and not less than V_1 .
- D) No greater than $0.95 V_{MU}$.

116- What happens to the field limited Takeoff Mass with runway slope?

- A) It increases with a downhill slope.
- B) It is unaffected by runway slope.
- C) It decreases with a downhill slope.
- D) It increases with an uphill slope.

117- For a turbojet aeroplane the 3rd segment of takeoff climb begins when:

- A) Acceleration to flap retraction speed begins (min 400 ft).
- B) Landing gear is fully retracted.
- C) Acceleration from V_{LOF} to V_2 begins.
- D) Flaps are fully retracted.

118- For a turbojet aeroplane the 2nd segment of the takeoff climb begins when:

- A) Accelerating from V_2 to flap retraction speed begins.
- B) Landing gear is fully retracted.
- C) Flap retraction begins.
- D) Flaps are fully retracted.



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119- The speed V_2 is defined for jet aeroplane as:

- A) Takeoff safety speed.
- B) Lift off speed.
- C) Takeoff decision speed.
- D) Critical engine failure speed.

120- The speed V_1 is defined as:

- A) Takeoff decision speed.
- B) Takeoff climb speed.
- C) Speed for best angle of climb.
- D) Engine failure speed.

121- What is the stalling speed at specific configuration?

- A) V_{S0}
- B) V_S
- C) V_{ST}
- D) V_{S1}

122- Which factor does effect on V_{S1} in jet aeroplane?

- A) Weight
- B) Configuration
- C) Altitude
- D) All answers are correct

123- The stalling speed for piston engine aircraft at specific configuration increase significantly by altitude increase.

- A) True
- B) False

124- Which factor does effect on V_{S1} for piston engine aircraft?

- A) Weight
- B) Configuration
- C) Altitude
- D) A and B are correct

125- Which statement regarding V_1 is correct?

- A) When determining V_1 , reverse thrust may only be used on the remaining symmetric engines.
- B) The correction for upslope on the balanced V_1 , is negative.
- C) V_R may not be lower than V_1 .
- D) V_1 may not be higher than V_{MCG} .



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126- A balanced field exists if:

- A) TORA = EDA.
- B) TORA = TODA.
- C) TODA is greater than EDA.
- D) TODA = ASDA.

127- During takeoff the third segment begins:

- A) When acceleration starts from V_{LOF} to V_2 .
- B) When flap retraction is completed.
- C) When acceleration to flap retraction speed is started.
- D) When landing gear is fully retracted.

128- When climbing at a constant Mach number in the troposphere, what is the effect on (i) IAS and (ii) TAS?

- A) (i) increases, (ii) decreases
- B) (i) remains constant, (ii) decreases
- C) (i) decreases, (ii) increases
- D) (i) decreases, (ii) decreases

129- In a constant Mach number climb, how does True Airspeed vary?

- A) Remains constant.
- B) Decreases.
- C) Increases.
- D) Increases then decreases.

130- When climbing at a constant Mach number through the troposphere, TAS:

- A) Increases.
- B) Decreases.
- C) Remains constant.
- D) Increases then decreases.

131- A jet aeroplane is climbing at constant Mach number below the tropopause. Which of the following statements is correct?

- A) IAS increases and TAS decreases.
- B) IAS increases and TAS increases.
- C) IAS decreases and TAS increases.
- D) IAS decreases and TAS decreases.



132- As altitude increases the stalling speed of an aircraft in terms of IAS _____ , TAS _____ and Mach number _____ . (with constant Thrust Available)

- A) Remains constant, increases, decreases
- B) Increases, increases, decreases
- C) Remains constant, increases, increases
- D) Increases, decreases, increases

133- A jet aeroplane is climbing at a constant IAS and maximum climb thrust, how will the climb angle / the pitch angle change?

- A) Reduce / decrease.
- B) Reduce / remain constant.
- C) Remain constant / decrease.
- D) Remain constant / become larger.

134- The optimum cruise altitude increases:

- A) If the temperature (OAT) is increased.
- B) If the tailwind component is decreased.
- C) If the aeroplane mass is increased.
- D) If the aeroplane mass is decreased.

135- Specific Range will:

- A) Decrease if CG is moved further forward of the CP.
- B) Increase if CG is moved further forward of the CP.
- C) Not be affected by CG position.
- D) Only be affected by CG position, if it is behind the CP.

136- The optimum altitude:

- A) Decreases as mass decreases.
- B) Increases as mass decreases and is the altitude at which the specific range reaches its maximum.
- C) Is the altitude at which the specific range reaches its minimum.
- D) Is the altitude up to which cabin pressure of 8000 ft can be maintained.

137- Maximum endurance:

- A) Can be flown in a steady climb only.
- B) Is the same as maximum specific range with wind correction.
- C) Is achieved in unaccelerated level flight with minimum fuel consumption.
- D) Can be reached with the best rate of climb speed in level flight.



138- “V₂” is the speed that define as:

- A) Must be attained before reaching a height of 35 ft AGL with all engine operative.
- B) Takeoff decision speed.
- C) Meet the requirement of climb gradient to 3000 ft.
- D) In some case would be less than V_{2min}.

139- What is the stalling speed with the landing configuration?

- A) V_{S1}
- B) V_S
- C) V_{SO}
- D) V_{ST}

140- Which one is correct?

- A) V₁ < V_R < V_{MU} < V_{2MIN} < V₂
- B) V₁ < V_R < V_{MU} < V_{LOF} < V_{2MIN} < V₂
- C) V₁ < V_{MU} < V_R < V_{LOF} < V_{2MIN} < V₂
- D) V₁ < V_R < V_{MU} < V_{2MIN} < V_{LOF} < V₂

141- Which one is correct?

- A) V_{LOF} is a speed that aircraft first become airborne.
- B) The takeoff must be aborted if engine failure occurs at a speed above V₁ but below V₂.
- C) V_{2min} is a speed that airplane can safely lift off the ground.
- D) All answers are correct.

142- “ASDA” is defined as:

- A) The length of runway plus stopway.
- B) Assuming the critical engine to fail at V₁.
- C) ASDA use for takeoff and landing.
- D) All answers are correct.

143- The balance field length is area define as:

- A) ASDA > TODA
- B) TODA > ASDA
- C) Stopway = Clearway
- D) Depend to Runway length

144- Which is correct about clearway?

- A) Minimum width is 500 ft
- B) Maximum climb gradient in clearway 1.25%
- C) Maximum length of clearway is one-half of the runway
- D) All answers are correct



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145- "Clearway " is the area defined as:

- A) Is area on the ground.
- B) Clearway is suitable for stop after aborted takeoff.
- C) Is area extending into the air from the end of runway.
- D) A and B are correct.

146- "Clearway " is the area defined as:

- A) Clearway use for aborted takeoff.
- B) Provide additional takeoff distance for climb.
- C) Clearway use for computing ASDA.
- D) Clearway does not provide extra distance after liftoff.

147- "Stopway " is the area defined as:

- A) Area beyond takeoff runway which use for aborted takeoff.
- B) Over run is another name of stopway.
- C) Use for takeoff computation only.
- D) All answers are correct.

148- "Takeoff distance" is the distance from:

- A) Starting point up to 35 ft height AGL.
- B) The point of break releases up to 50 ft AGL with engine failure.
- C) Starting point up to 50 ft AGL with all engine operative.
- D) Starting point up to 35 ft height AGL with critical engine failure.

149- Which statement is correct?

- A) Takeoff distance with critical engine failure is from starting point up to 50 ft AGL.
- B) Takeoff distance with all engine operative is 1.15 times of TODR with critical engine failure.
- C) Take off distance with all engine operative is lesser then distance with critical engine failure.
- D) All answers are correct.

150- "Takeoff Run" is a distance

- A) From starting point up to mid-point of lift off and 35 ft height AGL with critical engine failure at V_1 .
- B) From starting point up to lift off point.
- C) From starting point up to 50 ft height of AGL.
- D) None.

151- Which statement is correct?

- A) Takeoff run is a distance from starting point up to midpoint between lift off point and 35 ft height AGL for critical engine failure at V_1 .
- B) Takeoff run for all engine operative is 1.15 times of takeoff run with critical engine failure.
- C) Takeoff run for all engine operative is greater than takeoff run with critical engine failure.
- D) All answers are correct.



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152- “Ground roll “ is a distance from

- A) Starting point up to lift off point.
- B) Starting point up to 35 ft height AGL.
- C) Starting point up to 50 ft height AGL.
- D) Starting point up to mid-point between lift off point and 35 ft height AGL.

153- “Landing distance” is measure from

- A) 35 ft height above landing surface
- B) 50 ft height above landing surface
- C) 60 ft height above landing surface
- D) 70 ft height above landing surface

154- Which statement is correct?

- A) Landing distance is determined from 50 ft above landing surface until aircraft stop completely.
- B) Landing distance must not be greater than 60% of effective runway.
- C) Landing distance must not be greater than 60% of effective runway in alternate aerodrome.
- D) All answers are correct.

155- Which statement is correct?

- A) Climb gradient is the flight path achieved.
- B) Clearway begins at the end of stopway.
- C) Stopway use for both Takeoff & Landing computations.
- D) All answers are wrong.

156- What is the takeoff distance with all engines are operating?

Distance between starting point and LOF point = 5000 ft

Distance between LOF point and 35 ft height = 1000 ft

- A) 6000 ft
- B) 6900 ft
- C) 5000 ft
- D) 6325 ft

157- Optimum altitude can be defined as:

- A) The highest permissible altitude for an aeroplane type.
- B) The altitude at which an aeroplane attains the maximum specific air range.
- C) The altitude at which the ground speed is greatest.
- D) The altitude at which specific fuel consumption is highest.



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158- The optimum cruise altitude is:

- A) The pressure altitude at which the best specific range can be achieved.
- B) The pressure altitude at which the fuel flow is a maximum.
- C) The pressure altitude up to which a cabin altitude of 8000 ft can be maintained.
- D) The pressure altitude at which the speed for high speed buffet as TAS is a maximum.

159- The optimum altitude for a turbojet is:

- A) When the stall speed equals $V_{P\ MIN}$.
- B) When the TAS at the buffet boundary is greatest.
- C) Where fuel consumption is highest.
- D) When specific range is a maximum.

160- For a turbojet flying at maximum range speed the angle of attack:

- A) Will be more than that for the maximum L/D ratio.
- B) Will be less than that for the maximum L/D ratio.
- C) Will be that for the maximum L/D ratio.
- D) Will be that for $C_{L\ MAX}$.

161- Which of the following statements about the optimum flight level is true?

- A) ATC never allow you to fly at it continuously.
- B) You should always fly at this level because it is the most economically variable.
- C) You should always fly above it.
- D) You should always fly below it.

162- A jet aeroplane descends with constant Mach number, which of the following speed limits is most likely to be exceeded first?

- A) Maximum operational Mach number.
- B) Never exceed speed.
- C) High speed buffet limit.
- D) Maximum operating speed.

163- If an aircraft is descending at a constant Mach number:

- A) The IAS will increase and the margin to low speed buffet will decrease.
- B) The IAS will increase and the margin to low speed buffet will increase.
- C) The IAS will decrease and the margin to low speed buffet will decrease.
- D) The IAS will decrease and the margin to low speed buffet will increase.



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164- When in a gliding maneuver with jet aeroplane, in order to achieve maximum endurance, the aircraft should be flown at:

- A) The speed for maximum lift.
- B) The speed for maximum drag.
- C) The speed for maximum lift-to-drag ratio.
- D) The speed for minimum power.

165- Given:

Distance from starting point to LOF point is 5000 ft

Distance from LOF point up to midpoint between liftoff and 35 ft height (AGL) is 500 ft

Find takeoff distance when critical engine is failed:

- A) 6000 ft
- B) 6900 ft
- C) 5000 ft
- D) 6325 ft

166- Find "Takeoff distance" for aircraft with critical engine failure when:

Distance from starting point up to LOF point = 5000 ft

Distance from LOF point up to 35 ft height AGL = 1000 ft

- A) 6000 ft
- B) 6900 ft
- C) 5000 ft
- D) 6325 ft

167- Find "ASDA" when:

Runway length = 8000 ft

Clearway = 6000 ft

Stopway = nil

- A) 14000 ft
- B) 12000 ft
- C) 11000 ft
- D) 8000 ft

168- Find "TODA" when:

TORA = 8000 ft

Clearway = 6000 ft

Stopway = 3000 ft

- A) 14000 ft
- B) 12000 ft
- C) 11000 ft
- D) 8000 ft



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169- Find "TODA" when:

Runway length = 7000 ft

Stopway = 3000 ft

Clearway = 2000 ft

- A) 7000 ft
- B) 10000 ft
- C) 9000 ft
- D) 8500 ft

170- What is the length of displace threshold?

Runway length = 9000 ft

Stopway = 800 ft

Clearway = 3000 ft

- A) 9000 ft
- B) 8200 ft
- C) 6000 ft
- D) Zero

171- What is the length of displace threshold?

Runway length = 10000 ft

Landing distance available = 9500 ft

Stopway = 400 ft

- A) 400 ft
- B) 500 ft
- C) 1000 ft
- D) 10000 ft

172- What is the landing distance from 50 ft above surface when?

Landing runway length = 10000 ft

Stopway = 1000 ft

- A) 10000 ft
- B) 11000 ft
- C) 6000 ft
- D) 10600 ft



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173- What is the Landing distance at destination alternate aerodrome?

Destination alternate runway length = 10000 ft

Destination aerodrome runway length = 8000 ft

Stopway = 4000 ft

- A) 4800 ft
- B) 6000 ft
- C) 8400 ft
- D) 7200 ft

174- The first segment of climb is

- A) Actual lift off to landing gear retraction.
- B) Actual lift off to gear & flaps up.
- C) V_1 point up to gear retraction.
- D) V_1 point up to gear & flaps retraction.

175- The second segment of climb is from

- A) Gear & flaps retract up to 400 ft above AGL
- B) Gear retract up to 400 ft above AGL
- C) Gear & flaps retract up to 1500 ft above AGL
- D) Gear retract up to 1500 ft above AGL

176- The third segment of climb is from

- A) 400 ft AGL up to 1000 ft AGL
- B) Flap retraction up to 1500 ft AGL
- C) 400 ft AGL up to 1500 ft AGL
- D) Gear retraction up to 1000 ft AGL

177- Which take off limitation for a turbine engine air carrier airplane must not exceed 11100 feet when (1) runway length is 8600 feet (2) stopway is 2500 feet and (3) the clearway is 4200 feet?

- A) Take off path
- B) Take off distance
- C) Accelerate stop distance
- D) Take off run



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178- What is the maximum accelerate stop distance for a turboprop powered air carrier airplane?

Runway length **8800 feet**
Clearway length **4450 feet**
Stopway length **2700 feet**

- A) 13250 feet
- B) 11500 feet
- C) 10225 feet
- D) 8300 feet

179- Defines V_{SO} , as the stalling speed or the minimum steady flight speed:

- A) In the landing configuration
- B) In the takeoff configuration
- C) With the critical engine operative
- D) At which the airplane is controllable

180- What approximate speed should you expect dynamic hydroplaning to occur if a tire has an air pressure of 95 PSI?

- A) 84 knots
- B) 87 knots
- C) 90 knots
- D) 93 knots

181- What approximate speed should you expect dynamic hydroplaning to occur if a tire has an air pressure of 115 PSI?

- A) 89 knots
- B) 92 knots
- C) 95 knots
- D) 98 knots

182- Which is the correct symbol for the stalling speed or the minimum steady flight speed at which the airplane is controllable?

- A) V_{SO}
- B) V_2
- C) V_S
- D) V_{S1}



183- What is the stall speed of an airplane under a load factor of 2 G's if the unaccelerated stall speed is 100 knots?

- A) 66 knots
- B) 74 knots
- C) 84 knots
- D) 141 knots

184- Which is the correct symbol for indicating absolute ceiling speed?

- A) V_{s1}
- B) V_s
- C) V_{ZRC}
- D) V_2

185- Which is the correct symbol for best endurance speed?

- A) V_{BE}
- B) V_s
- C) V_{BR}
- D) V_{2min}

186- Which is the correct symbol for best range speed?

- A) V_{MA}
- B) V_{MO}
- C) V_{BE}
- D) V_{BR}

187- What is the maximum takeoff run for a turbine engine transport category aircraft on the runway?

Runway length	8800 feet
Clearway length	3000 feet
Stopway length	1000 feet

- A) 8800 feet
- B) 9000 feet
- C) 9500 feet
- D) 11000 feet

188- Which computation must not exceed the length of a runway plus the length of the stopway for a turbine engine powered transport category airplane?

- A) Take off run
- B) Accelerate stop distance
- C) Take off distance
- D) Take off path



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189- What is the maximum takeoff run for a turbine powered domestic air carrier airplane?

Available runway length 6500 ft
Length of clearway 3500 ft
Length of stopway 1500 ft

- A) 10000 feet
- B) 9750 feet
- C) 3000 feet
- D) 6500 feet

190- In a constant Mach descent which one of the following speeds will be exceeded first?

- A) V_{NE}
- B) V_D
- C) V_{MO}
- D) M_{MO}

191- A stall warning system is based on a measure of:

- A) Attitude.
- B) Airspeed.
- C) Aerodynamic incidence.
- D) Ground speed.

192- An airplane is in steady descent, the auto-throttle maintains a constant Mach number, if the total temperature remains constant, the calibrated airspeed:

- A) Increases.
- B) Decreases.
- C) Remains constant.
- D) Decreases if the static temperature is lower than the standard temperature, increases if above.

193- An aeroplane is in steady cruise at FL270. The auto throttle maintains a constant calibrated airspeed. If the total temperature increases, the Mach number:

- A) Decreases.
- B) Increases.
- C) Remains constant.
- D) Decreases if the outside temperature is higher than the standard temperature, increases if lower.

194- An aeroplane is in steady cruise at FL270. The auto-throttle maintains a constant calibrated airspeed. If the total temperature decreases, the Mach number:

- A) Increases if the outside temperature is higher than the standard temperature, decreases if lower.
- B) Increases.
- C) Decreases.
- D) Remains constant.



195- An aeroplane is in steady descent. The auto-throttle maintains a constant calibrated airspeed. If the total temperature remains constant, the Mach number:

- A) Increases.
- B) Decreases.
- C) Remains constant.
- D) Increases if the static temperature is lower than the standard temperature, decreases if higher.

196- An airplane is in steady cruise at FL290. The auto throttle maintains a constant Mach number. If the total temperature decreases, the calibrated airspeed:

- A) Decreases if the outside temperature is lower than the standard temperature, increases if higher.
- B) Increases.
- C) Decreases.
- D) Remains constant.

197- Considering the maximum operational Mach number (M_{MO}) and the maximum operational speed (V_{MO}) ft the captain of a pressurized aircraft begins his descent from a high flight level. In order to meet his scheduled time of arrival, he decides to use the maximum ground speed at any time of the descent. He will be limited:

- A) Initially by the V_{MO} then by the M_{MO} below a certain flight level.
- B) By the M_{MO} .
- C) By the V_{MO} in still air.
- D) Initially by the M_{MO} then by the V_{MO} below a certain flight level.

198- An airplane is cruising at FL190, the auto-throttle maintains a constant CAS, if the total temperature decreases, the Mach number:

- A) Remains constant.
- B) Increases.
- C) Decrease.
- D) Decrease if OAT is lower than standard.

199- At flight level and Mach number constant, if the total temperature decreases, the CAS:

- A) Decreases if OAT is lower than standard temperature, increases in the opposite case.
- B) Increases.
- C) Decreases.
- D) Remains constant.

200- Below the tropopause in standard conditions, when climbing at a constant Mach number:

- A) TAS decreases.
- B) TAS increases.
- C) TAS remains constant.
- D) The difference between surrounding conditions and ISA must be known to deduce the TAS variation.



201- Below the tropopause in standard conditions, when descending at a constant CAS:

- A) Mach number and the velocity of sound decrease.
- B) Mach number increases and the velocity of sound decreases.
- C) Mach number and the velocity of sound increase.
- D) Mach number decreases and the velocity of sound increases.

202- Below the tropopause in standard conditions, when descending at a constant Mach number:

- A) TAS remains constant.
- B) TAS decreases.
- C) TAS increases.
- D) The difference between surrounding conditions and ISA must be known to deduce the TAS variation.

203- During a climb at a constant calibrated airspeed (CAS) below the tropopause in ISA conditions:

- A) The Mach number decreases and the speed of sound increases.
- B) The Mach number increases and the speed of sound decreases.
- C) The Mach number and the speed of sound increase.
- D) The Mach number and the speed of sound decrease.

204- The Mach number is proportional to the ratio:

(Note: "a" indicates the local speed of sound)

- A) $EAS \div a$
- B) $CAS \div a$
- C) $TAS \div a$
- D) $IAS \div a$

205- The maximum TAS is obtained at:

- A) The maximum flight level.
- B) The flight level at which simultaneously $CAS = V_{MO}$ and $M = M_{MO}$
- C) All the flight level(s) where $CAS = V_{MO}$
- D) All the flight level(s) where $M = M_{MO}$

206- When climbing at a constant CAS in a standard atmosphere:

- 1) TAS decreases.
- 2) TAS increases.
- 3) Mach number increases.
- 4) Mach number decreases.

The combination regrouping all the correct statements is:

- A) 1,4
- B) 2,4
- C) 1,3
- D) 2,3



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207- When climbing at a constant CAS:

- A) Mach number decreases.
- B) Mach number increases.
- C) Mach number remains constant.
- D) The difference between surrounding conditions and ISA must be known to deduce the Mach number variation.

208- You are flying at a constant FL290 and constant Mach number, the total temperature increases by 5°C, the CAS will:

- A) Remain approximately constant.
- B) Increase by 10 kts.
- C) Decrease by 10 kts.
- D) Increase or decrease depending on whether you are above or below ISA.

209- The yaw damper indicator supplies the pilot with information regarding the:

- A) Yaw damper action only on the ground.
- B) Rudder displacement by the rudder pedals.
- C) Yaw damper action on the rudder.
- D) Rudder position.

210- The yaw damper, which suppresses Dutch roll:

- A) Controls the rudder, with Mach number as the input signal.
- B) Controls the ailerons, with Mach number as the input signal.
- C) Controls the rudder, with the angular rate about the vertical axis as the input signal.
- D) Controls the ailerons, with the angular rate about the vertical axis as the input signal.

211- The yaw damper affects:

- A) Ailerons only.
- B) All control surfaces in a coordinated way.
- C) Ailerons and rudder.
- D) Rudder only.

212- The Yaw Damper system:

- 1) Counters any wrong pilot action on the rudder pedals
- 2) Counters Dutch roll
- 3) Is active only when autopilot is engaged

The combination regrouping all the correct statements are:

- A) 1,2
- B) 1,2,3
- C) 2
- D) 2,3



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213- The correct sequence of speeds in climb is:

- A) V_S , V_X , V_Y .
- B) V_X , V_S , V_Y .
- C) V_S , max range speed, max endurance speed.
- D) Max endurance speed, V_S , max range speed.

214- The speed for best rate of climb:

- A) May be higher or lower than the speed for best angle of climb depending on helicopter type.
- B) Will be the same as the speed for best angle of climb under any circumstances.
- C) Will be equal or higher than the speed for best angle of climb.
- D) Lower than the speed for the best angle of climb.

215- An aircraft with a Centre of Gravity towards the aft limit will experience:

- A) An increased range and increased stalling speed.
- B) A decreased range and increased stalling speed.
- C) An increased range and decreased stalling speed.
- D) A decreased range and decreased stalling speed.

216- Changing the takeoff flap setting from flap 15° to flap 5° will normally result in:

- A) A shorter takeoff distance and an equal climb.
- B) A longer takeoff distance and a better climb.
- C) A better climb and an equal takeoff distance.
- D) A shorter takeoff distance and a better climb.

217- An aircraft has two certified landing flaps positions, 25° and 35°, if a pilot chooses 35° instead of 25°, the aircraft will have:

- A) A reduced landing distance and better go-around performance.
- B) A reduced landing distance and degraded go-around performance.
- C) An increased landing distance and degraded go-around performance.
- D) An increased landing distance and better go-around performance.

218- Aft center of gravity (within the approved limits):

- A) Increases maximum range.
- B) Improves longitudinal stability.
- C) Decreases maximum range.
- D) Increases stalling speed.

219- Heavy rain may temporarily cause:

- A) Increased weight.
- B) Increased stalling speed.
- C) Reduced forward speed.
- D) All answers are correct.



220- What is the effect of increased mass on the best rate of climb speed (all other factors considered unchanged)?

- A) Speed for maximum rate of climb increases with increasing mass.
- B) Maximum rate of climb is dependent of mass, but not the speed for maximum rate of climb.
- C) Speed for maximum rate of climb decreases with increasing mass.
- D) Maximum rate of climb and the corresponding speed are dependent of mass.



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	B	26	D	51	D	76	C
2	C	27	A	52	A	77	D
3	A	28	B	53	B	78	D
4	D	29	D	54	B	79	D
5	D	30	B	55	C	80	D
6	B	31	A	56	A	81	B
7	B	32	B	57	A	82	C
8	A	33	D	58	C	83	B
9	B	34	A	59	C	84	D
10	D	35	A	60	D	85	D
11	B	36	D	61	D	86	C
12	A	37	B	62	D	87	D
13	D	38	A	63	D	88	D
14	D	39	A	64	D	89	C
15	B	40	C	65	D	90	A
16	B	41	A	66	D	91	B
17	C	42	A	67	C	92	A
18	C	43	B	68	B	93	D
19	A	44	B	69	A	94	C
20	B	45	C	70	B	95	A
21	C	46	A	71	C	96	C
22	B	47	A	72	D	97	C
23	A	48	D	73	D	98	D
24	A	49	C	74	B	99	C
25	C	50	D	75	B	100	A

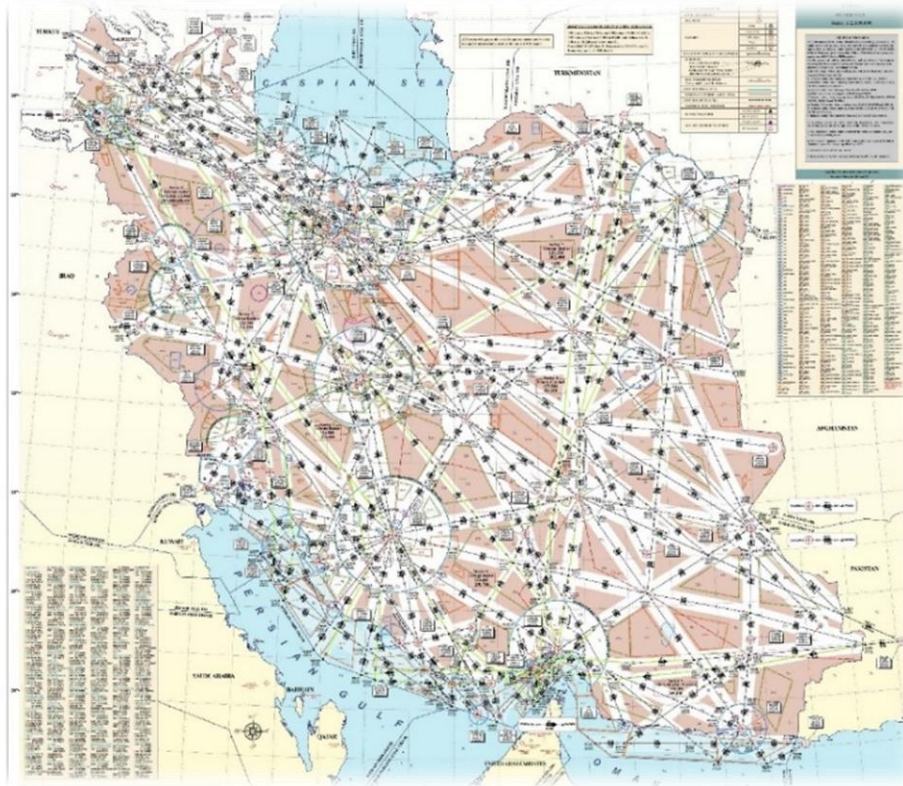


QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	C	126	D	151	D	176	C
102	D	127	C	152	A	177	C
103	B	128	D	153	B	178	B
104	B	129	B	154	D	179	A
105	B	130	B	155	D	180	A
106	D	131	D	156	B	181	B
107	C	132	C	157	B	182	C
108	B	133	A	158	A	183	D
109	B	134	D	159	D	184	C
110	B	135	A	160	B	185	A
111	D	136	B	161	A	186	D
112	A	137	C	162	D	187	A
113	C	138	A	163	B	188	A
114	C	139	C	164	C	189	D
115	C	140	B	165	A	190	C
116	A	141	A	166	A	191	C
117	A	142	A	167	D	192	A
118	B	143	C	168	B	193	C
119	A	144	D	169	C	194	D
120	A	145	C	170	D	195	B
121	D	146	B	171	B	196	D
122	D	147	D	172	C	197	D
123	B	148	D	173	B	198	A
124	D	149	B	174	A	199	D
125	C	150	A	175	B	200	A



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	D	206	D	211	D	216	B
202	C	207	B	212	C	217	B
203	B	208	A	213	A	218	A
204	C	209	C	214	C	219	D
205	B	210	C	215	C	220	A

AIRWAY MANUAL



➤ Issue Date February 2017



✓ INTRODUCTION

1- What is the meaning of an “X” along an airway structure?

- A) Mileage break.
- B) Turning point.
- C) Computer navigation fix.
- D) All answers are correct.

2- What is the meaning of “O>” on an airway?

- A) Odd and even level will be used in opposite direction.
- B) Odd level is used in the direction of arrow.
- C) Odd level is used on one-way airway on the direction of arrow.
- D) Even level will be used in opposite direction.

3- What is the meaning of a waypoint placed within a circle on SID or STAR chart?

- A) Turning point.
- B) Fly over fix.
- C) Fly by fix.
- D) Reporting point.

4- When the geographical co-ordination of the site of a navigation aid may be shown on an en-route chart?

- A) The facility used for high altitude.
- B) The facility used for low altitude.
- C) The facility used for VFR.
- D) A & B are correct.

5- The “M” shown on an identification of a VOR or NDB on an en-route chart means this station is selected as?

- A) Meteorological reporting station by MET office.
- B) Meteorological reporting station by ATS until.
- C) Meteorological reporting station by VOLMET.
- D) Meteorological reporting station by pilot.

6- What is the meaning of “G” as a suffix to the level, indicated on an airway?

- A) MORA
- B) GPS MEA
- C) GRID MORA
- D) MOCA



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7- How a ghost VOR may be shown on an enroute chart?

- A) Within brackets.
- B) Remote site.
- C) Within parentheses.
- D) Above NAV aid name.

8- The " \perp | \perp " symbol shown on the center line of a route on an airway chart mean?

- A) Change of MOCA.
- B) Change of MORA.
- C) Change of MAA.
- D) All answers are correct.

9- For which enroute facility change-over-point may be established?

- A) VOR
- B) DME
- C) TACAN
- D) NDB

10- What is the meaning of an asterisk on a frequency?

- A) Operating all the time.
- B) Operating not continues.
- C) Operating when requested.
- D) Operating day time.

11- What is the term of beginning of final approach segment of precision approach?

- A) FAP (USA)
- B) FAP (ICAO)
- C) FAF (USA)
- D) B & C are correct

12- The unboxed identification of navigation aid on a low and high altitude chart means:

- A) En-route facility.
- B) Off airway facility.
- C) Off chart facility.
- D) VFR facility.

13- How the MOCA may be shown on an enroute chart?

- A) By (A)
- B) By (g)
- C) By (T)
- D) By (D)



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14- What is the meaning of shaded symbol on an en-route chart coverage diagram?

- A) Main airport
- B) Area chart coverage
- C) CTA
- D) TMA

15- The altitude of 5600 ft on a profile view of an approach chart means?

- A) Maximum altitude.
- B) Mandatory altitude.
- C) Minimum altitude.
- D) Recommended altitude.

16- How the location of FAF may be identified on the profile view of approach chart?

- A) By Maltese cross symbol.
- B) By an asterisk.
- C) By the FAF.
- D) All above maybe used.

17- What is the meaning of letter (R) after the air traffic service unit?

- A) RNAV
- B) RNP
- C) Radar capability
- D) Radio

18- What is the meaning of Grid MORA following by “±”?

- A) Doubtful accuracy.
- B) Doubtful clearance.
- C) Doubtful position.
- D) Doubtful planning.

19- How an uncontrolled airspace may be shown on an airway chart?

- A) White
- B) Red
- C) Tint
- D) Yellow

20- Location name in blue means?

- A) Procedure are published.
- B) VFR procedure are published.
- C) IFR procedure are published.
- D) Controlled flight procedure are published.



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21- How database identifiers may be shown on STAR or SID charts?

- A) Within a closed box.
- B) Within brackets.
- C) Within parentheses.
- D) Within a circle.

22- Which instrument approach procedure on its profile view has the symbol of missed approach point?

- A) Precision approach.
- B) Circling approach.
- C) Straight in approach.
- D) Non precision approach.

23- The symbol "V" on a profile view of a non-precision approach means?

- A) Visual approach point.
- B) Visual descend point.
- C) Minimum visual point.
- D) Visual maneuvering circling.

24- What is the meaning of a small circle enclosing dot on an enroute chart H/L?

- A) Radio facility.
- B) Remote communication site.
- C) Airport site.
- D) Navigation facility site.

25- By which color the grid MORA may be shown?

- A) Less than 10000 ft maroon, above 10000 ft green.
- B) Less than 10000 ft green, above 10000 ft maroon.
- C) Less than 10000 ft green, at and above 10000 ft maroon.
- D) Above 10000 ft maroon, at and below 10000 ft green.

26- What is the meaning of letter (x) behind of a frequency on an approach chart?

- A) Part time operation.
- B) H24 operation.
- C) Operating at night.
- D) On request.

27- What is the meaning of "Full" on the landing minima of approach chart?

- A) All facilities are operating.
- B) All parts of MLS are operating.
- C) All components of ILS are operating.
- D) All lights are operating.



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28- What is the meaning of the “PANS-OPS4” margin notation?

- A) Holding speed is based on PANS-OPS fourth edition.
- B) Acceleration segment is deleted.
- C) Noise procedure is not applicable.
- D) “A” and “B” are correct.

29- What is the minimum obstacle clearance of grid MORA in mountainous area provided by a state?

- A) 1000 ft
- B) 2000 ft
- C) 1500 ft
- D) 2500 ft

30- What is the obstacle clearance of grid MORA provided by JEPPESEN where highest elevation is 6700 ft?

- A) 1000 ft
- B) 1500 ft
- C) 2000 ft
- D) 2500 ft

31- What is the maximum wing span of DL category aircraft?

- A) 65 m
- B) 70 m
- C) 75 m
- D) 80 m

32- What is the maximum turn off speed on high speed taxiway?

- A) 65 KT
- B) 60 KT
- C) 55 KT
- D) 50 KT

33- For which radio fix on an airway the MOCA may be published?

- A) TACAN
- B) VOR
- C) NDB
- D) VOR/DME



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34- What is the maximum lateral limits of route MORA derived by JEPPESEN?

- A) 10 NM
- B) 12 NM
- C) 20 NM
- D) 22 NM

35- Grid MORA provide for.....

- A) Terrain clearance.
- B) Navigation signal coverage.
- C) Communication signal coverage.
- D) Radar coverage.

36- What is the purpose of determination of MSA by "FAA"?

- A) Direct route.
- B) Reception of NAVAID.
- C) Emergency use only.
- D) Visual contact.

37- Which type of instrument approach procedures may have "VDP"?

- A) Precision approach.
- B) Non-Precision (straight-in).
- C) Circling.
- D) Non-Precision.

38- What is the dividing point of runway length indicated on the location name, labeled on an en-route chart?

- A) 50 ft
- B) 60 ft
- C) 70 ft
- D) 80 ft

39- What color is the grid MORA value of an obstacle with a height of 12700 ft?

- A) Green
- B) Maroon
- C) Blue
- D) Red

40- How the GPS MEA may be shown on an en-route chart?

- A) By letter T.
- B) By letter A.
- C) By letter X.
- D) By letter G.



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41- What color is the grid MORA value of an obstacle with a height of 4900 ft?

- A) Green
- B) Maroon
- C) Blue
- D) Red

42- If the value of grid MORA on an en-route chart is shown 98, what will be the actual elevation of obstacle?

- A) 7700 ft
- B) 8700 ft
- C) 8800 ft
- D) 7800 ft

43- How the change of GPS MEA may be shown on an en-route chart?

- A) By symbol T.
- B) By symbol X.
- C) By symbol A.
- D) By symbol G.

44- The continues line of T symbols on en-route chart coverage is:

- A) Telephone line.
- B) Time zone boundary.
- C) Sector boundaries.
- D) Communication boundaries.

45- How the MEA and MAA change may be shown on an en-route chart?

- A) By letter " T ".
- B) By letter " a ".
- C) By symbol " X ".
- D) By symbol " | | ".

46- The indication of route designator with gap means:

- A) PPR route.
- B) Gap in navigation aids coverage.
- C) Conditional route.
- D) Day light operation route.

47- Which region supply conditional route based on figure 1, 2, 3 as a suffix of route designator?

- A) MIDDLE EAST/SOUTH SEA
- B) NAT (NORTH ATLANTIC)
- C) NAM (NORTH AMERICAN)
- D) EUROPE



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48- Which conditional route (CDR) is required appropriate message?

- A) CDR 1
- B) CDR 3
- C) CDR 2
- D) All CDRs

49- The visual maneuver for landing on a parallel runway which is not more than 1200 ft from the runway that instrument approach is conducted, is called?

- A) Sidestep maneuver
- B) Circle to land
- C) Circling approach
- D) Visual approach

50- Which elevation above aerodrome level of man-made structure may be shown on a plan view of instrument approach chart?

- A) Higher than 500 ft.
- B) Higher than 400 ft.
- C) 500 ft and higher.
- D) 400 ft and lower.

51- Which of the following fixes have to label on the approach plan view?

- A) IAF, FAF
- B) IAF, IF
- C) IF, FAF
- D) IAF, MAP

52- How the approach transition track will be depicted on the approach plan view?

- A) Heavy weight line.
- B) Heavy weight dashed line.
- C) Medium weight dashed line.
- D) Medium weight line.

53- How the primary navigation aid will be indicated on the approach plan view?

- A) Shadowed navigation aid box.
- B) Bold type.
- C) Navigation aids box.
- D) Unbox navigation aids.



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54- How the final approach course will be shown on the approach plan view?

- A) Bold text.
- B) Bold text with directional arrow.
- C) Heavy weight line.
- D) Medium weight line.

55- Which navigation aid is intended to provide final approach course?

- A) Off-aerodrome navigation aid.
- B) On-aerodrome navigation aid.
- C) Primary navigation aid.
- D) Boxed navigation aid.

56- If a runway length is 12965 ft, what figure may be shown on location name?

- A) 130
- B) 129
- C) 129 ft
- D) 130 ft

57- What is the meaning of underline below the NAV aid identifier?

- A) Part time
- B) On-request
- C) BFO required
- D) Not co-located

58- How the location of FAF may be identified on the plan view of approach chart?

- A) By written FAF
- B) By an asterisk
- C) By Maltese cross symbol
- D) No indication on plan view

59- What is the horizontal accuracy of GPS for civil use?

- A) 50 meters
- B) 100 meters
- C) 150 meters
- D) 200 meters

60- What are the three dimensional information translated by GPS receiver?

- A) Position, velocity, level
- B) Position, bearing, time
- C) Velocity, level, time
- D) Position, velocity, time



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61- For which category aircraft, the additional OCA/H to be provided?

- A) D
- B) DL
- C) E
- D) H

62- Who is responsible to designate international airport?

- A) ICAO
- B) Contracting state
- C) IATA
- D) None

63- Between which radio fixes the MOCA may be published?

- A) VOR+DME
- B) NDB+DME
- C) VOR
- D) TACAN

64- Within what total width the MORA may be derived?

- A) 20 NM
- B) 10 NM
- C) 15 NM
- D) 5 NM

65- What changes in elevation within 10 NM shall be considered as mountainous area?

- A) 4000 ft
- B) More than 5000 ft
- C) 3000 ft
- D) Exceed 3000 ft

66- When you are using approved lighting system, by activating the mike 7 times within 5 seconds which lights will be available or off?

- A) Medium intensity is available
- B) REIL off
- C) Highest intensity is available
- D) REIL in lower intensity

67- What is the reference of aircraft height when using radio altimeter?

- A) Surface
- B) Threshold
- C) Touchdown
- D) Airport



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68- What is the maximum coverage of airport surveillance radar (ASR)?

- A) 40 NM
- B) 50 NM
- C) 60 NM
- D) 70 NM

69- What is the maximum assuring navigation signal coverage of a route within USA airspace where MOCA is published?

- A) Within entire route
- B) Within midpoint of route segment based on navigation aids
- C) Within 22 NM from VOR
- D) None

70- Which system of runway edge lights in USA has no variable intensity?

- A) RL
- B) MIRL
- C) HIRL
- D) LDIN

71- Which portion of instrument runway in USA the runway edge lights are amber?

- A) Last 1000 ft
- B) Last 2000 ft
- C) Last 1500 ft
- D) Last 2500 ft

72- What color is the runway edge lights (ICAO) from beginning of runway up to displaced threshold in the approach direction?

- A) Amber
- B) White
- C) Green
- D) Red

73- How many categories of significant point may be specified on an ATS route or flight path for ATS purpose?

- A) 1
- B) 2
- C) 3
- D) 4



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74- The high altitude en-route chart designed by JEPPESEN, has the information of

- A) At and above FL200.
- B) Above FL200.
- C) At and above FL150.
- D) Above FL150.

75- How many en-route charts, except area chart are designed by JEPPESEN?

- A) 4
- B) 3
- C) 2
- D) 1

76- What will be the index number of airport chart when it is printed on the reverse SID of the approach chart where the first approach chart is VOR approach?

- A) (10-9)
- B) (11-1)
- C) (13-1)
- D) (16-1)

✓ **ENROUTE**

77- How an area navigation airway (ICAO) may be identified on en-route chart?

- A) By adding "V" as a prefix on the route designator.
- B) By adding "L" as a prefix on the route designator.
- C) By adding "Y" instead of "R" as a prefix.
- D) "Z" instead of "R" as a suffix.

78- Which suffix of route designator shall not be used in voice communication?

- A) F, G, Y or Z
- B) A, B, Y or Z
- C) K, U, or G
- D) L, M, N or P

79- When the transponder shall be in "off" or "standby" position?

- A) When the runway is vacated.
- B) When aircraft arrived on aircraft stand.
- C) After completing landing roll.
- D) When entering taxiway.



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80- What SSR code you may select when entering Jeddah FIR as an uncontrolled flight?

- A) 2000
- B) 4000
- C) 7000
- D) None

81- What is the meaning of (F) as a suffix when added after the basic designator of an ATS route?

- A) ATC is provided.
- B) Advisory service is provided.
- C) Flight information is provided.
- D) All ATS services are provided.

82- How the route designator of "UL426F" shall be used in voice communication?

- A) Uniform Lima 426 foxtrot.
- B) Upper Lima 426.
- C) Uniform Lima 426.
- D) Upper Lima 426 foxtrot.

83- When SSR must be switch on?

- A) Prior to takeoff.
- B) After takeoff.
- C) After landing.
- D) Assign by ATSU.

84- Which of the following transponder codes is not a valid SSR mode A squawk?

- A) 0000
- B) 5678
- C) 7700
- D) 7777

85- Before departure a SSR transponder is found to be inoperative and repair is not possible:

- A) A flight can be continued only to the destination airport.
- B) A flight to the closest airport, where a repair can be made is allowed.
- C) A flight cannot be made.
- D) A flight to the closest airport, where a repair can be made and insert appropriate code in flight plan.

86- In the airway designator UA1Y, what does the prefix "U" mean?

- A) Uniform.
- B) Upper.
- C) Undesignated.
- D) Unidirectional.



87- Which of the following prefixes indicate an area navigation route which does not form part of the regional network of ATS routes?

- A) G
- B) M
- C) H
- D) Q

88- Which suffixes of route designator does not use in voice communication?

- A) F, S, T
- B) R, Y, Z
- C) F, Y, Z
- D) Y, Z, U

89- Who is responsible to direct the modes/codes for selection or reselection on transponder in normal condition?

- A) Pilot-in-command
- B) Operator
- C) State
- D) ATC

90- Which item of flight plan shall be inserted the appropriate code when the aircraft has no serviceable transponder?

- A) 9
- B) 10
- C) 17
- D) 18

91- Which section provide information regarding ATS route designator?

- A) RADIO AIDS
- B) GENERAL
- C) TERMINAL
- D) ENROUTE

92- Which section you can find the preferential route system?

- A) RADIO AIDS
- B) GLOSSARY
- C) ENROUTE
- D) INTRODUCTION



93- In which section you can find route restriction?

- A) ENROUTE
- B) RADIO AIDS
- C) ATC
- D) GLOSSARY

✓ **RADIO AIDS & METEOROLOGY**

94- What is the range of VHF transmission, when the height of aircraft is 35000 ft?

- A) 200 NM
- B) 210 NM
- C) 220 NM
- D) 230 NM

95- What is the frequency band for VOR (even and odd tenths MHz)?

- A) 111.975-117.975
- B) 108.000-111.975
- C) 111.975-117.795
- D) 108.000-111.795

96- Which ground facility may be used by ATS unite(s) to help a pilot to indicate the direction of aircraft, by pilot transmission, when the pilot is not aware of its position?

- A) ADF
- B) VHF DF
- C) LORAN
- D) RADAR

97- What is the CAIRO VOLMET frequency?

- A) 126.00
- B) 126.20
- C) 127.27
- D) 128.80

98- What is the NICOSIA VOLMET frequency?

- A) 126.25
- B) 122.27
- C) 126.62
- D) 127.20



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99- What is the ANTALYA ATIS frequency?

- A) 118.67
- B) 118.47
- C) 118.27
- D) 118.87

100- What is the ARDABIL ATIS frequency?

- A) 126.65
- B) 127.00
- C) 122.90
- D) 128.65

101- What information do you expect to receive from ERZURUM VOLMET regarding ERZURUM airport?

- A) METAR
- B) TREND
- C) SIGMET
- D) QNH

102- Within which section of airway manual you can find ANKARA VOLMET frequency?

- A) RADIO AIDS
- B) METEOROLOGY
- C) TERMINAL
- D) ENROUTE

103- Within which section of airway manual you can find ANNEX 3 information?

- A) RADIO AIDS
- B) METEOROLOGY
- C) TERMINAL
- D) ENROUTE

104- Within which part of airway manual you can find METAR decoding information?

- A) ENROUTE
- B) AIRPORT DIRECTORY
- C) EMERGENCY
- D) METEOROLOGY



105- Within which section of airway manual you can find range of navigation facility frequency?

- A) RADIO AIDS
- B) METEOROLOGY
- C) EMERGENCY
- D) ENROUTE

106- Within which section of airway manual you can find class of VDF antenna?

- A) RADIO AIDS
- B) METEOROLOGY
- C) TERMINAL
- D) ENROUTE

✓ **TABLES & CODES**

107- The duration of a NOTAM may be indicated by:

- A) Ten figure of date-time group
- B) PERM
- C) EST if duration is uncertain
- D) All answers are correct

108- If the second and third letter of NOTAM code is not in NOTAM code and the subject of NOTAM is related to the runway, which of the following letter can be used?

- A) CO
- B) AD
- C) AG
- D) RC

109- What is the meaning of "QNMAS" in NOTAM code?

- A) VOR is u/s
- B) DME is u/s
- C) VOR/DME is u/s
- D) ILS/DME is u/s

110- How much of the depth of wet snow is changed requires to issue new SNOWTAM?

- A) 10 mm
- B) 3 mm
- C) Greater than 10 mm
- D) Greater than 3 mm



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111- What is the pressure in inches of mercury if pressure is 994 hPa?

- A) 29.23
- B) 29.26
- C) 29.35
- D) 29.41

112- Within which part of airway manual you can find NOTAM information?

- A) EMERGENCY
- B) TABLES & CODES
- C) TERMINAL
- D) ENROUTE

113- Within which part of airway manual you can find country dial number?

- A) EMERGENCY
- B) TABLES & CODES
- C) TERMINAL
- D) ENROUTE

114- How long is the maximum validity of SNOWTAM?

- A) 6 Hours
- B) 12 Hours
- C) 18 Hours
- D) 24 Hours

115- The 50 km is equal to..... NM.

- A) 27
- B) 26
- C) 25
- D) 24

116- What is the NOTAM code "QMRLC"?

- A) Runway active
- B) Runway closed
- C) Aerodrome active
- D) Aerodrome closed

117- What pressure altitude corresponds to 23.58 inches of mercury?

- A) 6432 ft
- B) 6444 ft
- C) 6455 ft
- D) 6466 ft



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118- What pressure altitude corresponds to 30.16 inches of mercury?

- A) -202 ft
- B) -211 ft
- C) -220 ft
- D) -229 ft

119- What pressure in inches of mercury corresponds to 1110 ft?

- A) 28.71
- B) 28.72
- C) 28.73
- D) 28.74

120- The pressure is 876 hPa, what is the value of pressure in inches of mercury?

- A) 25.98
- B) 25.90
- C) 25.87
- D) 25.81

121- What pressure in millimeter of mercury corresponds to 941.3 millibar?

- A) 706
- B) 707
- C) 708
- D) 709

122- The rate of climb is 16 MPS corresponds toFPM.

- A) 3110
- B) 3130
- C) 3145
- D) 3150

123- The 36 MPS corresponds to..... Knots.

- A) 66
- B) 70
- C) 76
- D) 74

124- The 17 MPS corresponds to..... Knots.

- A) 38
- B) 36
- C) 33
- D) 30



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125- The 20 (°C) is equal to..... (°F).

- A) 68
- B) 65
- C) 75
- D) 71

126- The 50 (°F) is equal to..... (°C).

- A) 16
- B) 7
- C) 14
- D) 10

127- The 32 Kgs is equal to..... Lbs.

- A) 70
- B) 75
- C) 79
- D) 80

128- The 441 Lbs equal to..... Kgs.

- A) 196
- B) 200
- C) 203
- D) 204

129- The 40 KM is equal to..... NM.

- A) 22.1
- B) 22.40
- C) 21.90
- D) 21.60

130- The 60 NM is equal to..... SM.

- A) 69.0
- B) 71.0
- C) 69.05
- D) 70.05

131- The 67 Imp Gal is equal to..... US Gal.

- A) 78
- B) 80
- C) 82
- D) 84



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132- The 211 US Gal is equal to..... Liters.

- A) 799
- B) 803
- C) 804
- D) 806

133- The -10 (°C) is equal to..... (°F).

- A) 18
- B) 10
- C) 16
- D) 14

134- The 42 (°C) is equal to..... (°F).

- A) 106.7
- B) 107.0
- C) 107.6
- D) 108.0

135- The 68 KTS is equal to..... MPS.

- A) 37
- B) 38
- C) 31
- D) 35

136- The “QNVAS” in NOTAM code means:

- A) NDB is u/s
- B) DME is u/s
- C) VOR is u/s
- D) ILS is u/s

137- The “QITAO” in NOTAM code means:

- A) ILS CAT II is operational
- B) LLZ is operational
- C) OM is operational
- D) DME is operational

138- What is the specific gravity of wet snow?

- A) 0.5 up to 0.8
- B) 0.35 up to but not including 0.5
- C) 0.5 and over
- D) 0.35 up to 0.5



139- What units of measurement shall be used for issuance of SNOWTAM?

- A) MM
- B) Inches
- C) FT
- D) Metric

140- How the time of observation shall be indicated in SNOWTAM?

- A) By 10 figure date/time group
- B) 24 HR
- C) By 8 figure date/time group
- D) 12 HR

141- How many sections, the runway length shall be divided for the measurement and issuance of SNOWTAM?

- A) 4
- B) 3
- C) 2
- D) 1

142- What symbol may be used, if mean depth of deposit is not significant or is not measurable?

- A) TT
- B) MM
- C) XX
- D) AA

143- What is the value of temperature correction for each 10 (°C) ISA deviation?

- A) 5%
- B) 3%
- C) 4%
- D) 2%

144- Snow which can be blown if loose or, if compacted by hand, will fall apart again upon release, called as:

- A) Wet snow
- B) Dry snow
- C) Slush
- D) Compacted snow



✓ AIR TRAFFIC CONTROL

145- When acknowledging mode/code setting instruction pilots shall:

- A) Read back the mode and code to be set.
- B) Read back only the code to be set.
- C) Use only the word WILCO.
- D) Use only the word ROGER.

146- When the aircraft carries serviceable Mode C equipment, the pilot:

- A) Shall continuously operate this mode only when directed by ATC.
- B) Shall continuously operate this mode unless otherwise directed by ATC.
- C) Shall continuously operate this mode regardless of ATC instructions.
- D) Shall continuously operate this mode only when the aircraft is within controlled airspace.

147- How many aircraft proximity, on the opinion of a pilot or ATS personnel are classified?

- A) One
- B) Two
- C) Three
- D) Four

148- If the stall speed of an airplane with maximum mass and landing configuration over threshold is 126 kts what will be its category?

- A) A
- B) B
- C) C
- D) D

149- What is the reference of "DH"?

- A) Aerodrome elevation
- B) Threshold elevation
- C) Runway elevation
- D) Elevation of "GP" site

150- What is the minimum climb gradient with all engine operation during departure if climb gradient is not specified on departure procedure?

- A) 152 ft/NM
- B) 200 ft/NM
- C) 250 ft/NM
- D) 300 ft/NM



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151- What amount of wind will be considering to design SID?

- A) 20 kts
- B) 30 kts
- C) 10 kts
- D) 40 kts

152- What bank angle considers for constructing missed approach procedure?

- A) 25°
- B) 20°
- C) 15°
- D) 30°

153- How many entry procedures may be applied for an Omni-directional holding?

- A) 1
- B) 3
- C) 2
- D) 4

154- What is the distance of buffer area of a holding?

- A) 5 km
- B) 3 km
- C) 3 NM
- D) 5 NM

155- How many phases have a missed approach procedure?

- A) 1
- B) 2
- C) 3
- D) 4

156- What is the maximum holding speed of jet airplane at FL100 during normal condition according to second edition of PANS-OPS?

- A) 220 kts
- B) 210 kts
- C) 240 kts
- D) 265 kts

157- The noise abatement procedure is not to be initiated less than? (NADP 1 or 2)

- A) 1000 ft.
- B) 800 ft.
- C) 600 ft.
- D) 400 ft.



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158- What is the height reference of MDH of circle-to-land?

- A) Threshold elevation
- B) Elevation of site of NAV AIDS
- C) Runway elevation
- D) Aerodrome elevation

159- VMC descend maybe authorized within airspace of:

- A) Class ``D``
- B) Class ``E``
- C) Class ``G``
- D) Class ``D`` and ``E``

160- What significant change of crosswind shall be transmitted to an airplane in the final approach?

- A) 4 kts
- B) 5 kts
- C) 3 kts
- D) 2 kts

161- When the cloud information shall be transmitted to arriving aircraft?

- A) Cloud below 5000 ft
- B) Cloud below minimum sector altitude
- C) "A" or "B" whichever is greater
- D) "A" or "B" whichever is lower

162- Within which ICAO region, the B-RNAV is implemented?

- A) Middle-east
- B) ASIA pacific
- C) Europe
- D) North ATLANTIC

163- Which edition of PANS-OPS has no acceleration portion for missed approach?

- A) First
- B) Second
- C) Third
- D) Fourth

164- What is the maximum speed for CAT B during turning departure?

- A) 120 kts
- B) 290 kts
- C) 165 kts
- D) 300 kts



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165- What is the maximum rate of descent during final with no FAF for CAT C?

- A) 590 ft/min
- B) 655 ft/min
- C) 1000 ft/min
- D) 800 ft/min

166- What is the maximum speed during final for CAT C?

- A) 100
- B) 160
- C) 185
- D) 130

167- What bank angle will be considering to design of a turning departure between 1000 ft up to 3000 ft?

- A) 25°
- B) 20°
- C) 15°
- D) 10°

168- What is the total time of flight technical tolerances for turning departure?

- A) 3 Sec
- B) 5 Sec
- C) 6 Sec
- D) 4 Sec

169- How many separate segments may have an instrument approach procedure?

- A) 3
- B) 4
- C) 5
- D) 6

170- What wind factor considers for constructing circling area?

- A) 10 kts
- B) 15 kts
- C) 20 kts
- D) 25 kts

171- What is the outbound time of a holding at 14000 ft?

- A) 4 min
- B) 1 min
- C) 1.5 min
- D) 5 min



172- Who is responsible to develop and implement standard operating procedures (SOPs) for aerodrome surface operation?

- A) Aerodrome authority
- B) Operator
- C) State
- D) ATS authority

173- What is the minimum rate of descend during final with no FAF for CAT D?

- A) 590 ft/min
- B) 1000 ft/min
- C) 655 ft/min
- D) 750 ft/min

174- Area navigation (RNAV) equipment may be used to determine the aircraft position are?

- A) VOR, DME, INS
- B) GNSS, LORAN "C"
- C) VOR, GNSS
- D) NDB cannot support RNAV

175- The total flight technical tolerance for turning departure is:

- A) 5 seconds
- B) 3 seconds
- C) 6 seconds
- D) 10 seconds

176- What is the maximum initial approach speed for CAT C?

- A) 120 kts
- B) 240 kts
- C) 160 kts
- D) 290 kts

177- What is the maximum initial approach speed for CAT B during base turn?

- A) 150 kts
- B) 180 kts
- C) 140 kts
- D) 110 kts

178- What is the minimum MOC for the final of non-precision with FAF?

- A) 492 ft
- B) 392 ft
- C) 246 ft
- D) 295 ft



179- What is the MOC for circling for CAT B?

- A) 320 ft
- B) 246 ft
- C) 295 ft
- D) 350 ft

180- A MSA provides at least:

- A) 300 m obstacle clearance within 46 km of the homing facility associated with the approach procedure for aerodrome.
- B) 300 ft obstacle clearance within 20 NM of the homing facility associated with the approach procedure for that aerodrome.
- C) 300 ft obstacle clearance within 25 NM of the homing facility associated with the approach procedure for that aerodrome.
- D) 300 m obstacle clearance within 20 km of the homing facility associated with the approach procedure for that aerodrome.

181- The approach categories of aircraft are based upon:

- A) 1.3 times the stalling speed in clean configuration at maximum certified landing mass.
- B) 1.3 times the stalling speed in clean configuration at minimum certified landing mass.
- C) 1.3 times the stalling speed in the landing configuration at maximum certified landing mass.
- D) 1.3 times the stalling speed in the landing configuration at minimum certified landing mass.

182- Normally a procedure will be designed to provide protected airspace and obstacle clearance for aircraft up to and including:

- A) Category A.
- B) Category B.
- C) Category C.
- D) Category D.

183- For a non-precision approach, the elevation of the relevant runway threshold is used for OCH reference if:

- A) The threshold elevation is more than 2 m below the aerodrome elevation.
- B) The threshold elevation is less than 2 m below the aerodrome elevation.
- C) The threshold elevation is more than 2 m above and below the aerodrome elevation.
- D) The threshold elevation is less than 2 m above and below the aerodrome elevation.

184- When constructing a turning missed approach the pilot reaction time taken into account is:

- A) 0 - 3 seconds.
- B) 0 - 5 seconds.
- C) 3 - 5 seconds.
- D) 3 - 4 seconds.



185- The climb gradient of a missed approach can be reduced to:

- A) 2% if the necessary survey and safeguarding can be provided with the approval of the appropriate authority.
- B) 0.8% if the necessary survey and safeguarding can be provided with the approval of the appropriate authority.
- C) 1.5% if the necessary survey and safeguarding can be provided with the approval of the appropriate authority.
- D) 3.3% if the necessary survey and safeguarding can be provided with the approval of the appropriate authority.

186- If a turn of greater than 15° is required during a missed approach the turn is not allowed:

- A) Until at least 50 ft vertical clearance has been ensured.
- B) Until at least 50 m vertical clearance has been ensured.
- C) Until at least 100 ft vertical clearance has been ensured.
- D) Until at least 100 m vertical clearance has been ensured.

187- DME fix tolerance is:

- A) $\pm 0.46 \text{ km} + 0.25\%$ of the distance to the antenna.
- B) $\pm 0.46 \text{ km} + 1.25\%$ of the distance to the antenna.
- C) $\pm 0.46 \text{ km} + 1.5\%$ of the distance to the antenna.
- D) $\pm 0.46 \text{ km} + 2\%$ of the distance to the antenna.

188- Under which conditions may an aircraft on a straight-in VOR approach continue its descent below the OCA?

- A) When it seems possible to land.
- B) When the aircraft is in visual contact with the ground and with the runway lights in sight.
- C) When the aircraft has the control tower in sight.
- D) When the aircraft is in contact with the ground but not with the runway in sight yet.

189- Which is the obstacle clearance in the primary area of the intermediate approach segment in an instrument approach procedure?

- A) 150 m (492 ft).
- B) 300 m (984 ft).
- C) 450 m (1476 ft).
- D) 600 m (1968 ft).

190- During a standard arrival procedure under an IFR flight plan in VMC in airspace class D, traffic avoidance is the responsibility of:

- A) The area controller.
- B) The pilot-in-command.
- C) The approach controller.
- D) A and C are correct.



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191- In an approach procedure, a descent or climb conducted in a holding pattern is called:

- A) Base turn.
- B) Racetrack pattern.
- C) Procedure turn.
- D) Shuttle.

192- In case of a straight-in non-precision approach, the angle between the extended runway center line and the final approach track is ----- or less.

- A) 30°
- B) 20°
- C) 15°
- D) 10°

193- Which of the following would be regarded as "established" on the localizer of an ILS approach?

- A) Within 10° of the published track.
- B) Within 5° of the published track.
- C) Within half-scale deviation of the CDI.
- D) Not specified until the OM has been passed.

194- What is the minimum visibility for a circling approach for a Category B aircraft?

- A) 1600 m
- B) 1900 m
- C) 2800 m
- D) 3500 m

195- For a non-precision or circling approach, the Minimum Descent Height (MDH) cannot be lower than:

- A) 200 ft.
- B) The Obstacle Clearance Height (OCH).
- C) 350 ft.
- D) 400 ft.

196- On a non-precision approach with FAF, what is the maximum permissible descent gradient during the final approach?

- A) 3°
- B) 5%
- C) 6.5%
- D) 4.5°



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197- How can pilot descend below MDH on a VMC descend?

- A) Threshold in view, able to keep visual reference to terrain.
- B) Clearance from ATC, threshold in view, insight aerodrome traffic zone.
- C) Runway visual, 5 km visibility and clear of cloud.
- D) Visual glide path indication of "on glide path" and VMC exists.

198- Why the descent gradient shall be kept as low as possible in the intermediate approach segment?

- A) This is the segment in which speed and configuration are adjusted.
- B) It is not possible to guarantee full obstacle clearance in this segment.
- C) Usually track guidance is poor in this segment resulting in a requirement for a high MOC.
- D) Pilots cannot cope with track maintenance in a high rate of descent.

199- In a holding pattern all turns are to be made at a:

- A) Rate of 3° per second.
- B) Rate of 3° per second or at a bank angle of 25°, which ever requires the lesser bank.
- C) Maximum bank angle of 25°.
- D) Rate of 3° per second or at a bank angle of 20°, which ever requires the lesser bank.

200- Standard airway holding pattern (FAA) below 14000 ft?

- A) Left hand turns /1 minute outbound.
- B) Right hand turns /1.5 minutes outbound.
- C) Right hand turns /1 minute outbound.
- D) Left hand turns /1.5 minutes outbound.

201- What is the deviation allowed either side of track between entry sectors when joining a hold?

- A) 5 degrees.
- B) 2.5 degrees.
- C) 100 degrees.
- D) 20 degrees.

202- Regarding to the three entry sectors in a holding pattern, there is a zone of flexibility on either side of the sectors boundaries of:

- A) 20 degrees.
- B) 15 degrees.
- C) 5 degrees.
- D) 10 degrees.



203- What is the minimum obstacle clearance guaranteed at the edge of the buffer area (5 NM) outside of the holding area of a holding pattern?

- A) 300 m (1000 ft) (2000 ft in mountainous areas).
- B) 150 m (500 ft).
- C) 90 m (300 ft).
- D) 0 m (0 ft).

204- You are flying inbound on radial 232° towards VOR CDI. When you are required to hold overhead the VOR on radial 052, what type of entry will you perform?

- A) A direct entry.
- B) A parallel or offset entry.
- C) An offset entry.
- D) A reciprocal entry.

205- What is the outbound timing in a holding pattern below FL140 (no wind)?

- A) 1.5 minutes.
- B) 1 minute.
- C) 2 minutes.
- D) 1 minute or 2 minutes, depending on the actual IAS.

206- In a holding pattern, the pilot should attempt to maintain the ----- by making allowance for wind by applying corrections to ----- during entry and while flying the holding pattern.

- A) Track; heading
- B) Heading; time
- C) Track; heading and time
- D) Heading; track and time

207- You have received holding instructions for a radio fix. The published holding procedure is: "All turns to the right, 1 minute outbound, inbound MC 052". You are approaching the fix on an inbound magnetic track 232°. Select the available entry procedure:

- A) Either "offset" or "parallel"
- B) Offset
- C) Parallel
- D) Direct

208- In a standard holding pattern (FAA) turns are made:

- A) In a direction depending on the entry.
- B) To the left.
- C) To the right.
- D) In a direction depending on the wind direction.



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209- Unless otherwise published or instructed by ATC, all turns after initial offset entry into the holding pattern shall be made into which direction?

- A) Teardrop to the left and then to the right.
- B) To the left.
- C) First right and then to the left.
- D) To the right.

210- The maximum angle of bank to be used in a holding pattern is:

- A) 15°
- B) 25°
- C) 30°
- D) 35°

211- In a standard holding pattern with parallel entry first turn should be made:

- A) To the right.
- B) To the left.
- C) To the right except otherwise described by the appropriate authority.
- D) Left or right depending on the entry procedure.

212- Which is the normal still air outbound time in a holding pattern?

- A) One and one half minute for altitudes above 14000 ft.
- B) One and one half minute for altitudes above 10000 ft.
- C) One minute for altitudes above 14000 ft.
- D) All answers are incorrect.

213- In relation to the three entry sectors, the entry into the holding pattern shall be according to:

- A) Bearing
- B) Course
- C) Heading
- D) Track

214- If the holding is at FL060, what is the normal holding speed for jet aircraft (PANS-OPS Second Edition)?

- A) 170 kts
- B) 210 kts
- C) 230 kts
- D) 150 kts



215- You are flying towards a VOR on the 320° radial and have been told to hold on the 045° radial at FL060. What type of entry to the standard holding pattern is required?

- A) Direct.
- B) Parallel.
- C) Offset.
- D) Either parallel or offset.

216- When holding at FL110, what is the normal outbound leg time?

- A) 30 seconds.
- B) 1 minute 30 seconds.
- C) 1 minute 15 seconds.
- D) 1 minute.

217- The minimum permissible holding level provides a clearance above the obstacles of at least ----- in the holding area.

- A) 984 ft.
- B) 492 ft.
- C) 394 ft.
- D) 197 ft.

218- In a holding pattern, turns are to be made:

- A) At a bank angle of 20° or at a rate of 3° per second, whichever requires the lesser bank.
- B) At a bank angle of 15° or at a rate of 3° per second, whichever requires the lesser bank.
- C) At a bank angle of 30° or at a rate of 3° per second, whichever requires the lesser bank.
- D) At a bank angle of 25° or at a rate of 3° per second, whichever requires the lesser bank.

219- The entry into a holding pattern shall be according to:

- A) Magnetic heading in relation to the three entry sectors.
- B) Magnetic track in relation to the three entry sectors.
- C) True heading in relation to the three entry sectors.
- D) True track in relation to the three entry sectors.

220- You are required to carry out a teardrop entry into a holding pattern. Having reached the fix, the aircraft is turned onto a heading to make good a track making an angle of degrees from the reciprocal of the inbound track on the holding site.

- A) 20
- B) 30
- C) 45
- D) 60



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221- In a standard holding pattern (FAA), all turns should be made:

- A) To the right at a bank angle of 25° or at a rate of 3° per second, whichever requires the lesser bank.
- B) To the left at a bank angle of 25° or at a rate of 3° per second, whichever requires the lesser bank.
- C) The right at a bank angle of 25° or at a rate of 3° per second, whichever requires the higher bank.
- D) To the left at a bank angle of 25° or at a rate of 3° per second, whichever requires the higher bank.

222- What is the longest period of time that can fly the 30° leg of a teardrop procedure when joining a holding pattern?

- A) 1 minute 30 seconds.
- B) 2 minutes 30 seconds.
- C) 3 minutes.
- D) 30 seconds.

223- An aircraft is flying on heading 190° (M) toward holding fix with inbound track 010° (M) The correct entry type would be:

- A) Parallel or direct.
- B) Offset or direct.
- C) Parallel or offset.
- D) Reciprocal or direct.

224- Is the length of the outbound leg of a holding pattern always expressed in terms of time?

- A) Yes.
- B) No, where DME is used it may be specified in terms of distance.
- C) Yes, even where DME is used, the maximum length is always in time.
- D) No, where G/S is less than 65 kts, the outbound leg must be at least 2 NM long.

225- If an airplane cannot SQUAWK IDENT, which of the following is a valid method by ATC can identify an airplane that is squawking mode A codes?

- A) Switch SSR to ON then STANDBY.
- B) Switch SSR from ON to OFF.
- C) Switch SSR to ON then STANDBY then ON again.
- D) Switch SSR to STANDBY then ON again.

226- The speed limitation for both IFR flights and VFR flights inside ATS airspace classified as B, when flying below 3050 m (10000 ft) AMLS, is:

- A) 250 kts IAS.
- B) Not applicable.
- C) 250 kts TAS.
- D) 260 kts IAS.



227- Which of the following approach speed ranges (V_{at}) is applicable for Category B aircraft?

- A) 224 km/h to 261 km/h.
- B) 121 kts to 141 kts.
- C) 261 km/h to 307 km/h.
- D) 91 kts to 120 kts.

228- The ILS glide path is normally intercepted between:

- A) 5 and 10 NM.
- B) 3 and 7 NM.
- C) 4 and 8 NM.
- D) 3 and 10 NM.

229- What is the fix tolerance of terminal area surveillance radar within 20 NM?

- A) ± 0.8 NM
- B) ± 0.9 NM
- C) ± 1.0 NM
- D) ± 0.7 NM

230- What is the fix tolerance of en-route surveillance radar within 40 NM?

- A) ± 2 NM
- B) ± 1.9 NM
- C) ± 1.8 NM
- D) ± 1.7 NM

231- What is the amount of DME fix tolerance as a terminal fix provided on OISS TMA?

- A) ± 1.125 NM
- B) ± 1.2 NM
- C) ± 1.215 NM
- D) ± 1.175 NM

232- What is the amount of DME fix tolerance as a terminal fix provided on OIFM TMA?

- A) ± 1.1 NM
- B) ± 1 NM
- C) ± 0.9 NM
- D) ± 0.9 NM

233- What is the area width at a VOR for splaying?

- A) 1.25 NM
- B) 1.5 NM
- C) 2.0 NM
- D) 2.5 NM



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234- What is the splaying angle at NDB facility?

- A) 10.3°
- B) 6.9°
- C) 7.8°
- D) 6.2°

235- What is the splaying angle at VOR facility?

- A) 6.9°
- B) 6.2°
- C) 7.8°
- D) 6.2°

236- What is the width of splaying area for NDB?

- A) 2 NM
- B) 2.15 NM
- C) 2.4 NM
- D) 2.5 NM

237- What is the track accuracy of VOR as a providing track?

- A) $\pm 5^\circ$
- B) $\pm 5.2^\circ$
- C) $\pm 5.4^\circ$
- D) $\pm 5.6^\circ$

238- What is the track accuracy of NDB not providing track?

- A) $\pm 7.8^\circ$
- B) $\pm 6.9^\circ$
- C) $\pm 6.2^\circ$
- D) $\pm 6^\circ$

239- What is the track accuracy of ILS for providing track?

- A) $\pm 2.1^\circ$
- B) $\pm 2.2^\circ$
- C) $\pm 2.3^\circ$
- D) $\pm 2.4^\circ$

240- What is the track accuracy of NDB for providing track?

- A) $\pm 6.9^\circ$
- B) $\pm 7^\circ$
- C) $\pm 7.2^\circ$
- D) $\pm 7.6^\circ$



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241- What is the VOR tolerance as an airborne receiver?

- A) $\pm 2.5^\circ$
- B) $\pm 2.7^\circ$
- C) $\pm 2.9^\circ$
- D) $\pm 3^\circ$

242- What is the NDB tolerance an airborne receiver?

- A) $\pm 4.5^\circ$
- B) $\pm 5^\circ$
- C) $\pm 5.4^\circ$
- D) $\pm 6^\circ$

243- What is the ILS tolerance as an airborne receiver?

- A) $\pm 1^\circ$
- B) $\pm 1.2^\circ$
- C) $\pm 1.4^\circ$
- D) $\pm 1.6^\circ$

244- What bank angle will be considered during missed approach?

- A) 30°
- B) 25°
- C) 20°
- D) 15°

245- What amount of wind will be considered during departure?

- A) 25 Kts
- B) 30 Kts
- C) 20 Kts
- D) 35 Kts

246- How long as pilot reaction time will be considered for holding?

- A) 3 Sec
- B) 4 Sec
- C) 5 Sec
- D) 6 Sec

247- What amount of wind will be considered for construction of a holding with a height of 9000 ft?

- A) 65 Kts
- B) 50 Kts
- C) 45 Kts
- D) 30 Kts



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248- What amount of wind will be considered for circling area?

- A) 40 Kts
- B) 35 Kts
- C) 30 Kts
- D) 25 Kts

249- What time as a bank establishing time will be considered for dead reckoning segment?

- A) 5 Sec
- B) 6 Sec
- C) 3 Sec
- D) 10 Sec

250- What bank angle will be considered between 1000 ft and 3000 ft for departure?

- A) 15°
- B) 20°
- C) 25°
- D) 30°

251- What bank angle will be considered below 1000 ft for departure?

- A) 20°
- B) 30°
- C) 15°
- D) 25°

252- What time will be considered as pilot reaction time for circling area?

- A) 15 Sec
- B) 20 Sec
- C) 25 Sec
- D) None

253- Who is responsible to developed contingency procedure?

- A) Operator
- B) State
- C) ICAO
- D) ATC

254- The reduced power take-off is not required when visibility is less than

- A) 1.7 KM
- B) 1.8 KM
- C) 1.9 KM
- D) 2 KM



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255- The reduced power take-off is not required when crosswind component exceeds

- A) 20 KTS
- B) 15 KTS
- C) 10 KTS
- D) 25 KTS

256- Under which of the following condition, the reduced power for take-off is not required?

- A) Wind shear
- B) Thunderstorm
- C) Hail
- D) A or B is correct.

257- What MOC will be considered on the turn area of departure?

- A) 295 ft
- B) 310 ft
- C) 350 ft
- D) 405 ft

258- If the PDG is not published on an SID, what PDG is provided on departure?

- A) 0.8%
- B) 2%
- C) 2.5%
- D) 3.3%

259- What is the minimum ROC during departure?

- A) 152 ft/NM
- B) 200 ft/NM
- C) 295 ft/NM
- D) 398 ft/NM

260- Turning departure means a turn more than is required.

- A) 25°
- B) 20°
- C) 15°
- D) 10°

261- The straight departure means a turn of not more than is provided.

- A) 15°
- B) 10°
- C) 20°
- D) 25°



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262- Within what distances, the track guidance shall take place during straight departure?

- A) 8.8 NM
- B) 10.8 NM
- C) 12.6 NM
- D) 15 NM

263- Within what distances, the track guidance shall take place after completion of turn of turning departure?

- A) 10.3 NM
- B) 7.8 NM
- C) 6.8 NM
- D) 5.4 NM

264- If turning altitude is not published on the SID, what is the lowest level for the turn?

- A) 320 ft
- B) 355 ft
- C) 394 ft
- D) 440 ft

265- What is the maximum speed for CAT "C" aeroplane for turning departure?

- A) 265 kts
- B) 280 kts
- C) 295 kts
- D) 310 kts

266- What is the maximum speed for CAT "B" aeroplane for turning departure?

- A) 120 kts
- B) 165 kts
- C) 180 kts
- D) 195 kts

267- How many segments may have an instrument approach procedure?

- A) 2
- B) 3
- C) 4
- D) 5

268- How many types of instrument approach procedures may be provided?

- A) 2
- B) 3
- C) 4
- D) 5



269- When an instrument approach procedure, required descend gradient higher than maximum value, then the procedure will be promulgated as:

- A) Precision
- B) Circle-to-land
- C) Circling
- D) Visual approach

270- If stalling speed of an aeroplane over threshold is 107 kts, what will be its category?

- A) D
- B) C
- C) B
- D) A

271- For which category of aeroplane the maximum initial approach speed for racetrack procedures is limited to 140 kts?

- A) A
- B) B
- C) C
- D) D

272- For which category of aeroplane the maximum initial approach speed for reversal procedures is limited to 110 kts?

- A) A
- B) B
- C) C
- D) D

273- Who is responsible to define landing configuration to be taken into consideration for providing instrument procedures?

- A) State
- B) Pilot
- C) Operator
- D) ICAO

274- If stall speed of an aeroplane over threshold is 111 kts what will be its category?

- A) A
- B) B
- C) C
- D) D



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275- Who is responsible to approve permanent lower landing mass for determining V_{AT} may impose by an operator?

- A) IATA
- B) State of the operator
- C) Manufacture
- D) Pilot

276- What is the maximum descent gradient, with FAF for CAT C aeroplane during final approach?

- A) 5.6%
- B) 6.5%
- C) 5.2%
- D) 6.1%

277- What is the optimum descent gradient, with FAF for CAT B aeroplane during final approach?

- A) 5.2%
- B) 5.7%
- C) 6.1%
- D) 6.5%

278- What is the maximum descent gradient, with FAF for CAT B aeroplane during final approach?

- A) 5.2%
- B) 5.7%
- C) 6.1%
- D) 6.5%

279- What is the minimum rate of descent during final approach with no FAF for CAT D aeroplane?

- A) 394 ft/min
- B) 590 ft/min
- C) 655 ft/min
- D) 1000 ft/min

280- What is the maximum rate of descent during final approach with no FAF for CAT B aeroplane?

- A) 394 ft/min
- B) 590 ft/min
- C) 655 ft/min
- D) 1000 ft/min

281- What is the minimum obstacle clearance with no FAF for straight-in landing?

- A) 210 ft
- B) 245 ft
- C) 270 ft
- D) 295 ft



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282- What is the minimum obstacle clearance with FAF for straight-in landing?

- A) 210 ft
- B) 246 ft
- C) 270 ft
- D) 295 ft

283- What is the minimum obstacle clearance for CAT C and D aeroplane for circling approach?

- A) 394 ft
- B) 355 ft
- C) 270 ft
- D) 245 ft

284- What is the maximum interception angle from initial approach segment to IF for precision approach?

- A) 120°
- B) 110°
- C) 100°
- D) 90°

285- What is the maximum interception angle from initial approach segment to IF for non-precision approach?

- A) 120°
- B) 110°
- C) 100°
- D) 90°

286- What type of maneuver(s) do you expect to design where suitable IAF or IF is not available?

- A) Racetrack procedure
- B) Reversal procedure
- C) A or B is correct
- D) None

287- How long the straight leg without track guidance shall take place by CAT C aeroplane on 45°/180° of procedure turn?

- A) 30 Sec
- B) 45 Sec
- C) 60 Sec
- D) 75 Sec



288- What angle from outbound track of a procedure turn, the direct entry may be done to carry out the instrument approach procedure?

- A) $\pm 15^\circ$
- B) $\pm 20^\circ$
- C) $\pm 30^\circ$
- D) $\pm 35^\circ$

289- When do you start the required descent after inbound turn of reversal procedure based on VOR?

- A) Within full scale of deflection
- B) Within half full scale of deflection
- C) Within 5°
- D) Within 5.6°

290- When do you start the required descent after inbound turn of racetrack procedure based on NDB?

- A) Within $\pm 10.3^\circ$
- B) Within $\pm 7.8^\circ$
- C) Within $\pm 6.5^\circ$
- D) Within $\pm 5^\circ$

291- What will be the maximum length of dead reckoning segment?

- A) 10 NM
- B) 9 NM
- C) 8 NM
- D) 7 NM

292- At what angle the dead reckoning track will intersect the localizer?

- A) 25°
- B) 35°
- C) 45°
- D) 55°

293- What is the minimum descent rate on inbound track of reversal procedure for CAT D aeroplane?

- A) 394 ft
- B) 590 ft
- C) 804 ft
- D) 655 ft



294- What is the maximum rate of descent per minute on an inbound leg of racetrack procedure for CAT B aeroplane?

- A) 590 ft
- B) 755 ft
- C) 804 ft
- D) 655 ft

295- What is the maximum rate of descent per minute during outbound leg of procedure turn 80°/260° for CAT D aeroplane?

- A) 755 ft
- B) 1197 ft
- C) 1000 ft
- D) 804 ft

296- What will be the optimum distance of FAF (non-precision) from threshold?

- A) 10 NM
- B) 8 NM
- C) 6 NM
- D) 5 NM

297- What will be the maximum distance of FAF (non-precision) from threshold?

- A) 12 NM
- B) 11 NM
- C) 10 NM
- D) 9 NM

298- What will be the optimum descent gradient during final approach?

- A) 2.5°
- B) 3°
- C) 3.3°
- D) 3.5°

299- Who is responsible to include in SOP, the specific guidance for using on-board technology with ground-based aids?

- A) Operator
- B) State
- C) State of the operator
- D) Manufacture



300- How many OCA/H are to be published, when stepdown fix is incorporated on the final approach segment?

- A) Only one
- B) minimum two
- C) One
- D) Two

301- How many stepdown fix may be depicted on the final approach segment where suitably DME is located?

- A) One
- B) Several
- C) Two
- D) Only one

302- When an aerodrome is served by a single facility as an aerodrome facility, the facility is intended to indicate.....and fix.

- A) IAF, FAF
- B) IF, FAF
- C) IF, MAPt
- D) IAF, MAPt

303- What maximum glide path angle do you expect for CAT I operation?

- A) 4°
- B) 3°
- C) 3.5°
- D) 2.5°

304- What will be the maximum glide path angle or elevation angle for CAT III operation?

- A) 4°
- B) 3°
- C) 3.5°
- D) 2.5°

305- For which category of operation, the obstacle free zone has been established for the protection of balked landing?

- A) CAT II
- B) CAT III
- C) Both CAT II and III
- D) None



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306- How many phases has a missed approach procedure?

- A) 1
- B) 2
- C) 3
- D) 4

307- When the missed approach procedure in precision approach must be initiated?

- A) At MAPt
- B) Runway not in sight
- C) VDP
- D) Not lower than DA/H

308- What is the minimum missed approach climb gradient?

- A) 2.5 %
- B) 2.6 %
- C) 2.7 %
- D) 2.8 %

309- What is the maximum turn during initial phase of missed approach?

- A) 15°
- B) 20°
- C) 25°
- D) None

310- What is the maximum turn from final approach track to the intermediate phase of missed approach?

- A) 10°
- B) 15°
- C) 20°
- D) 25°

311- What is the MOC in primary area for the en-route phase in mountainous areas, where variation in terrain elevation is between 3000 ft and 5000 ft?

- A) 2000 ft
- B) 1000 ft
- C) 1476 ft
- D) 1969 ft



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312- What is MOC in primary area for the en-route phase in mountainous areas where the variation in terrain elevation is greater than 5000 ft?

- A) 1969 ft
- B) 1476 ft
- C) 2500 ft
- D) 3000 ft

313- What is the maximum holding speed based on second edition of PANS-OPS at 13000 ft for jet aeroplane in normal condition?

- A) 230 kts
- B) 240 kts
- C) 220 kts
- D) 210 kts

314- What is the maximum holding speed at 16000 ft based on TERPS criteria?

- A) 205 kts
- B) 215 kts
- C) 245 kts
- D) 265 kts

315- What will be MOC in the holding area?

- A) 500 ft
- B) 492 ft
- C) 984 ft
- D) 1000 ft

316- What is width of holding buffer area?

- A) 4 NM
- B) 5 NM
- C) 3 NM
- D) 2 NM

317- For which type of aeroplane the noise abatement procedure is designed?

- A) Propeller
- B) Turboprop
- C) Turbojet
- D) All answers are correct



318- Who is responsible to specify the location of noise sensitive area and/or the location noise monitors of an aerodrome?

- A) State
- B) ATC
- C) Operator
- D) Aerodrome authority

319- Who has the authority to decide not to execute a noise abatement departure procedure if conditions preclude safety?

- A) Pilot-in-command
- B) Operator
- C) ATC
- D) State

320- Which document specified the power or thrust setting which are needs for engine anti-icing during departure?

- A) CDL
- B) Flight manual
- C) MMEL
- D) Aircraft operating manual

321- Who is responsible to develop the noise abatement procedure?

- A) State
- B) Operator
- C) State of the operator
- D) State of design

322- Who is responsible to approve the developed noise abatement procedure?

- A) State
- B) Operator
- C) State of the operator
- D) State of design

323- Where the noise abatement approach procedure is developed, the aeroplane shall be on the final landing configuration only?

- A) After passing OM
- B) After passing MM
- C) After intercepting of GP
- D) At 10 NM



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324- When an arriving aeroplane shall be on the final landing configuration where the noise abatement procedure is developed?

- A) 9 NM from threshold.
- B) 7 NM from threshold.
- C) 5 NM from threshold.
- D) 3 NM from threshold.

325- When the published noise procedure should not be required to comply?

- A) Ceiling is lower than 500 ft
- B) Tailwind is exceeding 5 kts
- C) Horizontal visibility is less than 1.9 km
- D) All answers are correct

326- When the published noise procedure should not be required where crosswind component?

- A) Exceeds 15 kts
- B) Exceeds 12 kts
- C) Exceeds 10 kts
- D) All answers are correct

327- What is the noise initiation speed?

- A) V_2+10 kts
- B) Not less than V_2+10 kts
- C) Not more than V_2+10 kts
- D) V_2+20 kts

328- When reduction may take place in (NADP 1)?

- A) Above 800 ft
- B) Below 800 ft
- C) At or above 800 ft
- D) At or below 800 ft

329- When the normal transition, for en-route climb is to be made (NADP 2)?

- A) Above 3000 ft
- B) Below 3000 ft
- C) At and below 3000 ft
- D) At and above 3000 ft



330- When entry of an arriving aircraft cannot be made on a procedure where a turn at IAF less than 110° on TAA, what procedure shall be flown?

- A) Reversal procedure
- B) Racetrack procedure
- C) Holding procedure
- D) All answers are correct

331- When the GNSS or FMC shall not be used by pilot?

- A) Database is not approved
- B) Database has no information
- C) Database has no DEP or APP procedure
- D) All answers are correct

332- What is the CDI sensitivity for en-route mode in basic GNSS receivers?

- A) ± 10 NM
- B) ± 8 NM
- C) ± 6 NM
- D) ± 5 NM

333- What is the basic GNSS receiver mode for en-route alert?

- A) ± 2 NM
- B) ± 3 NM
- C) ± 4 NM
- D) ± 5 NM

334- What is the basic GNSS receiver mode for approach?

- A) ± 2 NM
- B) ± 1 NM
- C) ± 0.5 NM
- D) ± 0.3 NM

335- What is the CDI sensitivity for terminal mode?

- A) ± 2 NM
- B) ± 1 NM
- C) ± 0.5 NM
- D) ± 0.3 NM

336- How many kinds of turn may be defined for RNAV departure procedure?

- A) 2
- B) 3
- C) 4
- D) 5



337- What maximum speed should be used in the holding associated with airway structure?

- A) 280 kts
- B) 265 kts
- C) 240 kts
- D) 230 kts

338- What is the minimum height of transition altitude above the aerodrome?

- A) Not less than 6000 ft
- B) Not less than 3000 ft
- C) Not less than 4000 ft
- D) Not less than 5000 ft

339- When above transition altitude, the QNH may be used?

- A) After approach clearance
- B) Descent to land is begun
- C) At EAT
- D) A and B are correct

340- When a pilot is not required to make pressure and temperature correction?

- A) Off route flying
- B) Flying along advisory route
- C) Vectoring by radar
- D) All answers are correct

341- What is the QFE reference tolerance of serviceable altimeter indication between (0 to 30000 ft)?

- A) ± 50 ft
- B) ± 55 ft
- C) ± 60 ft
- D) ± 65 ft

342- When pressure correction shall be made by pilot?

- A) Using 1013 hPa
- B) Using QNH
- C) Using QFE
- D) Using QFF

343- What altimeter correction shall be made per each hPa when pressure is below 1013 hPa?

- A) 15 ft
- B) 20 ft
- C) 25 ft
- D) 30 ft



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344- What altimeter correction (percent) shall be made per every 10°C below standard temperature?

- A) 5
- B) 4
- C) 3
- D) 2

345- When the pilot shall SQUAWK IDENT?

- A) Requested by the operator
- B) Requested by state
- C) Requested by ATC
- D) Requested by ADIZ

346- When the pilot shall operate the serviceable transponder?

- A) Requested by state
- B) All the time during flight
- C) Requested by ATC
- D) Above FL150

347- What action shall be done by the pilot when "CONFIRM SQUAWK" requested by ATC?

- A) Verify the mode A code
- B) Reselect assigned code
- C) Confirm to ATC the setting displayed on the controls
- D) All answers are correct

348- When the pilot shall SQUAWK IDENT?

- A) Requested by ATC
- B) Requested by operator
- C) Requested by state
- D) Requested by ATS authority

349- When mode C is operated, what indication of level on the aeroplane altimeter shall include in voice communication?

- A) Nearest 50 ft
- B) Nearest 100 ft
- C) Nearest 30 ft
- D) Nearest 75 ft



350- The aircraft identification of aeroplane equipped with mode S shall correspond to which item of flight plan?

- A) 5
- B) 6
- C) 7
- D) 8

351- What action shall be taken by a pilot when there is a conflict between RA and ATC instruction?

- A) Follow RA
- B) Follow ATC instruction
- C) Advice ATC
- D) Don't make any maneuver

352- What will be the rate of climb or descend (ft/min) throughout of last 1000 ft?

- A) 800 ft
- B) 1000 ft
- C) 1500 ft
- D) Less than 1500 ft

353- When the vertical speed reduction shall be started by pilot?

- A) 800 ft below clearance altitude
- B) 1500 ft below clearance altitude
- C) 500 ft below clearance altitude
- D) 1000 ft below clearance altitude

354- Who is responsible to develop and implement SOP for aerodrome surface operation?

- A) Operator
- B) Aerodrome authority
- C) ATC
- D) State

355- Where you can find the stabilized approach parameters?

- A) Flight manual
- B) SOP
- C) AIP
- D) PANS-ATM



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356- When an aeroplane shall be on stabilized approach in IMC?

- A) Not lower than 500 ft
- B) Not lower than MDA/H
- C) Not lower than 1000 ft
- D) After passing OM

357- When the go-around policy shall be reinforced?

- A) Every 6 month
- B) Each calendar year
- C) Type rating exam
- D) Through training

358- What non-specific items should be avoided in response of checklist?

- A) Set, checked
- B) Switched
- C) Lights
- D) Levers

359- Which frequency is used as a back-up for 121.5 MHz?

- A) 243
- B) 40.5
- C) 123.45
- D) 122.5

360- For which type of aeroplane the "Mach number technique" is used?

- A) Turbo-jet
- B) Propeller
- C) Turbo-prop
- D) Turbo-fan

361- The prescribed standard longitudinal separation "in time" between two aeroplane flying same level, over entry point on a particular track is?

- A) 10 min
- B) 15 min
- C) 20 min
- D) 25 min

362- Within which ICAO region the Basic RNAV (B-RNAV), without modification is implemented?

- A) NAT
- B) MID
- C) MID/ASIA
- D) EUR



363- How many automatic altitude-keeping device shall has an aeroplane for RVSM application within MID airspace?

- A) One
- B) Two
- C) At least one
- D) At least two

364- How many primary altimetry systems shall have an aeroplane for operation in MID RVSM airspace?

- A) Only one
- B) One
- C) Two
- D) None

365- How the operation of RVSM approved aircraft shall include the approval in the item 10 of flight plan for operation in MID region?

- A) By letter X
- B) By letter W
- C) By letter Z
- D) By letter Y

366- When the RVSM shall be suspended in MID region by ATC?

- A) IMC
- B) CB activity
- C) Severe icing
- D) Severe turbulence

367- What are the four-dimension information derived from ADS?

- A) Time and level
- B) Level and speed
- C) Latitude and longitude
- D) A and C are correct

368- What information are provided by AWOS-A/V?

- A) Altimeter setting
- B) Visibility
- C) Temperature
- D) A & B are correct



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369- What is maximum speed that may be used by an aeroplane on high speed taxiway?

- A) 50 kts
- B) 55 kts
- C) 60 kts
- D) 65 kts

370- What is the reference of 25 NM for terminal arrival altitude (TAA)?

- A) ARP
- B) Main facility
- C) IAF
- D) CTR

371- What is the reference of OCH in precision approach (ICAO)?

- A) Touchdown zone elevation
- B) Aerodrome elevation
- C) Threshold elevation
- D) QFE reference datum height

372- What type of approach may be executed by an IFR before completing its instrument approach procedure?

- A) VFR
- B) VMC
- C) Visual approach
- D) Visual contact

373- How many waypoint(s) may be identified for the purpose area navigation (RNAV)?

- A) 1
- B) 4
- C) 3
- D) 2

374- What will be the altimeter error due to wind, if wind speed is 40 kts?

- A) 201 ft
- B) 220 ft
- C) 250 ft
- D) 300 ft

375- What is the maximum speed for CAT C during final phase of missed approach?

- A) 240 kts
- B) 250 kts
- C) 260 kts
- D) 265 kts



376- What is the maximum speed for CAT B during intermediate phase of missed approach?

- A) 120 kts
- B) 125 kts
- C) 130 kts
- D) 135 kts

377- What will be the MOC on the primary area of intermediate approach segment?

- A) 450 ft
- B) 492 ft
- C) 518 ft
- D) 555 ft

378- What is the MOC on the primary area of initial approach segment?

- A) 900 ft
- B) 960 ft
- C) 950 ft
- D) 984 ft

379- How many type of snow (on the ground) are defined?

- A) 4
- B) 3
- C) 2
- D) 1

380- For which instrument approach procedure the vertical path angle (VPA) based on ICAO shall be published?

- A) BARO-VNAV
- B) Non precision
- C) Circling
- D) Precision CAT III

381- Which surface to be considered for calculation of obstacle clearance altitude/height for precision approach?

- A) Balked landing
- B) Obstacle assessment surface (OAS)
- C) Approach surface
- D) Precision surface



382- Which navigation facility is used as a guidance for instrument approach operation by method of two dimensional (2D)?

- A) Providing lateral and distance
- B) Providing lateral and vertical
- C) Providing lateral and slop
- D) Providing lateral only

383- Which navigation facility is used as a guidance for instrument approach operation by method of three dimensional (3D)?

- A) Providing lateral and distance
- B) Providing lateral and vertical
- C) Providing lateral and slope
- D) Providing lateral only

384- Which type of instrument approach procedure may have a defined point as VDP?

- A) Precision approach
- B) Circling approach
- C) Non-precision approach
- D) Non-precision (straight-in)

385- How many phase may have an emergency situation?

- A) 1
- B) 2
- C) 3
- D) 4

386- What is the maximum speed for CAT C during turning departure?

- A) 265 kts
- B) 290 kts
- C) 120 kts
- D) 300 kts

387- What is the maximum speed for CAT B during final approach segment?

- A) 160 kts
- B) 150 kts
- C) 140 kts
- D) 130 kts



✓ EMERGENCY

388- Within which section of airway manual you can find intercepting procedure?

- A) RADIO AIDS
- B) EMERGENCY
- C) TERMINAL
- D) ENROUTE

389- Within which section of airway manual you can find search & rescue symbol?

- A) RADIO AIDS
- B) EMERGENCY
- C) TERMINAL
- D) ENROUTE

390- What frequencies are provided for distress / emergency?

- A) 500 kHz
- B) 2182 kHz
- C) 8364 kHz
- D) All answers are correct

391- Within which part of airway manual you can find international distress frequency?

- A) EMERGENCY
- B) TABLES & CODES
- C) TERMINAL
- D) ENROUTE

392- What frequency are provided for radiotelephony to be used when assistance is requested by an aeroplane from maritime service?

- A) 121.5 kHz, 243 MHz
- B) 2182 kHz, 500 kHz
- C) 500 kHz, 121.5 kHz
- D) 2182 MHz, 243 MHz

393- What ground-air visual signal shall be formed by survivors when required assistance?

- A) V
- B) X
- C) Y
- D) N



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394- What ground-air visual signal shall be formed by survivors, when required medical assistance?

- A) Y
- B) N
- C) X
- D) V

395- What ground-air visual signal shall be formed by rescue units to indicate "we have found only some personnel"?

- A) LLL
- B) LL
- C) XX
- D) ++

396- What ground-air visual signal shall be formed by rescue units to inform "operation completed"?

- A) LL
- B) LLL
- C) ++
- D) XX

397- Within which section of airway manual you can find radio failure procedure?

- A) EMERGENCY
- B) ENROUTE
- C) RADIO AIDS
- D) TERMINAL

✓ **AIRPORT DIRECTORY**

398- Within which part of airway manual you can find airport ICAO identifier code?

- A) ENROUTE
- B) AIRPORT DIRECTORY
- C) EMERGENCY
- D) METEOROLOGY

399- Within which part of airway manual you can find runway ASDA information?

- A) ENROUTE
- B) AIRPORT DIRECTORY
- C) EMERGENCY
- D) METEOROLOGY



IRANBOOKLET



400- How can you classify aerodrome firefighting category?

- A) Overall fuselage length
- B) Fuselage width
- C) Wing tip to wing tip
- D) A and B are correct

401- How the operational hours of an aerodrome based on prior permission only may be specified?

- A) PPR
- B) PNR
- C) PPO
- D) PTO

402- Where can we find tire pressure limitation for runway PCN?

- A) ENROUTE
- B) AIRPORT DIRECTORY
- C) TABLES & CODES
- D) TERMINAL

403- What minor overload, may be occasionally accepted on rigid pavement?

- A) Maximum 10%
- B) Maximum 5%
- C) Maximum 5 tone
- D) Maximum 10 tone

404- What minor over load, occasionally maybe accepted for unknown Pavements?

- A) Maximum 3%
- B) Maximum 5%
- C) Maximum 10%
- D) Maximum 8%

405- The "PCN" of Ahwaz is PCN 57/F/C/X/T, what is the type of pavement?

- A) Flexible
- B) Rigid
- C) Unknown
- D) Asphalt

406- How the operational hours of an aerodrome based on irregular time maybe specified?

- A) O/T
- B) PPO
- C) HX
- D) HN



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407- Within which section of airway manual you can find ACN/PCN information?

- A) RADIO AIDS
- B) AIRPORT DIRECTORY
- C) TERMINAL
- D) ENROUTE

408- What will be the required fire category where the airplane over-all length is 42 meters and fuselage width is 4.5 meters?

- A) 6
- B) 7
- C) 8
- D) 9

409- What minor overload, may be occasionally accepted for flexible pavements?

- A) Max 10%
- B) Max 3%
- C) Max 5%
- D) None

410- How the operational hours of an aerodrome based on continuous operation may be specified?

- A) O/R
- B) H24
- C) PTO
- D) HX

411- Find the LCN of an airplane with single isolated wheel load of 45 Tone with tire pressure of 7 kg/cm².

- A) 86
- B) 88
- C) 90
- D) 92

412- Which section provide information about length of TODA for RUNWAY 10 of Birjand airport?

- A) AIRPORT DIRECTORY
- B) EMERGENCY
- C) INTRODUCTION
- D) ENROUTE



IRANBOOKLET



413- Which section provide information about fire category of Bushehr airport?

- A) AIRPORT DIRECTORY
- B) EMERGENCY
- C) INTRODUCTION
- D) ENROUTE

414- What will be the airport rescue and firefighting category for an aeroplane with over-all length of 52 meters?

- A) 8
- B) 7
- C) 9
- D) 6

415- What will be the airport rescue and firefighting category for an aeroplane with over-all length of 28 meters?

- A) 7
- B) 5
- C) 6
- D) 8

416- What unit of measurement indicate the subgrade strength of flexible pavement?

- A) MPA
- B) KELVIN
- C) NEWTON
- D) CBR

417- The bearing strength of a pavement for aircraft with all-up mass equal to 5700 kg shall be available by reporting ----- .

- A) Maximum allowable mass and pressure
- B) PCN
- C) Maximum allowable mass
- D) LCN/LCG

418- Which document contain the information regarding SIWL/ESIWL?

- A) Flight manual
- B) Airport operating manual
- C) Aircraft operations manual
- D) PANS-OPS (Doc. 8168)



IRANBOOKLET



419- What is the purpose of providing a stopway for a runway?

- A) Abandoned take-off
- B) Balked landing
- C) Take-off
- D) Landing

420- What is the meaning of "U" regarding the fuel on an aerodrome?

- A) Unknown octane of fuel
- B) Unknown type of fuel
- C) Unknown providing service
- D) B and C are correct

421- What is the meaning of "X" in PCN 80/R/C/X/T?

- A) Tire pressure is limited to 1.85 MPa
- B) Tire pressure is limited to 1.75 MPa
- C) Tire pressure is limited to 1.65 MPa
- D) Tire pressure is limited to 1.55 MPa

✓ **TERMINAL**

422- Which section contain instrument approach charts?

- A) RADIO AIDS
- B) GENERAL
- C) TERMINAL
- D) ENROUTE

423- Within which section of airway manual you can find SHIRAZ AIRPORT chart?

- A) RADIO AIDS
- B) METEOROLOGY
- C) TERMINAL
- D) ENROUTE

424- Within which section of airway manual you can find SHIRAZ RADAR chart?

- A) RADIO AIDS
- B) METEOROLOGY
- C) TERMINAL
- D) ENROUTE



425- REF Shiraz instrument approach procedure (13-1) what is the maximum missed approach speed indicated on missed approach icon?

- A) 180
- B) 185
- C) 200
- D) 205

426- REF Chah Bahar instrument approach procedure (13-1), the lowest level up to lead radial may an aircraft descend is?

- A) 390 ft
- B) FL045
- C) 3000 ft
- D) 1900 ft

427- REF Bahrain chart (13-3), if QNH is 1016 hPa, what is the QFE?

- A) 1016
- B) 1017
- C) 1018
- D) 1019

428- REF Dubai chart (12-1) what is the name of final approach fix?

- A) KUVON
- B) TOXOD
- C) VEDAG
- D) OSTIN

429- REF Imam Khomeini chart (21-7) what is the minimum level from Varamin for ILS interception?

- A) 6450 ft
- B) 6410 ft
- C) 6140 ft
- D) 6448 ft

430- REF Imam Khomeini chart (21-7), what is the maximum holding speed over KAZ?

- A) 220 kts
- B) 210 kts
- C) 230 kts
- D) 240 kts



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431- REF Shiraz chart (10-1R1), what minimum level do you expect between R 305 - R 310 within 8 NM?

- A) 7000 ft
- B) 8000 ft
- C) 8500 ft
- D) 9000 ft

432- REF Shiraz chart (10-3H), what is the track range of KATIB 2C to reach to KATIB?

- A) 85 NM
- B) 90 NM
- C) 92 NM
- D) 98 NM

433- REF Shiraz chart (10-3H), how many turning point/cross mileage are charted?

- A) 3
- B) 2
- C) 1
- D) None

434- REF Mehrabad aerodrome chart (10-9A), what is the height of jet barrier (net barrier) in ft?

- A) 10
- B) 12
- C) 14
- D) 16

435- REF Mehrabad aerodrome chart (10-9A), what is the direction of traffic circuit of 11L?

- A) Right
- B) Left
- C) Both
- D) None

436- REF Mehrabad aerodrome chart (10-9A), what is the distance of arrester gear (hock barrier) in meters from runway 29L?

- A) 598
- B) 972
- C) 197
- D) 792



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437- REF Mehrabad aerodrome chart (10-9A), what is the angle of PAPI for runway 11R?

- A) 3.3°
- B) 3.36°
- C) 3.22°
- D) 3.26°

438- REF Mehrabad aerodrome chart (10-9A), what is the minimum take-off visibility for departure, when runway lighting are on?

- A) 500 m
- B) 300 m
- C) 400 m
- D) 1200 m

439- REF Mehrabad aerodrome chart (10-9A), what is the width of runway 29L?

- A) 60 m
- B) 40 m
- C) 50 m
- D) 45 m

440- REF Mehrabad chart (10-9), what is ASDA of runway 29L?

- A) 13087 ft
- B) 13507 ft
- C) 13222 ft
- D) 13622 ft

441- REF Mehrabad chart (10-9), which runway elevation is airport elevation?

- A) 11R
- B) 11L
- C) 29L
- D) 29R

442- REF Mehrabad chart (10-9), how many helicopter landing PAD are charted?

- A) 4
- B) 1
- C) 3
- D) 2



443- REF Imam Khomeini chart (21-1), if the ground speed of an aircraft is 220 kts during missed approach what is the ROC/minute?

- A) 740 ft
- B) 735 ft
- C) 745 ft
- D) 750 ft

444- REF Imam Khomeini chart (21-1), what is the RVR of straight-in landing, when ALS out?

- A) 500 m
- B) 720 m
- C) 550 m
- D) 1200 m

445- REF Dubai chart (11-1), what is DH minimum for CAT IIIA for the operator using issues standard chart format?

- A) 50 ft
- B) 100 ft
- C) 150 ft
- D) 200 ft

446- REF Dubai chart (11-1), what is the distance of FAF to "0" point?

- A) 5.2 NM
- B) 7.3 NM
- C) 6.8 NM
- D) 6.4 NM

447- REF Esfahan chart (11-1), what is minimum level after crossing lead radial?

- A) 7000 ft
- B) 7500 ft
- C) 6800 ft
- D) None

448- Within which section of airway manual you can find RNAV charts?

- A) RADIO AIDS
- B) METEOROLOGY
- C) TERMINAL
- D) ENROUTE



449- Which section contains instrument approach charts?

- A) RADIO AIDS
- B) GENERAL
- C) TERMINAL
- D) ENROUTE

450- REF Shiraz instrument approach procedure (13-1) what is the maximum holding speed, in normal condition?

- A) 170 kt
- B) 230 kt
- C) 240 kt
- D) 250 kt

451- REF Chah Bahar airport chart (13-1) what is the "ASDA" of runway 27L?

- A) 9000 ft
- B) 10181 ft
- C) 9360 ft
- D) 11743 ft

452- REF Bahrain chart (13-3), what is the time of outbound leg of holding?

- A) 4 min
- B) 1.5 min
- C) 1 min
- D) 5 min

453- REF Dubai chart (12-1) the [2.87°] means?

- A) ILS glide slope
- B) VNAV
- C) MLS glide slope
- D) All answers are correct

454- REF Dubai chart (12-1) the numbers shown on the line of descend angle means?

- A) M/S
- B) ft/S
- C) ft/min
- D) M/min

455- REF Imam Khomeini chart (21-7), what is the missed approach holding level?

- A) 9000 ft
- B) 8000 ft
- C) 7000 ft
- D) 6000 ft



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456- REF Imam Khomeini chart (21-7) what is the recommended altitude at 5 DME?

- A) 4850 ft
- B) 4848 ft
- C) 4840 ft
- D) 4830 ft

457- REF Shiraz (10-3E), what is track range to reach over KASOL based on KASOL 2C?

- A) 86
- B) 82
- C) 80
- D) 78

458- REF Shiraz chart (10-3E), if ground speed of departing aircraft is 234 kts how long does it take to reach to KARAM via KARAM 2D?

- A) 18 min
- B) 19 min
- C) 21 min
- D) 20 min

459- REF Imam Khomeini aerodrome chart (20-9), how many locations the RVR are installed?

- A) 1
- B) 2
- C) 3
- D) 4

460- REF Imam Khomeini aerodrome chart (20-9), which runway has the precision approach with side row?

- A) 29
- B) 11
- C) Both
- D) None

461- REF Imam Khomeini aerodrome chart (20-9), what is distance between VOR and NDB?

- A) 1800 ft.
- B) 2000 ft.
- C) 2100 ft.
- D) 2200 ft.



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462- REF Imam Khomeini aerodrome chart (20-9A), which runway equipped with touchdown zone lights?

- A) 29
- B) 11
- C) Both
- D) None

463- REF Imam Khomeini aerodrome chart (20-9A), which lights may be operational for LVP take-off?

- A) Runway lights
- B) Runway center line lights
- C) A and B are correct
- D) VASI

464- REF Imam Khomeini aerodrome chart (20-9A), what is the angle of PAPI of runway 29?

- A) 2.9°
- B) 3.0°
- C) 3.1°
- D) 3.2°

465- REF Imam Khomeini aerodrome chart (20-9A), what is the runway length (in ft) when using ILS?

- A) 12801 ft
- B) 13773 ft
- C) 13005 ft
- D) 12900 ft

466- REF Esfahan aerodrome chart (11-1), How many wind indicator is installed on the aerodrome?

- A) 1
- B) 2
- C) 3
- D) 4

467- REF Esfahan aerodrome chart (11-1), what is true direction of runway 26L?

- A) 075
- B) 255
- C) 258
- D) 078



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468- REF Esfahan aerodrome chart (11-1), How many cross bar are shown on the approach light of runway 26L?

- A) 5
- B) 4
- C) 3
- D) 2

469- REF Esfahan aerodrome chart (11-1), what is the length of 26R (ASDA)?

- A) 15600 ft
- B) 15607 ft
- C) 15610 ft
- D) 15617 ft

470- REF Esfahan aerodrome chart (11-1), what is the distance of ILS glide slope antenna from threshold of runway 26R?

- A) 1416 ft.
- B) 1426 ft.
- C) 1215 ft.
- D) 1216 ft.

471- REF Esfahan aerodrome chart (11-1), what is the width of runway?

- A) 48 M
- B) 45 M
- C) 50 M
- D) 52 M

472- REF Esfahan chart (11-1), How many initial approach fix are provided?

- A) 1
- B) 2
- C) 3
- D) 4

473- REF Bahrain chart (13-3), what is the distance of intermediate fix from VOR?

- A) 7 NM
- B) 4.8 NM
- C) 12 NM
- D) 10 NM



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474- REF Dubai chart (12-1), how many aircraft at the same time may hold over PINGO?

- A) 5
- B) 4
- C) 3
- D) 2

475- REF Imam Khomeini chart (21-7), what is the entry procedure of a missed approach aircraft for KAZ after missed approach?

- A) Off set
- B) Direct
- C) Parallel
- D) A or C is correct

476- REF Imam Khomeini chart (21-7), what is the missed approach climb gradient (ft/NM)?

- A) 152
- B) 170
- C) 200.5
- D) 210

477- REF Shiraz chart (10-3 H), what is the KATIB 2A track range?

- A) 81 NM
- B) 85 NM
- C) 73 NM
- D) 89 NM

478- REF Shiraz chart (10-3 H), what will be the minimum ROC/NM of departing aircraft to cross 15 DME at 10,000 ft based on airport elevation?

- A) 353 ft
- B) 350 ft
- C) 369 ft
- D) 363 ft

479- REF Esfahan aerodrome chart (11-1), which runway elevation is airport elevation?

- A) 26R
- B) 26L
- C) 08L
- D) 08R



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480- REF Esfahan aerodrome chart (11-1), which runway is equipped with ILS?

- A) 08R
- B) 08L
- C) 26L
- D) 26R

481- REF Esfahan aerodrome chart (11-1), what is the distance of runway lights from each other?

- A) 60 m
- B) 100 m
- C) 45 m
- D) 50 m

482- REF Esfahan aerodrome chart (11-1) the N 32 45.1 E 051 51.8 related to:

- A) VOR
- B) NDB
- C) ARP
- D) Control tower

483- REF Esfahan aerodrome chart (11-1), how many cross bar has 26L approach lights?

- A) 3
- B) 5
- C) 4
- D) 2

484- REF Esfahan aerodrome chart (11-1), if the VAR is 3° E, what is the MAG track of runway 08L?

- A) 075
- B) 255
- C) 258
- D) 078

485- REF Esfahan aerodrome chart (11-1), what is TORA of runway 26L?

- A) 8694 ft
- B) 15610 ft
- C) 14426 ft
- D) 14246 ft

486- REF Esfahan aerodrome chart (11-1), what is ASDA of runway 08L?

- A) 15617 ft
- B) 14426 ft
- C) 15610 ft
- D) 14462 ft



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487- REF Esfahan aerodrome chart (11-1), what is the TODA of runway 26L?

- A) 8694 ft
- B) 8858 ft
- C) 7008 ft
- D) None

488- REF Khark island aerodrome chart (10-9) what is the LDA of runway 31?

- A) 7657 ft
- B) 6345 ft
- C) 6332 ft
- D) 6232 ft

489- REF Khark island aerodrome chart (10-9), for which category of aircraft, the take-off minima is not applicable?

- A) A
- B) B
- C) C
- D) D

490- REF to KHARK island aerodrome chart (10-9), within which of the following area the KHARK aerodrome is located?

- A) P
- B) R
- C) D
- D) C

491- REF to KHARK island aerodrome chart (10-9), what type of air traffic service are provided to aircraft?

- A) ATC
- B) Advisory
- C) AFIS
- D) All answers are correct

492- REF to Esfahan chart (11-1), the missed approach icon indicated the turn of?

- A) Less than 45°
- B) Straight
- C) 45°
- D) More than 45°



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493- REF to Esfahan chart (11-1), what is the localizer frequency?

- A) 109.90
- B) 110.10
- C) 110.30
- D) 111.90

494- REF to Esfahan chart (11-1), what is the minimum north holding altitude?

- A) 11000 ft
- B) 10000 ft
- C) 9000 ft
- D) 8000 ft

495- REF to Esfahan chart (11-1), what is the distance between R-166 and R-109 in 12 DME arc ISN?

- A) 10 NM
- B) 11 NM
- C) 12 NM
- D) 13 NM

496- REF to Esfahan chart (11-1), what is the maximum speed during circle to land for CAT D?

- A) 100 kts
- B) 135 kts
- C) 180 kts
- D) 205 kts

497- REF Shiraz chart (11-5), what is the maximum initial approach speed that restricted by chart?

- A) 220 kts
- B) 230 kts
- C) 240 kts
- D) 250 kts

498- REF Shiraz chart (11-5), what is the minimum missed approach climb gradient?

- A) 6.3 %
- B) 6.0 %
- C) 5.5 %
- D) 5.1 %

499- REF Shiraz chart (11-5), what is the distance of ILS/DME from threshold of runway 29L?

- A) 0.4 NM
- B) 0.3 NM
- C) 0.2 NM
- D) 0.1 NM



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500- REF Shiraz chart (11-5), what is the minimum visibility for CAT C aircraft during circle to land?

- A) 2000 m
- B) 3200 m
- C) 4200 m
- D) 4800 m



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	D	26	D	51	B	76	C
2	C	27	C	52	D	77	B
3	B	28	D	53	A	78	A
4	D	29	B	54	B	79	C
5	D	30	C	55	C	80	C
6	B	31	D	56	B	81	B
7	C	32	B	57	C	82	B
8	D	33	B	58	D	83	A
9	A	34	C	59	B	84	B
10	B	35	A	60	D	85	D
11	D	36	C	61	B	86	B
12	B	37	B	62	B	87	D
13	C	38	C	63	C	88	C
14	B	39	B	64	A	89	D
15	C	40	D	65	D	90	B
16	A	41	A	66	C	91	D
17	C	42	D	67	A	92	C
18	A	43	B	68	C	93	A
19	C	44	B	69	C	94	D
20	C	45	D	70	A	95	A
21	B	46	B	71	B	96	B
22	D	47	D	72	D	97	B
23	B	48	C	73	C	98	D
24	B	49	A	74	A	99	C
25	C	50	B	75	B	100	A



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	C	126	D	151	B	176	B
102	B	127	A	152	C	177	C
103	B	128	B	153	B	178	C
104	D	129	D	154	D	179	C
105	A	130	C	155	C	180	A
106	A	131	B	156	A	181	C
107	D	132	A	157	B	182	D
108	C	133	D	158	D	183	A
109	C	134	C	159	D	184	A
110	C	135	D	160	B	185	A
111	C	136	C	161	C	186	B
112	B	137	A	162	C	187	B
113	B	138	B	163	D	188	B
114	D	139	D	164	C	189	A
115	A	140	C	165	C	190	D
116	B	141	B	166	B	191	D
117	B	142	C	167	B	192	A
118	C	143	C	168	C	193	C
119	D	144	B	169	C	194	C
120	C	145	A	170	D	195	B
121	A	146	B	171	B	196	C
122	D	147	D	172	B	197	A
123	B	148	D	173	A	198	A
124	C	149	B	174	D	199	B
125	A	150	B	175	C	200	C



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	A	226	B	251	C	276	D
202	C	227	D	252	D	277	A
203	D	228	D	253	A	278	D
204	B	229	A	254	C	279	B
205	B	230	D	255	B	280	C
206	C	231	A	256	D	281	D
207	A	232	B	257	A	282	B
208	C	233	C	258	D	283	A
209	A	234	A	259	B	284	D
210	B	235	C	260	C	285	A
211	B	236	D	261	A	286	C
212	A	237	B	262	B	287	D
213	C	238	C	263	D	288	C
214	B	239	D	264	C	289	B
215	B	240	A	265	A	290	D
216	D	241	B	266	B	291	A
217	A	242	C	267	D	292	C
218	D	243	A	268	B	293	B
219	A	244	D	269	C	294	D
220	B	245	B	270	B	295	B
221	A	246	C	271	B	296	D
222	A	247	A	272	A	297	C
223	C	248	D	273	C	298	B
224	B	249	A	274	D	299	A
225	C	250	B	275	B	300	D



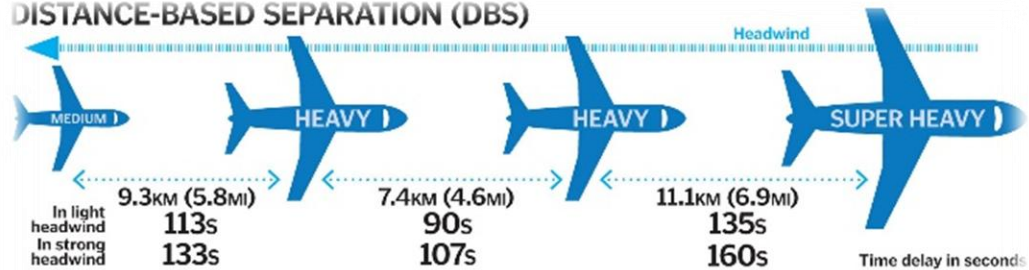
QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
301	B	326	A	351	A	376	C
302	D	327	B	352	D	377	B
303	C	328	C	353	C	378	D
304	B	329	D	354	A	379	B
305	C	330	A	355	B	380	A
306	C	331	C	356	C	381	B
307	D	332	D	357	D	382	D
308	A	333	A	358	A	383	B
309	D	334	D	359	C	384	D
310	B	335	B	360	A	385	C
311	C	336	C	361	B	386	A
312	A	337	A	362	D	387	D
313	C	338	B	363	A	388	B
314	D	339	D	364	C	389	B
315	C	340	C	365	B	390	D
316	B	341	C	366	D	391	A
317	C	342	A	367	D	392	B
318	D	343	D	368	D	393	A
319	A	344	B	369	C	394	C
320	D	345	C	370	C	395	D
321	B	346	B	371	C	396	B
322	C	347	D	372	C	397	A
323	A	348	A	373	D	398	B
324	C	349	B	374	A	399	B
325	D	350	C	375	A	400	D



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
401	C	426	C	451	A	476	C
402	B	427	A	452	B	477	B
403	B	428	B	453	B	478	D
404	B	429	A	454	C	479	D
405	A	430	C	455	D	480	D
406	C	431	B	456	A	481	A
407	B	432	B	457	A	482	C
408	B	433	A	458	D	483	B
409	A	434	B	459	B	484	A
410	B	435	A	460	A	485	C
411	C	436	D	461	B	486	C
412	A	437	B	462	A	487	D
413	A	438	C	463	C	488	C
414	A	439	A	464	B	489	D
415	C	440	C	465	A	490	B
416	D	441	B	466	B	491	C
417	A	442	D	467	C	492	D
418	C	443	B	468	A	493	A
419	A	444	D	469	D	494	B
420	D	445	A	470	C	495	C
421	B	446	C	471	B	496	D
422	C	447	A	472	C	497	A
423	C	448	C	473	D	498	B
424	C	449	C	474	D	499	C
425	B	450	B	475	C	500	D

ANNEX 2

DISTANCE-BASED SEPARATION (DBS)

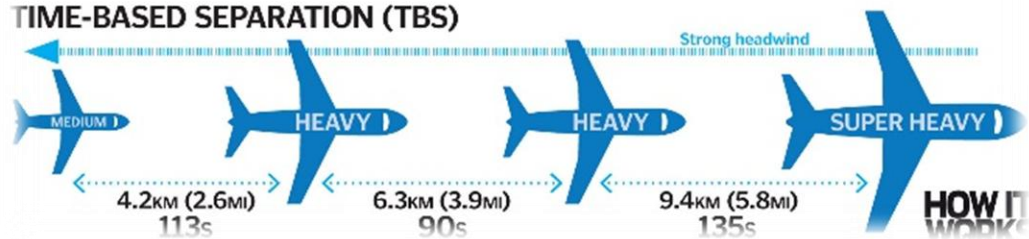


To solve this problem, NATS has developed a new system that separates the aircraft based on time instead of distance.

It discovered that when flying into strong headwinds, an aircraft's wake vortex dissipates more quickly, meaning the distance between them can be reduced. Using real-time wind data, the optimum distance between

aircraft is calculated for the specific conditions, helping the controller maintain a normal landing rate of about 40 aircraft per hour. This new system is being introduced at London Heathrow Airport in spring 2015, with the hope that it will significantly reduce the number of flight delays and cancellations.

TIME-BASED SEPARATION (TBS)





1- Which Annex to the Chicago Convention contain information about personal licensing?

- A) ANNEX 16.
- B) ANNEX 17.
- C) ANNEX 1.
- D) ANNEX 15.

2- What is a danger area?

- A) An airspace of defined dimensions above the land areas or territorial waters of a State within which flight of aircraft is prohibited.
- B) An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.
- C) A NOTAM activated airspace where the general flight rules are disregarded.
- D) An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

3- What is Special VFR?

- A) A flight in IMC for which the pilot and/or the airplane is unable to comply with the requirements of IFR.
- B) A VFR flight cleared by ATC to operate within a CTR in meteorological conditions below VMC.
- C) A VFR procedure to enable an airplane to transit a control zone or area in IMC without compliance with IFR.
- D) Any flight cleared by ATC to operate in conditions less than VMC in which the pilot is required to remain clear of cloud and in sight of the surface.

4- Which type of traffic shall comply with rules of the air?

- A) To all IFR traffic.
- B) To all VFR traffic.
- C) Only to aircraft registered in the State being over flown.
- D) Both A and B are correct.

5- Which action shall be taken by an aircraft in the traffic pattern of an aerodrome, experiencing radio failure to indicate difficulties which compel it to land without requiring immediate assistance?

- A) The repeated switching on and off of the landing lights.
- B) Switching on and off four times the landing lights.
- C) Switching on and off four times the navigation lights.
- D) Switching on and off three times the landing lights.



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6- You have filed a VFR flight plan. What do you put in field 16 (total estimated elapsed time)?

- A) Time from brakes off to overhead the destination.
- B) Time from brakes off to landing time.
- C) Time from takeoff to overhead the destination.
- D) Time from takeoff to landing.

7- An aircraft operated on, or in the vicinity of, an aerodrome shall whether or not within an ATZ:

- 1) Observe other aerodrome traffic for the purpose of avoiding collision.
- 2) Conform with or avoid the pattern of traffic formed by other aircraft in operation.
- 3) Make all turns to the right, when approaching for landing or taking-off unless otherwise instructed.
- 4) Land and take off into the wind unless safety, the runway configuration, or an air traffic consideration determines that a different direction should be used.

Which statements are correct?

- A) 2,3,4
- B) 1,3,4
- C) 1,2,4
- D) 1,2,3

8- Aircraft shall not be flown in formation except:

- A) By pre-arrangement among the pilots taking part.
- B) By pre-arrangement among the PICs taking part.
- C) By pre-arrangement among the PICs taking part and if the flight is to be in control airspace in accordance with the conditions laid out by ICAO Annex 2.
- D) By pre-arrangement among the PICs taking part and if the flight is to be in control airspace in accordance with the conditions laid out by ICAO Annex 2 and supplemented by the national procedures.

9- For which of the following condition in accordance with Annex 2, the flight plan must be submitted?

- A) Any flight across an international border.
- B) Any IFR flight in advisory airspace.
- C) Any flight in controlled airspace and receive air traffic control service.
- D) All answers are correct.

10- An aircraft is crossing your flight path from left to right, which light will you see?

- A) Steady red.
- B) Steady green.
- C) Flashing green.
- D) White.



11- On a VFR flight, your magnetic track is 005°, the magnetic heading 355°. Which of the following flight level is correct?

- A) FL060
- B) FL055
- C) FL065
- D) FL070

12- On a VFR flight, which of the following cruising levels would you select under the following conditions: True track 358°, variation 3°W, deviation 2°W?

- A) FL080
- B) FL065
- C) FL070
- D) FL075

13- When an aircraft is operating in class F airspace below 900 m AMSL, the minimum horizontal distance from cloud for VFR flight is:

- A) 1500 Ft.
- B) 1500 m.
- C) 5 km.
- D) Clear of clouds and surface in sight.

14- A VFR flight shall comply with the ATC clearances under which of the following conditions?

- 1) When operated in Class A, B, C and D airspace.
- 2) When forming part of aerodrome traffic at a controlled aerodrome.
- 3) When operated as special VFR flights.

- A) 1, 2 are correct.
- B) 2, 3 are correct.
- C) 1, 3 are correct.
- D) All statements are correct.

15- In areas where a separation minimum of 1000 ft is applied up to FL410, authorization for VFR flight shall not be granted above which flight level?

- A) FL190
- B) FL200
- C) FL240
- D) FL290

16- An aircraft used for simulated instrument flying must have:

- A) Dual controls.
- B) Dual controls and a competent observer.
- C) A qualified safety pilot and fully functioning dual controls.
- D) A competent observer in the front seat.



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- 17- What is the appropriate IFR flight level for a magnetic track of 125° in non-RVSM airspace?**
- A) FL280
 - B) FL290
 - C) FL350
 - D) FL310
- 18- An aircraft intercepted by another aircraft, if equipped with SSR transponder shall, unless otherwise instructed by the appropriate ATS unit, select one of the following codes in mode A:**
- A) 7000
 - B) 7700
 - C) 7500
 - D) 7600
- 19- An intercepted aircraft is to attempt to communicate with the intercepting aircraft. Which frequency is to be used?**
- A) 121.500 MHz
 - B) 118.100 MHz
 - C) 249.000 MHz
 - D) 123.450 MHz
- 20- At or below the transition altitude, the altimeter setting should be:**
- A) QFE
 - B) QNE
 - C) 1013.2 hPa
 - D) QNH
- 21- The vertical position of an aircraft at or above the transition level will be reported:**
- A) As altitude.
 - B) As height.
 - C) As flight level.
 - D) According to pilot's choice.
- 22- At least which services have to be provided by ATS within a flight information region?**
- A) Flight information service and alerting service.
 - B) Flight information service.
 - C) Flight information service and air traffic advisory service
 - D) Flight information service and air traffic control service.



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23- A TMA is:

- A) An area in which submission of a flight plan is not required.
- B) A control airspace establishes at confluence of ATS route around one or major aerodrome.
- C) A CTR.
- D) Available at all times to VFR traffic.

24- A controlled airspace extending upwards from the surface of the earth to a specified upper limit is:

- A) Air traffic zone.
- B) Control area.
- C) Control zone.
- D) Advisory airspace.

25- The definition of "Maneuvering Area" is:

- A) That part of an aerodrome to be used for takeoff, landing and taxiing of aircraft, including apron(s).
- B) That part of an aerodrome to be used for takeoff, landing and taxiing of aircraft, excluding apron(s).
- C) That part of an aerodrome to be used for takeoff, landing and taxiing of aircraft, including movement area and apron(s).
- D) None.

26- For an IFR flight to an airport equipped with navigation aids, the estimated time of arrival is the estimated time at which the aircraft:

- A) Will leave the initial approach fix to start the final approach.
- B) Will land.
- C) Will stop on the parking area.
- D) Will arrive over the designated navigation facility.

27- What is the objective of the alerting service?

- A) To prevent collisions between aircraft.
- B) To provide the advisory service.
- C) To notify appropriate organizations regarding aircraft in need of assistance.
- D) Provide advice and information useful to the safe and efficient conduct of flights.

28- A controlled flight is:

- A) Any flight in C, D or E class airspace.
- B) Any flight in uncontrolled airspace.
- C) Any flight which is subject to an ATC clearance.
- D) Any IFR flight.



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29- FIS:

- A) Provides an aerodrome and approach control service for the efficient conduct of flight.
- B) Provides flight plan services for the safe and efficient conduct of flight.
- C) Provides control useful for the safe and efficient conduct of flight.
- D) Provides advice and information useful for the safe and efficient conduct of flight.

30- Approach control service is provided for:

- A) All arriving and departing controlled flights.
- B) All arriving IFR traffic.
- C) Traffic within the CTA.
- D) All VFR traffic.

31- The part of an aerodrome provided for the stationing of aircraft for the purpose of embarking and disembarking passengers, loading and unloading of cargo and refueling and parking is known as:

- A) Movement area.
- B) Maintenance area.
- C) Apron.
- D) Maneuvering area.

32- Which of the following signals is a distress signal?

- A) A parachute flare showing a red light.
- B) The repeated switching on and off the landing lights.
- C) The repeated switching on and off the navigation lights.
- D) In radiotelephony the spoken word PANPAN.

33- For which type of operation, the advisory service may be provided?

- A) Controlled IFR
- B) SVFR
- C) CVFR
- D) IFR

34- What is the purpose of air traffic control service?

- A) Prevent collision between aircraft
- B) Expedite flow of traffic
- C) A and B are correct
- D) A or B is correct

35- Airway is a control area in the form of:

- A) Corridor
- B) Area
- C) Arrival route
- D) Uncontrolled route



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36- How many controlled airspaces are classified by ICAO?

- A) 5
- B) 7
- C) 4
- D) 3

37- Within which class of controlled airspace an IFR is not subject to control?

- A) E
- B) C
- C) D
- D) All answers are incorrect

38- Based on what facility the ACAS operate:

- A) NAV AIDS
- B) SSR
- C) SSR transponder
- D) Communication

39- What is vertical position of an aircraft, if set 1013.2 hPa?

- A) Flight level
- B) Altitude
- C) Height
- D) None

40- What will be the level of aircraft below lowest usable flight level?

- A) Flight level
- B) Altitude
- C) Height
- D) None

41- Who is the relevant authority for an aircraft operating over high seas?

- A) State of manufacture
- B) State of design
- C) State of registry
- D) State of operator

42- Chang over point may be established on a route which is equipped with:

- A) DME
- B) NDB
- C) VOR
- D) ILS



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43- Who is responsible to establish minimum flight altitude?

- A) State
- B) Operator
- C) Pilot-in-command
- D) All answers are correct

44- Who is responsible for the operation of aircraft?

- A) Pilot-in-command
- B) Operator
- C) State
- D) A person who recognize by ATCU

45- Which navigation light of overtaken aircraft may not be seen at night?

- A) Port
- B) Starboard
- C) Rear
- D) A or B is correct

46- Which aircraft has right of way?

- A) Landing
- B) Taking off
- C) Emergency
- D) Urgency

47- What is the first action of pilots when two aircraft are approaching head-on, on the ground?

- A) Alter its course to the left
- B) Alter its course to the right
- C) Both aircraft shall stops
- D) Both aircraft alter heading to the right

48- What is the purpose of using navigation light?

- A) Indicate relative flight path
- B) Attract attention
- C) A and B are correct
- D) A or B is correct

49- What is the purpose of ACAS?

- A) Provide traffic and resolution advisory to pilot
- B) Provide advice to ATC
- C) Provide weather information
- D) Receive information by ADS



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50- Who is the appropriate authority of an aircraft operating over a territory of a state?

- A) The state having sovereignty
- B) State of registry
- C) State of design
- D) State of manufacture

51- The lowest layer of clouds is called ceiling when it is:

- A) Below 6000 m
- B) Below 20000 ft
- C) Above 6000 m
- D) A or B are correct

52- Which portion of flight is called "significant portion" of flight?

- A) Cruise
- B) Climb
- C) Descend
- D) None

53- Which area shall not be established over the high seas?

- A) Prohibited area
- B) Restricted area
- C) Danger area
- D) A and B are correct

54- When may an IFR flight cancel its IFR flight?

- A) Ground in sight
- B) In VMC
- C) Uninterrupted ground in sight
- D) Uninterrupted VMC

55- An IFR flight shall not operate?

- A) Above MEA
- B) Above FL200
- C) Below minimum flight altitude
- D) Along advisory route

56- Who are responsible to arrange a formation flight within uncontrolled airspace?

- A) Pilots -in-command
- B) Appropriate authority
- C) Air traffic controller
- D) None



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57- What action shall be taken by an overtaking aircraft on the ground?

- A) Contact with ATC
- B) Turn left
- C) Keep well clear
- D) All answers are correct

58- Which lights may be switched off during flight?

- A) Anti-collision lights
- B) Red anti-collision lights
- C) Any flashing lights
- D) Green flashing light

59- How long after ETA or acknowledge expected approach time the radio failure aircraft must to be landed?

- A) Within 3 min
- B) Within 20 min
- C) Within 30 min
- D) Within 40 min

60- ADS stand for:

- A) Automatic direction specification
- B) Aerodrome data system.
- C) Aviation development service
- D) Automatic dependent surveillance

61- Acrobatic flight is a flight consist of manoeuvres performed by an aircraft involving abrupt changes in attitude or speed.....

- A) Intentionally
- B) Compulsory
- C) Automatically
- D) All answers are correct

62- Advisory route is....

- A) A designated route along which air traffic control service is available.
- B) A designated control zone within which air traffic advisory service is available.
- C) A designated route along which air traffic control and advisory service is available.
- D) A designate route along which air traffic advisory service is available.



63- Movement of helicopter/VTOL above the surface of an aerodrome is normally at a ground speed.....

- A) More than 20Kt
- B) 20Kt
- C) Less than 20Kt
- D) 37Km

64- Aeronautical information publication will be issued by:

- A) State
- B) Operator
- C) ATC unit
- D) Flight standard

65- An airspace of defined dimension established around an aerodrome for the protection of aerodrome traffic is.....

- A) CTR
- B) ATZ
- C) CTA
- D) TMA

66- Maneuvering area is consisting of:

- A) Runway and Taxiway
- B) Runway, Taxiway and apron
- C) Runway, Taxiway and isolated parking
- D) All answers are correct

67- All aircraft flying in the vicinity of an aerodrome and all traffic operating on the maneuvering area of an aerodrome is:

- A) Controlled traffic
- B) Known traffic
- C) Aerodrome traffic
- D) Air traffic

68- Altitude is measured from....

- A) MSL
- B) AGL
- C) Aerodrome elevation
- D) Specific datum

69- Who are safety-sensitive personnel?

- A) Air traffic controllers
- B) Crew members
- C) Aircraft maintenance personnel
- D) All answers are correct



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70- An airspace extending upwards from surface of the earth is....

- A) Control area
- B) Control zone
- C) ATZ
- D) TMA

71- Radiotelephony is a form of radio communication in the form of:

- A) Speech
- B) Signal
- C) Data link
- D) All answers are correct

72- Taxiing is movement of an aircraft on the surface of an aerodrome under its own power.....

- A) Including take-off roll
- B) Excluding take-off roll
- C) Excluding take-off and landing roll
- D) Including take-off and landing roll

73- Advice provided by ATC unit specifying maneuvers to assist a pilot to avoid a collision is....

- A) Traffic information
- B) Traffic resolution
- C) Traffic avoidance advice
- D) Resolution advisory

74- By which reason, a pilot may depart from rules of the air or ATC clearance?

- A) In case of radio communication failure
- B) Economic
- C) Urgency
- D) Interest of safety

75- Which one of the following lights will indicate the aircraft flight path?

- A) Navigation light
- B) Anti-collision light
- C) Landing light
- D) None

76- EOBT is the time:

- A) At which the aircraft will commence taxi associated to departure.
- B) At which the aircraft will request the start up.
- C) At which the aircraft will enter the runway for take-off.
- D) At which the aircraft will stop on runway holding position.



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77- An aircraft taxiing on the maneuvering area of an aerodrome shall stop and hold at

- A) All runway holding positions
- B) At lighted stop bars
- C) All marking areas
- D) A and B are correct

78- Which one of the following manner decreases the safety of aircraft operation?

- A) Negligent
- B) Reckless
- C) Acrobatic
- D) All answers are correct

79- In formation flight, the vertical separation between leader and each formation flight shall not exceed:

- A) 100 ft.
- B) 200 ft.
- C) 50 ft.
- D) 150 ft.

80- The actual time of leaving the holding fix for approach, depends on:

- A) Estimated arrival time
- B) Expected approach time
- C) Approach clearance
- D) None

81- Who has the final authority for disposition of an aircraft?

- A) Pilot-in-command
- B) In-flight security
- C) Pilot
- D) Crew member

82- What information shall be study carefully by pilot-in-command before beginning a flight as pre-flight action?

- A) Current weather report
- B) Current weather forecast
- C) Fuel requirement
- D) All answers are correct



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83- Which one is considered as minima for VMC?

- A) Flight visibility 5Km / distance from cloud 1500 ft horizontally, 1000 M vertically
- B) Flight visibility 5Km/ distance from cloud 1500 M horizontally, 1000 ft vertically
- C) Flight visibility 5Km/ distance from cloud 1000 M horizontally,1500 ft vertically
- D) Flight visibility 5Km / distance from cloud 1000 ft horizontally ,1500 M vertically

84- Which lights of the preceding aircraft will be observed by the overtaking aircraft?

- A) Port
- B) Starboard
- C) Rear
- D) All answers are correct

85- Air traffic advisory service is provided within advisory airspace to ensure separation between:

- A) Aircraft which are operating on IFR flight plans.
- B) Aircraft which are operating on special VFR and VFR flight plans.
- C) Aircraft which are operating on VFR and IFR flight plans.
- D) Aircraft which are operating as special VFR.

86- is provided to notify appropriate organizations regarding aircraft in need of search and rescue service.

- A) Advisory service.
- B) Alerting service.
- C) Area control service.
- D) Surveillance service.

87- A controlled airspace extending upwards from a specified limit above the earth is called a:

- A) Control zone.
- B) Control area.
- C) Control center.
- D) Terminal control area.

88- is responsible for the operation of the aircraft in accordance with the rules of the air.

- A) The air traffic control unit.
- B) The pilot-in-command.
- C) The operation manager.
- D) The person manipulating the controls.



89- What separation shall be maintained from the flight leader by each aircraft in a formation flight?

- A) A distance not exceeding 500 meters laterally and longitudinally and 30 meters vertically.
- B) A distance not exceeding 1000 meters laterally and longitudinally and 100 meters vertically.
- C) A distance not exceeding 0.5 NM laterally and longitudinally and 100 feet vertically.
- D) A distance of 1 km laterally and longitudinally and 30 feet vertically.

90- When two aircraft are approaching head-on or nearly so and there is a danger of collision, what action shall be take place by the pilots?

- A) Both aircraft shall alter their headings to the left.
- B) Both aircraft shall alter their headings to the right.
- C) Both aircraft must make a climbing turn to the left.
- D) Both aircraft must make a climbing turn to the right.

91- Which aircraft has the right-of-way when they are converging?

- A) Airplane.
- B) Balloon.
- C) Glider.
- D) Airship.

92- Unless otherwise prescribed by the appropriate ATS authority, a flight plan for a flight to be provided with air traffic control service or air traffic advisory service shall be submitted:

- A) At least 15 minutes before departure.
- B) At least 30 minutes before departure.
- C) At least 60 minutes before departure.
- D) At least 90 minutes before departure.

93- When operating under visual flight rules in class D airspace at altitudes above 10000 feet AMSL, you must maintain a vertical distance of at least from clouds.

- A) 1500 feet
- B) 300 feet
- C) 1000 feet
- D) 1000 meters

94- When flying under visual flight rules in class C airspace at altitudes below 10000 feet AMSL and above 3000 feet AMSL, or 1000 feet above terrain, whichever is the higher, you must maintain a horizontal distance of at least from clouds.

- A) 5 kilometers.
- B) 1500 meters.
- C) 1000 feet.
- D) 2000 feet.



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95- To fly under VFR in class D airspace at or below 3000 ft AMSL, or 1000 feet above terrain, whichever is the higher, the flight visibility must be at least:

- A) 5 kilometers.
- B) 5 nautical miles.
- C) 8000 meters.
- D) 1500 meters.

96- To fly under VFR in class G airspace at and below 3000 ft AMSL or 1000 feet above terrain, whichever is the higher, you must:

- A) Maintain a horizontal distance of at least 1500 meters from clouds.
- B) Maintain a vertical distance of at least 1500 meters from the clouds.
- C) Maintain a horizontal distance of at least 1500 feet from clouds.
- D) Remain clear of clouds and in sight of the surface.

97- To fly under VFR in class C airspace at and above 10000 ft AMSL, the flight visibility must be at least:

- A) 5 KM.
- B) 8 KM.
- C) 1500 meters.
- D) 3000 meters.

98- Except when a clearance is obtained from an air traffic control unit, no VFR flight may take-off or land at an aerodrome within a control zone, or enter the aerodrome traffic zone or traffic pattern when:

- A) The ceiling is less than 1000 ft, and the ground visibility is less than 3 km.
- B) The ceiling is less than 1500 ft, and the ground visibility is less than 5 statute miles.
- C) The ceiling is less than 1500 ft, and the ground visibility is less than 5 km.
- D) The ceiling is less than 450 ft, and the ground visibility is less than 5 km.

99- You may not fly over any congested area of a city, town, or settlement at a height from which it would be impossible to land without undue hazard to persons or property on the surface in the event of an emergency arising, except:

- A) When necessary for take-off or landing.
- B) When trying to remain clear of clouds and in sight of surface.
- C) When you receive a logbook endorsement from your instructor.
- D) When you receive visual ground signal from tower



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100- When QFE is set on the altimeter, the vertical position of the aircraft is expressed in terms of:

- A) Altitude.
- B) Height.
- C) Flight level.
- D) Elevation.

101- When climbing through the transition layer, the reference for the vertical position of the aircraft should be changed from to

- A) Flight levels – altitudes.
- B) Altitudes – height.
- C) Altitudes – flight levels.
- D) Transition layer – altitudes.

102- Which signal shall be said by an aircraft when it has a very urgent message regarding another aircraft which is in fire?

- A) MAY DAY
- B) PANPAN
- C) XXX
- D) SOS

103- When an aircraft flying on a route with magnetic track of 315° what shall be its assign flight level (non RVSM airspace)?

- A) 310
- B) 320
- C) 330
- D) 340

104- Which of following aircraft on the final stage of landing, has the right of way?

- A) Emergency
- B) Lower
- C) Faster
- D) Nearer

105- Which light shall be displayed by an airplane for the purpose of indication of relative path?

- A) Anti-collision
- B) Landing
- C) Navigation
- D) Beacon



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106- Who shall be permitted to switch off the any flashing light?

- A) Pilot-in-command
- B) Operator
- C) ATC
- D) None

107- When the revised estimated time shall be notified to ATS unit?

- A) It is found that the error of estimate time to be exceed 5 min.
- B) It is found that the error of estimate to be exceed time 1 min.
- C) It is found that the error of estimate to be exceed time 2 min.
- D) It is found that the error of estimate to be exceed time 4 min.

108- Above which flight level IFR flight is compulsory?

- A) 30
- B) 90
- C) 10
- D) 200

109- An aircraft is holding within transition layer, what shall be the term of its level?

- A) Flight level
- B) Height
- C) Altitude
- D) None

110- How much of the sky shall be covered by cloud when you consider it as ceiling?

- A) 1/2 sky
- B) 1/3 sky
- C) 2/3 sky
- D) 4/8 sky

111- What action shall be taken by an overtaking aircraft?

- A) Alter its heading to the left
- B) Alter its level
- C) Alter its heading to the right
- D) Alter its speed

112- Which lights may be displayed, when there is no adequate illumination to indicate aircraft structure?

- A) Landing lights
- B) Navigation lights
- C) Anti-collision lights
- D) Strobe lights



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113- Who has the responsibility for operation of an aircraft in accordance with rules of the air?

- A) Operator
- B) ATC
- C) Pilot-in-command
- D) Pilot at flight control

114- The lowest cruising flight level for VFR is:

- A) 200
- B) 35
- C) 45
- D) 50

115- What shall be the minimum height for VFR flight over an open air assembly?

- A) 500 ft
- B) 1000 ft
- C) 600 M
- D) 1500 ft

116- When an IFR may cancel its IFR flight?

- A) It is in VMC
- B) Encountering VMC
- C) Uninterrupted VMC
- D) For a reasonable period in uninterrupted VMC

117- What is the first IFR flight level above FL290, if magnetic track is 105° (RVSM airspace)?

- A) 300
- B) 310
- C) 320
- D) 330

118- Which light fitted on aircraft may be switched-off by pilot?

- A) Navigation lights
- B) Flashing lights
- C) Strobe lights
- D) Landing

119- Which signal may be initiated by, an intercepted aircraft which is in distress?

- A) Irregular flashing landing lights
- B) Irregular flashing navigation lights
- C) Regular flashing all lights
- D) Irregular flashing all available lights



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120- What SSR code shall be selected by, a hijacked airplane?

- A) 7700
- B) 7600
- C) 7500
- D) 7400

121- Which of the following aircraft on the final stage of landing has the right of way?

- A) Lower airplane
- B) Faster airplane
- C) Glider
- D) Higher airplane

122- When aircraft is running its engine on the movement area, shall display it's?

- A) Landing light
- B) Anti-collision light
- C) Position light
- D) Landing light

123- The first IFR FL above FL290 on a 020° magnetic track is (RVSM airspace):

- A) 330
- B) 310
- C) 300
- D) 320

124- The first westbound FL above FL280 is (RVSM airspace):

- A) 300
- B) 320
- C) 290
- D) 310

125- The aircraft has the right of way shall maintain its

- A) Heading
- B) Speed
- C) level
- D) A and B are correct

126- When communication facility at an aerodrome is not available, arrival report shall be made?

- A) Before landing
- B) After landing
- C) 10 minutes after landing
- D) None



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127- Cargo sling loads by helicopters require air taxiing in order to reduce ground effect turbulence with a height of:

- A) 25 ft
- B) Above 25 ft
- C) Less than 25 ft
- D) None

128- Authorization for an aircraft to proceed under condition specified by air traffic control unit is:

- A) Flight permission
- B) Authorized flight
- C) Controlled flight
- D) ATC clearance

129- What is(are) the uncontrolled airspace(s)?

- A) F
- B) G
- C) D, E
- D) G, F

130- Flight visibility is the visibility forward from:

- A) Cockpit of an aircraft on the ground
- B) Cockpit of an aircraft in flight
- C) RVR
- D) All answers are correct

131- IMC is a meteorological condition.....

- A) Equal to VMC
- B) Less than minima for VMC
- C) More than minima for VMC
- D) B and C are correct

132- Runway- holding position is a designated position intended to.....

- A) Protect runway
- B) Protect an obstacle limitation surface
- C) Protect an ILS/MLS critical/sensitive area
- D) All answers are correct



133- Traffic avoiding advice will be provided by:

- A) Operator
- B) Pilot-in-command
- C) ATS units
- D) Flight dispatcher

134- What is the intent of traffic avoidance advice?

- A) To make large separation
- B) To sequence the traffic
- C) To apply priority
- D) To avoid a collision

135- What is the basis of expressing time in aeronautical operations?

- A) UTC
- B) Local
- C) UTC and local
- D) GMT

136- The accuracy of time in data link communication is expected to be within?

- A) 5 second
- B) 1 second
- C) 30 second
- D) 10 second

137- The obtaining of time check shall be made:

- A) Prior to operating a controlled flight
- B) The other times during flight as may be necessary
- C) A and B are correct
- D) During night flight

138- Which one is the urgency signal code?

- A) SOS
- B) PANPAN
- C) MAYDAY
- D) Parachute flare red light

139- Within which Iranian controlled airspace the VFR, is subject to control?

- A) Airway.
- B) TMA.
- C) CTR.
- D) "A, B and C" but not above FL200.



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140- VFR flight is subject to control, when it is operating within:

- A) Control zone.
- B) Controlled airspace.
- C) Airway.
- D) In class B, C, D.

141- ETA for IFR flight with navigation aids is:

- A) Estimated to arrive over facility intended for departure.
- B) Estimated to arrive over facility intended for instrument approach procedure.
- C) Estimated to arrive over aerodrome.
- D) Estimated to arrive over initial approach fix.

142- An aircraft is operating on or in vicinity of an aerodrome shall make all turns to the:

- A) Left.
- B) Left unless otherwise instructed by ATC.
- C) Right.
- D) Right unless otherwise instructed by ATC.

143- Flight plan submission during flight shall be made at least:

- A) 10 minutes before crossing airway or advisory route.
- B) 10 minutes before entering control area or advisory area.
- C) 10 minutes prior departure.
- D) A and B are correct.

144- When arriving VFR aircraft entering Esfahan CTR and reported visibility is 3000 m, it shall:

- A) Leave CTR.
- B) Return to departure point.
- C) Request SVFR.
- D) A or B is correct.

145- When a controlled flight lost its radio in VMC shall:

- A) Continue VMC to destination.
- B) Continue VMC to land at nearest and suitable aerodrome.
- C) Report its arrival by expeditious means to ATS unit.
- D) B and C are correct.

146- Controlled radio failure aircraft in IMC may be landed within:

- A) 30 minutes after ETA.
- B) 30 minutes after acknowledge EAT.
- C) A and B whichever is later.
- D) A or B whichever is later.



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147- Steady red signal to an aircraft on the ground means:

- A) Cleared to taxi.
- B) Cleared for take-off.
- C) Stop.
- D) Return for landing.

148- When an aircraft wishes to inform that a ship within sight is in fire shall say:

- A) SOS.
- B) MAYDAY.
- C) PANPAN.
- D) XXX.

149- Cruising level is a level maintained during:

- A) Flight time.
- B) Flight duty time.
- C) Significant portion of flight.
- D) Take-off or landing.

150- The elevation at highest obstacle on an airway over mountain area is 7654 ft. If magnetic track of IFR flight on route is 156° , what is the lowest usable flight level based on ICAO criteria?

- A) FL110.
- B) FL120.
- C) FL130.
- D) FL160.

151- An aeroplane is classified as a:

- A) Rotorcraft.
- B) Power driven heavier than aircraft
- C) Airship.
- D) Lighter than air aircraft.

152- The aircraft is:

- A) A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.
- B) Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.
- C) A non-power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.
- D) Any aircraft supported chiefly by its buoyancy in the air.



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153- How is ground visibility defined?

- A) The visibility forward from the flight deck of an aeroplane.
- B) The visibility at an aerodrome as reported by an accredited observer or by automatic systems.
- C) The visibility reported by a pilot currently flying in the vicinity.
- D) The forecast visibility at 3000 ft above the aerodrome.

154- An ETA for an IFR flight with navigation facility is referred to:

- A) IAF
- B) FAF/FAP
- C) Touchdown
- D) None of the above

155- Transition altitude is defined as:

- A) The altitude at or below which the vertical position of aircraft is expressed in reference to mean sea level.
- B) The altitude at or below which the vertical position of aircraft is expressed in reference to standard pressure.
- C) The altitude below which the vertical position of aircraft is expressed in reference to QFE.
- D) The altitude above the aerodrome at which the altimeter sub-scale is reset to 1.013 hPa and vertical position above that is then reported as a FL.

156- Who is charged with the safe conduct of a flight?

- A) The Pilot-in-Command.
- B) The ATC controller whenever the aircraft is flying in controlled airspace.
- C) The aircraft owner.
- D) The airline operator.

157- The pre-flight actions for a flight leaving the local aerodrome area, is to include:

- A) A careful study of the available meteorological reports and forecasts for the route.
- B) A careful study of the available weather charts.
- C) A careful briefing of the crew.
- D) A careful briefing of the passengers.

158- Pre-flight briefing for flights away from the vicinity of an aerodrome and all IFR flights shall include which of the following?

- 1) A meteorological information
 - 2) A consideration of the fuel requirements
 - 3) Alternative actions if the flight cannot be completed as planned
- A) 1
 - B) 1, 2
 - C) 1, 2, 3
 - D) 2, 3



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159- Which of the following flights has the greatest priority to land?

- A) Emergency aircraft.
- B) Military aircraft.
- C) VIP (Head of state) aircraft.
- D) Hospital aircraft.

160- On an IFR flight in airspace class G, you receive a traffic information from ATC, that a VFR flight is going to cross your flight path from right to left. Who has the right-of-way?

- A) ATC decides who has the right-of-way and issues appropriate instruction.
- B) It is the task of ATC to separate VFR flights from IFR flights in airspace class D.
- C) I have the right-of-way as I am on an IFR flight.
- D) The VFR flight has the right-of-way.

161- While flying at night another aircraft reports that you are on his 90 degrees relative bearing. Assuming you are on converging courses, you should see his:

- A) White navigation light.
- B) Red navigation light.
- C) Green and white navigation lights.
- D) Green navigation light.

162- Which of the following actions shall be taken in case a controlled flight deviates from the track?

- A) Adjust the heading of aircraft to regain track as soon as practicable.
- B) Inform the ATC unit immediately.
- C) If VMC, maintain this condition, waiting for the ATC instructions.
- D) Notify ATC of the new track immediately and comply with instructions.

163- Which one of the following lights will indicate the aircraft flight path?

- A) Navigation light
- B) Anti-collision light
- C) Landing light
- D) None

164- Which lights of the preceding aircraft will not be observed by the overtaking aircraft?

- A) Port
- B) Starboard
- C) Rear
- D) A and B are correct



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165- You are outside controlled airspace on a VFR flight above 3000 ft Your distance from the cloud should be:

- A) 1000 ft horizontally and 1000 ft vertically.
- B) 2000 ft and 3 NM horizontally.
- C) Clear of cloud and in sight of the surface.
- D) 1000 ft vertically and 1500 m horizontally.

166- An airplane and a glider are converging, The glider has the airplane on its right. Which aircraft has the right of way?

- A) Both should alter their headings to the right.
- B) The glider.
- C) The airplane.
- D) Both should alter their headings to the left.

167- A VFR flight shall not be flown:

- A) Over the congested areas of cities, towns or settlements or over an open air assembly of persons at a height less than 300 m (1000 ft) above the highest obstacle within a radius of 6000m from the aircraft.
- B) Elsewhere at a height less than 150 ft above the ground or water.
- C) Over the congested areas of cities, towns or settlements or over an open air assembly of persons at a height less than 300 m (1000 ft) above the highest obstacle within a radius of 600m from the aircraft.
- D) Elsewhere at a height less than 500 m above the ground or water.

168- SVFR may be authorized when the ground visibility is not less than:

- A) 1000 m
- B) 1500 m
- C) 1800 m
- D) 5 km

169- What is the definition of level?

- A) Flight level
- B) Altitude
- C) Height
- D) All answers are correct

170- Aerodrome defines an area over:

- A) Land
- B) Water
- C) A and B are correct
- D) A or B is correct



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171- Which signal shall be said by an aircraft when it has a very urgent message regarding another aircraft which is in distress?

- A) Mayday
- B) PANPAN
- C) XXX
- D) SOS

172- Above what flight level IFR flight is compulsory?

- A) 30
- B) 90
- C) 10
- D) 200

173- When flying on an airway on a heading of 255° (M) the correct flight level will be:

- A) Usually odd.
- B) Always even.
- C) Always odd.
- D) Usually even.

174- Which signal may be initiated by, an intercepted aircraft would not be complying from intercepting aircraft?

- A) Irregular flashing landing lights
- B) Irregular flashing navigation lights
- C) Regular flashing all available lights
- D) Irregular flashing all available lights

175- In areas where a vertical separation of 2000 ft has to be applied above FL290, which group of the following flight levels contains eastbound flight levels only?

- A) FL330, FL350.
- B) FL310, FL370.
- C) FL350, FL430.
- D) FL330, FL410.

176- In areas where a vertical separation minimum of 300 m (1000 ft) is applied between FL290 and FL410 inclusive an aircraft on a magnetic track of 350 would be expected to fly at:

- A) FL405
- B) FL370
- C) FL390
- D) FL400



177- Which of the following aircraft on the final stage of landing has the right of way?

- A) Lower airplane
- B) Balloon
- C) Airship
- D) Higher airplane

178- Over high terrain or mountainous areas, where no minimum flight altitude has been established, flights in accordance with IFR shall be flown at a level which is at least:

- A) 1000 ft above the highest obstacle located within 8 km of the estimated position of the aircraft.
- B) 2000 ft above the highest obstacle located within 8 km of the estimated position of the aircraft.
- C) 1000 m above the highest obstacle located within 10 NM of the estimated position of the aircraft.
- D) 2000 m above the highest obstacle located within 10 NM of the estimated position of the aircraft.

179- When flying over city or town and where no minimum flight altitude has been established, flights in accordance with IFR shall be flown at a level which is at least:

- A) 1000 m above the highest obstacle located within 10 NM of the estimated position of the aircraft.
- B) 2000 m above the highest obstacle located within 10 NM of the estimated position of the aircraft.
- C) 1000 ft above the highest obstacle located within 8 km of the estimated position of the aircraft.
- D) 2000 ft above the highest obstacle located within 8 km of the estimated position of the aircraft.

180- When an airplane and a balloon converging, which one has right of way:

- A) Balloon
- B) Airplane
- C) Right side aircraft
- D) Left side aircraft

181- The Vertical Separation Minimum (VSM) between reciprocal flights operating in accordance with IFR, within controlled airspace, above FL290, is:

- A) 2000 ft (600 m).
- B) 1000 ft (300 m).
- C) 500 ft (150 m).
- D) 4000 ft (1200 m).

182- The Vertical Separation Minimum (VSM) for reciprocal flight between flights operating in accordance with IFR, within controlled airspace, below FL290 is:

- A) 2000 ft (600 m).
- B) 1000 ft (300 m).
- C) 500 ft (150 m).
- D) 2500 ft (750 m).



183- You are flying IFR in IMC and you suspect communications failure. Which combination of the following actions would you take?

- 1) Try to contact another aircraft for relay.
- 2) Try to make contact with ATC on another frequency.
- 3) Land at the nearest suitable aerodrome and report to ATC.
- 4) Continue the flight according to the flight plan.

- A) 1, 2, 3
- B) 1, 2, 4
- C) 2, 3, 4
- D) All answers are correct

184- When communication facility at an aerodrome is available but ATSU work operationally part time when arrival report shall be made, if an aircraft will land during a time that ATC does not operate?

- A) Before landing
- B) After landing
- C) 10 minutes after landing
- D) None

185- While flying at night another aircraft reports that you are on his 270 degrees relative bearing. Assuming you are on converging courses, you should see his:

- A) White navigation light.
- B) Red navigation light.
- C) Green and white navigation lights.
- D) Green navigation light.

186- Transition from altitude to flight level, and vice versa is done:

- A) At transition altitude during climb and transition level during descent.
- B) At transition level during climb and transition altitude during descent.
- C) Only at transition altitude.
- D) Only at transition level.

187- "A surveillance technique in which aircraft automatically provide, via data link, data derived from on-board navigation and position-fixing systems, including aircraft identification, four-dimensional position and additional data as appropriate" is the definition for:

- A) Secondary Surveillance Radar Systems (SSR).
- B) Automatic Terminal Surveillance System(ATSS).
- C) Automatic Dependent Surveillance (ADS).
- D) Automatic Enroute Surveillance (AES).



188- Control Area is defined as follows:

- A) A controlled airspace extending upwards from a height of 1000 feet above the Earth.
- B) A controlled airspace extending upwards from a height of 900 feet above the Earth.
- C) A controlled airspace extending upwards from the surface of the Earth to a specified limit.
- D) A controlled airspace extending upwards from a specified limit above the Earth.

189- The expression "Expected Approach Time (EAT)" is defined as follows:

- A) The time at which ATC expects that an arriving aircraft, following a delay, will leave the holding point to complete its approach for a landing.
- B) The time at which the PIC expects that he will be able to leave the holding point to complete the approach for a landing.
- C) The time at which ATC expects that an arriving aircraft, following a delay, will leave its cruising level to complete its approach for a landing.
- D) The time at which ATC expects that an arriving aircraft, following a delay, will leave the FAF/FAP to complete its approach for a landing.

190- Controlled airspace is:

- A) An area within a FIR in which an ATC service is provided.
- B) An area within a FIR/UIR in which an ATC service is provided.
- C) An area within a UIR only in which an ATC service is provided.
- D) An area with a lower limit which is above ground level.

191- The units providing Air Traffic Control Services are:

- A) Area Control Centre - Advisory Centre - Flight Information Centre - Approach Control Office and Tower.
- B) Area Control Centre - Approach Control unit and Aerodrome Control Tower.
- C) Area Control Centre - Flight Information Centre - Approach Control Office - Aerodrome Control Tower and Air Traffic Services reporting office.
- D) Area Control Centre - Flight Information Region - Approach Control Office and Tower.

192- The Approach Control Service is an Air Traffic Control Service:

- A) For IFR flights arriving and departing.
- B) Provided for IFR and VFR flights within a Control Zone.
- C) Provided for IFR traffic within a Control Zone.
- D) Provided for the arriving and departing controlled flights.

193- The responsible unit to control aerodrome traffic is:

- A) TWR
- B) ACC
- C) APP
- D) GND



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194- Approach Control has the following duties:

- A) Provide approach control service for arriving and departing aircraft.
- B) Inform aircraft before departure if the delay is greater than 45 minutes.
- C) Aircraft with first radio contact shall always be number one to land.
- D) During a visual approach, delegate the responsibility for separation to the aircraft.

195- The pilot-in-command of an aircraft:

- 1) Must comply immediately to all instructions received from ATC.
- 2) Is responsible only if he is the "pilot flying".
- 3) May deviate from air regulations for safety reasons.
- 4) May be exempted from air regulations in order to comply to an ATC instruction.
- 5) May ask for the modification of an unsatisfactory clearance.

Which of the following combinations contain all of the correct statements?

- A) 3, 4, 5
- B) 3, 5
- C) 1, 4
- D) 2, 3, 5

196- What is the first action of pilots when two aircraft are approaching head-on, on the ground?

- A) Alter its course to the left
- B) Alter its course to the right
- C) Both aircraft shall stops
- D) Both aircraft alter heading to the right

197- What is the direction of turn when approaching for landing and after taking off?

- A) Left
- B) Right
- C) Depend to pilot decision
- D) Depends to wind direction

198- Which flight plan is used as a reference to continue flight on a specific route when total communication is lost?

- A) Flight plan
- B) Filed flight plan
- C) Current flight plan
- D) RPL



199- Within which class of airspace the VFR flight are not permitted?

- A) Class B
- B) Class A
- C) Class C
- D) Class D

200- An IFR flight shall not operate:

- A) Above MEA
- B) Above FL200
- C) Below minimum flight altitude
- D) Along advisory route

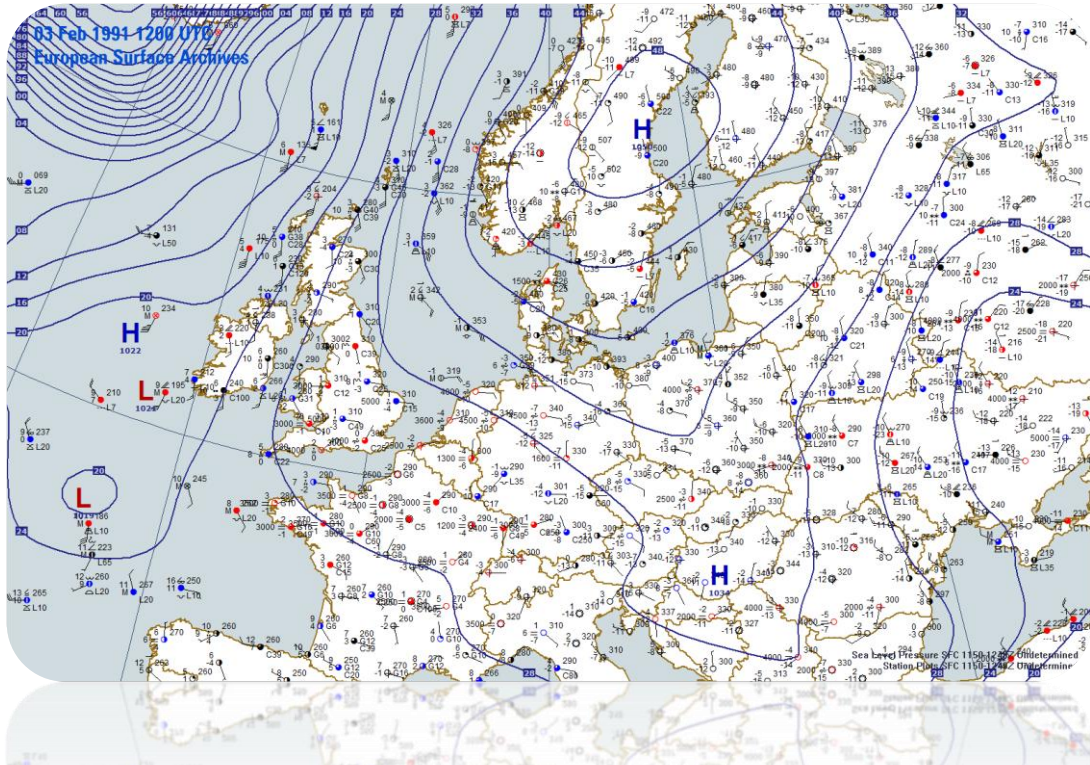


QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	C	26	D	51	D	76	A
2	B	27	C	52	A	77	D
3	B	28	C	53	D	78	D
4	D	29	D	54	D	79	A
5	A	30	A	55	C	80	C
6	C	31	C	56	A	81	A
7	C	32	A	57	C	82	D
8	D	33	D	58	C	83	B
9	D	34	C	59	C	84	C
10	B	35	A	60	D	85	A
11	B	36	A	61	A	86	B
12	D	37	D	62	D	87	B
13	D	38	C	63	C	88	B
14	B	39	A	64	A	89	C
15	D	40	B	65	B	90	B
16	C	41	C	66	A	91	B
17	B	42	C	67	C	92	C
18	B	43	A	68	A	93	C
19	A	44	A	69	D	94	B
20	D	45	D	70	C	95	A
21	C	46	C	71	A	96	D
22	A	47	C	72	C	97	B
23	B	48	A	73	C	98	C
24	C	49	A	74	D	99	A
25	B	50	A	75	A	100	B



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	C	126	A	151	B	176	D
102	B	127	B	152	B	177	A
103	A	128	D	153	B	178	B
104	A	129	D	154	A	179	C
105	C	130	B	155	A	180	A
106	A	131	B	156	A	181	A
107	C	132	D	157	A	182	B
108	D	133	C	158	C	183	B
109	D	134	D	159	A	184	B
110	C	135	A	160	D	185	B
111	C	136	B	161	D	186	A
112	B	137	C	162	A	187	C
113	C	138	B	163	A	188	D
114	B	139	D	164	D	189	A
115	B	140	D	165	D	190	B
116	D	141	D	166	B	191	B
117	B	142	B	167	C	192	D
118	B	143	D	168	B	193	A
119	D	144	C	169	D	194	A
120	C	145	D	170	D	195	B
121	C	146	D	171	B	196	C
122	B	147	C	172	D	197	A
123	B	148	C	173	D	198	C
124	A	149	C	174	C	199	B
125	D	150	A	175	D	200	C

ANNEX 3



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1- When fog is reported the visibility is below:

- A) 0.8 km
- B) 1 km
- C) 1.5 km
- D) 2 km

2- (Refer to figure I-03) Which type of front is indicated?

- A) Warm occlusion front
- B) Cold occlusion front
- C) Stationary front
- D) Warm front

3- Compare meteorological visibility:

- A) Visibility is greater in RA than in DZ.
- B) Visibility is lower in RA than in DZ.
- C) Visibility is equal in RA and in DZ.
- D) Visibility is greater in FG than in DZ.

4- The wind indicator for a weather observation receives the measured value from an anemometer, where is this instrument placed?

- A) On the roof of the weather station.
- B) 1 m above the runway.
- C) Close to station about 2 m above the ground.
- D) On a mast 6-10 m above flat terrain.

5- What is the relationship between meteorological visibility and RVR in homogeneous fog?

- A) The visibility is generally the same as the RVR.
- B) The visibility is generally greater than the RVR.
- C) The visibility is generally less than RVR.
- D) There is no specific relationship between the two.

6- What is the approximate speed of a 40 kts wind, expressed in m/sec?

- A) 25 m/sec.
- B) 15 m/sec.
- C) 20 m/sec.
- D) 30 m/sec.

7- (Refer to figure I-05) Which type of front is indicated in illustration "3"?

- A) Warm front
- B) Cold front
- C) Stationary front
- D) Warm occlusion front



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8- What values are used for the forecasted wind at higher levels?

- A) Direction relative to Grid North and speed in km/h.
- B) Direction relative to Magnetic North and speed in knots.
- C) Direction relative to Magnetic North and speed in km/h.
- D) Direction relative to True North and speed in knots.

9- What is the approximate speed of a 25 kts wind, expressed in kilometers per hour?

- A) 60 km/h
- B) 35 km/h
- C) 55 km/h
- D) 45 km/h

10- (Refer to figure I-07) What is the height and speed of the jet stream over northeast of Caspian Sea blowing from southwest to northeast?

- A) FL380 at 80 knots
- B) FL420 at 70 knots
- C) FL320 at 90 knots
- D) FL420 at 120 knots

11- (Refer to figure I-07) What is the height of tropopause over southeast of Iran?

- A) FL550
- B) FL400
- C) FL200
- D) FL350

12- (Refer to figure I-07) The area enclosed in the scalloped line over northwest of Turkey, indicates:

- A) Well-separated embedded cumulonimbus features from earth surface with tops at 30000 ft.
- B) Isolated embedded cumulonimbus with tops at 30000 ft and bases from surface.
- C) Isolated embedded cumulonimbus with tops at 30000 ft and bases below 25000 ft.
- D) Well-separated embedded cumulonimbus features tops at 30000 ft and bases below 25000 ft.

13- (Refer to figure I-07) What is the intensity and height limits of turbulence in CAT area No.1?

- A) Light turbulence below 25000 ft up to 46000 ft.
- B) Moderate turbulence below 25000 ft up to 46000 ft.
- C) Light turbulence between 25000 ft up to 47000 ft.
- D) Moderate turbulence between 25000 ft up to 47000 ft.



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14- What is the approximate speed of a 90 km/h wind, expressed in knots?

- A) 55 kts
- B) 50 kts
- C) 60 kts
- D) 70 kts

15- A wind of 20 knots corresponds to an approximate speed of:

- A) 10 m/sec
- B) 40 m/sec
- C) 10 km/h
- D) 50 km/h

16- (Refer to figure I-04) Which type of cloud is indicated in illustration "B"?

- A) Cumulus
- B) Altocumulus Standing Lenticular
- C) Altocumulus Castellanos
- D) Cumulonimbus

17- The wind at the surface is 240°/15 kts. What is it most likely to be at 2000 ft?

- A) 210°/30 kts
- B) 270°/30 kts
- C) 280°/15 kts
- D) 210°/15 kts

18- Which of the following causes echoes on meteorological radar screens?

- A) Hail
- B) Water vapor
- C) Fog
- D) Any cloud

19- (Refer to figure I-08) According to wind and temperature aloft forecast at FL340, what is the average wind and temperature over northeast of Iran?

- A) Wind is from 250° true at 67 knots and temperature is -57°C.
- B) Wind is from 270° true at 80 knots and temperature is -50°C.
- C) Wind is from 090° true at 75 knots and temperature is -57°C.
- D) Wind is from 070° true at 85 knots and temperature is -55°C.



20- (Refer to figure I-09) What weather conditions are forecast to exist from 06:00 Z until 08:00 Z on 11th of the month at LTAC?

- A) Temporary conditions are: visibility 500 ft, partial fog and vertical visibility 100 meter.
- B) Temporary conditions are: visibility 500 meter, patches fog and vertical visibility 500 ft.
- C) Temporary conditions are: visibility 500 meter, freezing fog and vertical visibility 100 ft.
- D) Temporary conditions are: visibility 500 ft, shallow fog and vertical visibility 500 ft.

21- (Refer to figure I-09) Between 09:00 Z and 11:00 Z on 11th of the month the wind at OMRK is forecast to be?

- A) Wind variable in direction at 2 knots
- B) Wind variable in direction at 20 knots.
- C) Wind from 005° true at 5 knots with gusts to 15 knots.
- D) Wind from 340° true at 14 knots.

22- (Refer to figure I-09) The base of lowest ceiling at OSDI between 09:00 Z on 11th to 06:00 Z on 12th of the month is forecast to be:

- A) 1000 ft
- B) 3000 ft
- C) 10000 ft
- D) 300 ft

23- (Refer to figure I-09) What is the reported intensity of the precipitation at OBBI from 06:00 Z on 11th to 12:00 Z on 12th of the month?

- A) Moderate rain associated with thunderstorm.
- B) Light rain at vicinity.
- C) Moderate rain showers.
- D) Light rain associated with thunderstorm.

24- What is the definition of Air-report?

- A) A report from an aircraft in flight prepared in conformity with requirement for position and operational and/or meteorological reporting.
- B) A report from an aircraft in flight prepared in conformity with requirement for operational and meteorological reporting.
- C) A report from a pilot in flight prepared in conformity with requirement for position and operational and/or meteorological reporting.
- D) A report from a pilot in flight prepared in conformity with requirement for meteorological reporting only.



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25- When the RVR is reported at most airports?

- A) When the RVR decrease below 2000 m.
- B) When the meteorological visibility falls below 800 m.
- C) When the RVR decreases below 800 m.
- D) When the meteorological visibility falls below 1500 m.

26- An area on a synoptic chart appearing as a "V-shaped" extension of a low pressure area is called a:

- A) Ridge
- B) Col
- C) Trough
- D) Occlusion

27- How the cloud base reported in METAR?

- A) In steps of 100 ft up to 10000 ft and in steps of 1000 ft above 10000 ft.
- B) Insteps of 100 m up to 10000 ft and in steps of 1000 ft above 10000 ft.
- C) Insteps of 10 ft up to 10000 ft and in steps of 1000 ft above 1000 ft.
- D) In steps of 10 m up to 10000 ft and in steps or 1000ft above 10000 ft.

28- What is the meaning of the expression "FEW"?

- A) 3 - 4 oktas of cloud cover.
- B) 1 - 2 oktas of cloud cover.
- C) 5 - 7 oktas of cloud cover.
- D) 0 - 1 oktas of cloud cover.

29- A cup and remote transmitting vane form the transmitting head of electrical and which enables a continuous record of wind direction and speed to be made on a moving chart:

- A) Anemograph, anemometer.
- B) Anemometer, barograph.
- C) Anemometer, anemograph.
- D) Barograph, anemograph.

30- How is a ceiling defined?

- A) Height above ground or water of the highest layer of cloud or obscuring phenomena aloft that covers 4 oktas or more of the sky.
- B) Height above ground or water of the lowest layer of cloud independent on the amount of clouds.
- C) Height above ground or water of the lowest layer of cloud that contributes to the overall overcast.
- D) Height above ground or water of the lowest layer of cloud below 20000 ft covering more than half of the sky.



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31- (Refer to figure I-05) Which type of front is indicated in illustration "2"?

- A) Warm front
- B) Cold front
- C) Stationary front
- D) Cold occlusion front

32- What is the definition of "cloud of operational significance"?

- A) A cloud with the height of cloud base below 5000 ft.
- B) A cloud with the height of cloud base above 5000 ft.
- C) A CB or towering cumulus in any height.
- D) A or C are correct.

33- Discussion with a meteorologist or another qualified person about existing or expecting meteorological condition is known as a:

- A) Weather reporting
- B) Meteorological negotiation
- C) Consultation
- D) Meteorological interviewer

34- What is the definition of observation?

- A) The evaluation of visibility.
- B) The evaluation of cloud base.
- C) The evaluation of wind direction and speed.
- D) The evaluation of one or more meteorological elements.

35- What are the colors of stationary front is shown on a surface chart?

- A) Violet and red
- B) Blue and violet
- C) Red and blue
- D) Red and green

36- (Refer to figure I-04) Which type of cloud is indicated in illustration "C"?

- A) Cumulus
- B) Altocumulus Standing Lenticular
- C) Altocumulus Castellanus
- D) Cumulonimbus

37- What is the color of warm front is shown on a surface chart?

- A) Red
- B) Green
- C) Blue
- D) Violet



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38- Runway visual range assessments shall be representative of:

- A) Touchdown zone RVR for non-precision or CAT I ILS.
- B) Touchdown and mid-point RVR are intended for CAT II ILS.
- C) Touchdown, mid-point and stop end RVR are intended for CAT III ILS.
- D) All answers are correct.

39- What is the reference of light to see and identify object with on unlit background?

- A) Bright light
- B) 1000 spot light
- C) 1000 candles
- D) Dark light

40- (Refer to figure I-05) Which type of front is indicated in illustration "1"?

- A) Warm front
- B) Cold front
- C) Stationary front
- D) Occlusion front

41- "D-VOLMET" provide useful information such as METAR, TAF and SPECI via:

- A) DME frequency
- B) Data link
- C) Data base in FMS
- D) ADS data base

42- Runway visual range can be reported in:

- A) A TAF.
- B) A METAR.
- C) A SIGMET.
- D) Both a TAF and a METAR.

43- When will the surface wind in a METAR record as gust factor?

- A) When gusts are at least 10 knots above the mean wind speed.
- B) When gusts are at least 15 knots above the mean wind speed.
- C) With gusts of at least 25 knots.
- D) With gusts of at least 35 knots.

44- The radiosonde can directly measure:

- A) Atmospheric pressure, air temperature, humidity.
- B) Air temperature, humidity, wind.
- C) Humidity, wind, atmospheric pressure.
- D) Humidity, wind, air temperature.



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45- What does a "Transmissometer" measure?

- A) Meteorological visibility.
- B) Cloud base.
- C) Runway visibility range.
- D) Breaking action.

46- Which type of aircraft shall report special aircraft observation when they are facing with severe mountain wave or thunderstorm with hail?

- A) Small aircraft
- B) Large aircraft
- C) Heavy aircraft
- D) All aircraft

47- Wind shear alerts system should be update and should be canceled as soon as head wind/tail wind change fall below.....

- A) At least every minute – 15 kts
- B) Every minute – 20 kts
- C) At least every ten minute – 20 kts
- D) Every ten minutes – 15 kts

48- The continues VOLMET broadcast is normally on frequency and schedule VOLMET broadcast is normally on frequency shall contain current METAR information.

- A) VHF – VHF
- B) VHF – HF
- C) HF – HF
- D) HF – UHF

49- Which of the following phenomena should be described as precipitation at the time they are observed?

- A) TS
- B) SA
- C) DZ
- D) SQ

50- What does the abbreviation "NOSIG" mean?

- A) No significant changes.
- B) No report received.
- C) No weather related problems.
- D) Not signed by the meteorologist.



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51- A SPECI is:

- A) An aviation routine weather report.
- B) An aviation selected special weather report.
- C) A warning for special weather phenomena.
- D) A forecast for special weather phenomena.

52- What does the code "VV002" in METAR mean?

- A) Vertical visibility is 200 ft.
- B) Vertical visibility is 200 m.
- C) Vertical visibility is 20 ft.
- D) Vertical visibility is 20 m.

53- What does the code "VV///" in METAR mean?

- A) Sky is clear but visibility cannot determine.
- B) Sky is clear and visibility is unlimited.
- C) Sky is obscured and vertical visibility is not available.
- D) Sky is obscured and vertical visibility limits to 100 meter.

54- (Refer to figure I-04) Which type of cloud is indicated in illustration "D"?

- A) Cumulus
- B) Altocumulus Lenticular
- C) Altocumulus Castellanus
- D) Cumulonimbus

55- What does the term METAR signify?

- A) A METAR is a flight forecast, issued by the meteorological station several times daily.
- B) A METAR is a warning of dangerous meteorological conditions within a FIR.
- C) A METAR signifies the actual weather report at an aerodrome and is generally issued in half-hourly or hourly intervals.
- D) A METAR is a landing forecast added to the actual weather report as a brief prognostic report.

56- ATIS information contains:

- A) Operational information and if necessary meteorological information.
- B) Only meteorological information.
- C) Meteorological and operational information.
- D) Only operational information.



57- If during the last 10 minutes preceding the issuance of a METAR the wind velocity deviates more than 10kts from mean value obtained during the same period of time this will be indicated as:

- A) A gust.
- B) A squall.
- C) TEMPO 10 KTS.
- D) Geostrophic wind.

58- Which of the following phenomena should be described as precipitation at the time they are observed?

- A) +SHSN
- B) VA
- C) BR
- D) MIFG

59- What does the code "PO" in METAR mean?

- A) Drizzle
- B) Duststorm
- C) Sandstorm
- D) Dust devil

60- What does the code "FC" in METAR mean?

- A) Rain
- B) Water spout
- C) Tornado
- D) Funnel cloud

61- What does the code "IC" in METAR mean?

- A) Diamond dust
- B) Funnel cloud
- C) Snow grains
- D) Mist

62- Which of the following weather reports is a warning of conditions that could be potentially hazardous to aircraft in flight?

- A) SPECI
- B) ATIS
- C) SIGMET
- D) TAF



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63- (Refer to figure I-01) What does the symbol 16 indicate on a significant weather chart?

- A) Widespread fog
- B) Widespread haze
- C) Widespread mist
- D) Moderate turbulence

64- The wind direction in a METAR is measured relative to:

- A) Compass North.
- B) Magnetic North.
- C) True North.
- D) Grid North.

65- In what hPa range is an upper weather chart for FL340 situated?

- A) 500-400 hPa
- B) 600-500 hPa
- C) 300-200 hPa
- D) 400-300 hPa

66- In the METAR code the abbreviation "VC" indicates:

- A) Volcanic ash.
- B) Present weather within the approach area.
- C) Present weather within a range of 8 km, but not at the airport.
- D) Present weather at the airport.

67- In the METAR code the abbreviation "VCBLDU" means:

- A) An active dust storm.
- B) Blowing dust in the vicinity.
- C) An active sandstorm.
- D) An active dust- and sandstorm.

68- RVR is measured when meteorological visibility falls below:

- A) 500 m
- B) 1500 m
- C) 2000 m
- D) 2500 m

69- (Refer to figure I-01) What does the symbol 17 indicate on a significant weather chart?

- A) Widespread fog
- B) Widespread haze
- C) Widespread mist
- D) Moderate turbulence



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70- On an aerodrome, when a warm front is approaching:

- A) QFE increases and QNH decreases.
- B) QFE and QNH increase.
- C) QFE and QNH decrease.
- D) QFE decreases and QNH increases.

71- In which of these temperature bands is ice most likely to form on the aircraft's surface?

- A) -20°C to -35°C.
- B) +10°C to 0°C.
- C) 0°C to -10°C.
- D) -35°C to -50°C.

72- Which of the following condition is most likely to cause airframe icing?

- A) PE
- B) GR
- C) SHSN
- D) +FZRA

73- The unit of pressure most commonly used in meteorology is:

- A) kg/cm²
- B) lbs/in²
- C) hPa
- D) tons/m²

74- (Refer to figure I-01) What does the symbol 08 indicate on a significant weather chart?

- A) Thunderstorm
- B) Tropical cyclone
- C) Mountain waves
- D) Moderate turbulence

75- The horizontal visibility given for VFR flight planning by a MET Office is:

- A) The average flight visibility for the planned flight.
- B) Meteorological visibility at an average altitude of 500 meters.
- C) Meteorological visibility on ground.
- D) Vertical visibility.

76- (Refer to figure I-06) what does zone "A" depict:

- A) A trough.
- B) A ridge.
- C) The warm sector.
- D) The cold front.



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77- When planning a flight at FL110 which upper wind and temperature chart would be nearest your flight level?

- A) 300 hPa
- B) 850 hPa
- C) 700 hPa
- D) 500 hPa

78- (Refer to figure I-01) What does the symbol 07 indicate on a significant weather chart?

- A) Thunderstorm
- B) Severe turbulence
- C) Squall line
- D) Moderate turbulence

79- If Tehran reports a wind of 320°/20 kts on the METAR, what wind velocity would you expect to encounter at a height of 2000 feet above the ground?

- A) 300°/25 kts
- B) 230°/30 kts
- C) 350°/40 kts
- D) 270°/20 kts

80- While flying at FL120, you notice an OAT of -2°C. At which altitude do you expect the freezing level to be?

- A) FL110
- B) FL130
- C) FL150
- D) FL090

81- When SPECI must be issued?

- A) Temperature increase 2°C or more
- B) Wind direction change 20° or more
- C) Wind speed change 5 knots or more
- D) Change in cloud base

82- (Refer to figure I-01) What does the symbol 06 indicate on a significant weather chart?

- A) Thunderstorm
- B) Tropical cyclone
- C) Squall line
- D) Moderate turbulence



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83- When SPECI must be issued?

- A) Temperature increase 1°C
- B) Wind direction change 60° or more
- C) Wind speed change 5 knots or more
- D) Change in cloud base

84- If you are planning a flight at FL290 which of these upper wind and temperature charts would be nearest your flight levels?

- A) 850 hPa
- B) 500 hPa
- C) 700 hPa
- D) 300 hPa

85- When SPECI must be issued?

- A) Temperature increase 1°C
- B) Wind direction change 20° or more
- C) Wind speed change 10 knots or more
- D) Change in cloud base

86- (Refer to figure I-01) What does the symbol 05 indicate on a significant weather chart?

- A) Thunderstorm
- B) Tropical cyclone
- C) Squall line
- D) Moderate turbulence

87- When SPECI must be issued?

- A) Temperature increase 1°C
- B) Wind direction change 20° or more
- C) Wind speed change 5 knots or more
- D) Significant change in cloud base

88- When SPECI must be issued?

- A) Temperature increase 1°C
- B) Wind direction change 20° or more
- C) Wind speed change 5 knots or more
- D) Significant phenomena such as freezing PPTN or TS



89- What position are connected with contour lines on the weather chart?

- A) Positions with the same air density
- B) Position with the same thickness between two constant pressure levels
- C) Positions with the same height in a chart of constant pressure
- D) Positions with the same wind velocity

90- Wind direction for METAR is the average wind direction that receives within last:

- A) 10 minutes.
- B) 15 minutes.
- C) 30 minutes.
- D) 60 minutes.

91- (Refer to figure I-01) What does the symbol 04 indicate on a significant weather chart?

- A) Thunderstorm
- B) Tropical cyclone
- C) Squall line
- D) Moderate turbulence

92- The VARIABLE wind for wind direction is express when wind direction change within last 10 minutes before observing weather.

- A) 30° or more
- B) 45° or more
- C) 60° or more
- D) 50° or more

93- Which one of the following statement is correct about variable wind direction?

- A) 240V260
- B) 240V270
- C) 240V290
- D) 240V310

94- (Refer to figure I-01) which of the following ICAO charts symbols represents severe icing?

- A) 9
- B) 7
- C) 7
- D) 13



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95- When the wind speed is variable?

- A) Wind speed is less than 5 knots
- B) Wind speed is less than 7 knots
- C) Wind speed is less than 3 knots
- D) Wind speed is less than 10 knots

96- "9999" in METAR is used when.....

- A) Visibility is 10 Km or more
- B) Visibility is 5 Km or more
- C) Visibility is 8 Km or more
- D) Visibility is 15 Km or more

97- What is the specification of CAVOK?

- A) Visibility is 10 Km or more.
- B) No cloud below 5000 ft.
- C) No PPTN.
- D) All answers are correct.

98- (Refer to figure I-01) What does the symbol 03 indicate on a significant weather chart?

- A) Thunderstorm
- B) Tropical cyclone
- C) Squall line
- D) Moderate turbulence

99- What is the specification of CAVOK?

- A) Visibility is 10 Km or more.
- B) No significant cloud to restrict visibility less than 10 Km.
- C) No CB.
- D) All answers are correct.

100- What is the specification of CAVOK?

- A) No CB
- B) No cloud below 5000 ft
- C) No PPTN
- D) All answers are correct

101- "R26L/P1200U" in METAR is shown the value of:

- A) Visibility
- B) RVR
- C) Ceiling
- D) Temperature



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102- Which constant pressure altitude chart is standard at FL300?

- A) 500 hPa
- B) 250 hPa
- C) 700 hPa
- D) 300 hPa

103- (Refer to figure I-01) What does the symbol 02 indicate on a significant weather chart?

- A) Sand
- B) Dust
- C) Widespread haze
- D) Fog

104- What is the "P" in RVR information that use for "R26L/P1200U"?

- A) RVR is more than 1200 meters
- B) RVR is less than 1200 meters
- C) RVR is no change but will be positive during next 10 minutes
- D) RVR is no change but will be positive during next 20 minutes

105- What is the "U" in RVR information that use for "R26L/P1200U"?

- A) Under
- B) Up
- C) No change
- D) Unlimited

106- What is the "N" in RVR information that use for "R26L/P1200N"?

- A) No change
- B) Down
- C) Up
- D) Negative

107- What is the limitation of visibility in Mist?

- A) Visibility more than 1000 m but less than 5000 m
- B) Visibility more than 1000 m but less than 6000 m
- C) Visibility more than 2000 m but less than 5000 m
- D) Visibility more than 2000 m but less than 6000 m

108- (Refer to figure I-01) What does the symbol 12 indicate on a significant weather chart?

- A) Rain
- B) Snow
- C) Shower
- D) Drizzle



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109- If you are planning a flight at FL170 which of these upper wind and temperature charts would be nearest your flight level?

- A) 300 hPa
- B) 500 hPa
- C) 850 hPa
- D) 700 hPa

110- On which of the following aviation weather charts can a pilot most easily find a jet stream?

- A) Upper air chart
- B) wind/temperature chart
- C) Surface chart
- D) Significant weather chart.

111- (Refer to figure I-01) What does the symbols 15 indicate on a significant weather chart?

- A) The center of the tropopause high where the tropopause is at FL400.
- B) The center of a high pressure area at 400 hPa.
- C) The upper limit of significant weather at FL400.
- D) The lower limit of the tropopause.

112- What is the limitation of visibility in DUST or SAND?

- A) Visibility is less than 5000 m
- B) Visibility more than 1000 m but less than 6000 m
- C) Visibility more than 2000 m but less than 5000 m
- D) Visibility is equal or less than 1000 m

113- When does wind shear express in METAR?

- A) It occurs below 1500 ft above aerodrome level
- B) It occurs below 1600 ft above aerodrome level
- C) It occurs below 1700 ft above aerodrome level
- D) It occurs below 1800 ft above aerodrome level

114- (Refer to figure I-01) What does the symbol 13 indicate on a significant weather chart?

- A) Moderate rain
- B) Rain
- C) Heavy rain
- D) Hail

115- Which of the following items are used in TREND?

- A) BECMG
- B) TEMPO
- C) FM
- D) All answers are correct



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116- How can you identify temporary nature change in TREND information?

- A) It follows by word "FROM"
- B) It follows by word "TEMPO"
- C) It follows by word "BECMG"
- D) It follows by word "AT"

117- Terminal aerodrome forecast is an aerodrome weather forecast that cover an area about:

- A) 3 NM
- B) 5 NM
- C) 10 NM
- D) 15 NM

118- (Refer to figure I-01) What does the symbol 14 indicate on a significant weather chart?

- A) Rain
- B) Snow
- C) Shower
- D) Hail

119- What is the validity of TAF when it issues every 3 hours?

- A) Less than 9 hours
- B) Less than 12 hours
- C) Less than 24 hours
- D) Less than 30 hour

120- In a SIGMET what does "EMBD TSGR" stand for?

- A) Severe icing
- B) Severe turbulence
- C) Sand storm
- D) Embedded thunderstorm with hail

121- In METAR what does the code "VCTS –SHRA" stand for?

- A) Severe icing
- B) Thunderstorm in vicinity and light rain showers
- C) Sand storm
- D) Embedded thunderstorm with hail

122- (Refer to figure I-01) What does the symbol 11 indicate on a significant weather chart?

- A) Rain
- B) Snow
- C) Shower
- D) Hail



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123- In METAR what does the code "BR" stand for?

- A) Severe icing
- B) Mist
- C) Sandstorm
- D) Embedded thunderstorm with hail

124- In a forecast what does the code "GR" stand for?

- A) Severe icing
- B) Thunderstorm in vicinity and light rain showers
- C) Hail
- D) Embedded thunderstorm with hail

125- In a forecast what does the code "+TSSNGR" stand for?

- A) Severe icing
- B) Thunderstorm with heavy snow and hail
- C) Hail
- D) Embedded thunderstorm with hail

126- In a forecast what does the code "DZ" stand for?

- A) Severe icing
- B) Thunderstorm in vicinity and light rain showers
- C) Drizzle
- D) Embedded thunderstorm with hail

127- (Refer to figure I-01) What does the symbol 10 indicate on a significant weather chart?

- A) Rain
- B) Snow
- C) Shower
- D) Hail

128- In a forecast what does the code "FU" stand for?

- A) Icing
- B) Thunderstorm in vicinity and light rain showers
- C) Hail
- D) Smoke

129- In a forecast what does the code "PL" stand for?

- A) Severe icing
- B) Thunderstorm in vicinity and light rain showers
- C) Hail
- D) Ice pellets



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130- In a forecast what does the code "SG" stand for?

- A) Severe icing
- B) Snow grains
- C) Hail
- D) Embedded thunderstorm with hail

131- In a forecast what does the code "SQ" stand for?

- A) Severe icing
- B) Thunderstorm in vicinity and light rain showers
- C) Squall
- D) Embedded thunderstorm with hail

132- In a forecast what does the code "DS" stand for?

- A) Severe icing
- B) Duststorm
- C) Hail
- D) Embedded thunderstorm with hail

133- (Refer to figure I-01) What does the symbols 01 indicate on a significant weather chart?

- A) Rain
- B) Snow
- C) Shower
- D) Hail

134- (Refer to figure I-02) Which type of front is indicated?

- A) Warm occlusion front
- B) Cold front
- C) Stationary front
- D) Occlusion front

135- (Refer to figure I-05) Which type of front is indicated in illustration "4"?

- A) Warm front
- B) Cold front
- C) Stationary front
- D) Occlusion front

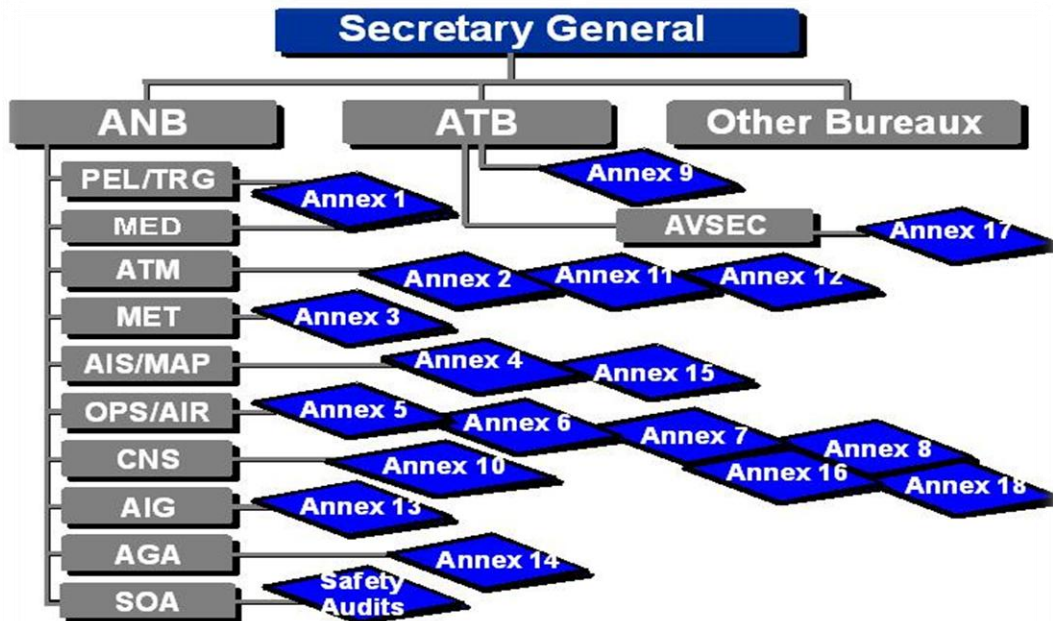


QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	B	26	C	51	B	76	A
2	B	27	A	52	A	77	C
3	A	28	B	53	C	78	B
4	D	29	C	54	D	79	C
5	C	30	D	55	C	80	A
6	C	31	D	56	C	81	A
7	D	32	D	57	A	82	D
8	D	33	C	58	A	83	B
9	D	34	D	59	D	84	D
10	C	35	C	60	D	85	C
11	A	36	C	61	A	86	C
12	C	37	A	62	C	87	D
13	B	38	D	63	C	88	D
14	B	39	C	64	C	89	C
15	A	40	B	65	C	90	A
16	B	41	B	66	C	91	B
17	B	42	B	67	B	92	C
18	A	43	A	68	B	93	D
19	A	44	A	69	A	94	A
20	C	45	C	70	C	95	C
21	D	46	D	71	C	96	A
22	C	47	A	72	D	97	D
23	C	48	B	73	C	98	A
24	A	49	C	74	C	99	D
25	D	50	A	75	C	100	D



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	B	110	D	119	B	128	D
102	D	111	A	120	D	129	D
103	C	112	A	121	B	130	B
104	A	113	B	122	D	131	C
105	B	114	A	123	B	132	B
106	A	115	D	124	C	133	B
107	A	116	B	125	B	134	A
108	D	117	B	126	C	135	A
109	B	118	A	127	C		

ANNEX 6 (I)



➤ Annex 6 (Part I) – 10th edition, AMDT 40-A



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1- The aerodrome operating minima usually expressed in term of:

- A) Visibility and RVR and cloud condition.
- B) Visibility or RVR and cloud condition.
- C) Visibility or RVR and cloud condition and temperature.
- D) Visibility and/or RVR and MDA/H or DA/H and if necessary, cloud conditions.

2- An airplane can be:

- A) Power driven
- B) Lighter than air
- C) Heavier than air
- D) Power driven heavier than air

3- Where the MDH is referenced to the threshold elevation?

- A) If that is more than 7 ft below the AD elevation
- B) If that is less than 7 ft below the AD elevation
- C) If that is more than 7 ft above the AD elevation
- D) If that is less than 7 ft above the AD elevation

4- Crew member is:

- A) A person assigned by state to duty on an aircraft
- B) A licensed member assigned by operator to act as a pilot-in-command
- C) A person assigned by Pilot-in-command
- D) A person assigned by an operator to duty on an aircraft during flight duty period

5- Flight crew member is:

- A) A licensed crew member on an aeroplane
- B) A licensed crew member on an aeroplane during flight time
- C) A licensed crew member on an aircraft during flight duty period
- D) A licensed crew member on an aircraft

6- Cruising level is level maintained during:

- A) Flight time
- B) Flight duty period
- C) Significant portion of flight
- D) Take-off or landing

7- Decision altitude is a specified altitude in:

- A) Precision approach or Approach with vertical guidance (3D)
- B) Precision approach (3D)
- C) Non-precision approach (2D)
- D) Circling approach (2D)



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8- Flight time is:

- A) Block to block time
- B) Chock to chock time
- C) A and B are correct
- D) A or B is correct

9- The procedures for carrying of dangerous goods are contained in:

- A) Annex 1
- B) Annex 6
- C) Annex 18
- D) Annex 17

10- Civil twilight means:

- A) Centre of sun's disc is 6° above horizon
- B) Centre of sun's disc is 15° below horizon
- C) Centre of sun's disc is 6° below horizon
- D) Centre of sun's disc is 15° above horizon

11- MEL shall be approved by:

- A) State of manufacture
- B) State of operator
- C) Operator
- D) State of design

12- An instrument approach and landing which utilize lateral guidance is known as:

- A) Precision APCH (3D)
- B) Non-precision APCH (2D)
- C) Circling APCH (2D)
- D) B and C are correct

13- Duties of cabin crew member assigned by:

- A) Pilot-in-command
- B) Operator
- C) State of operator
- D) A or B is correct

14- MMEL shall be approved by:

- A) State of design
- B) Operator
- C) State of operator
- D) State of manufacture



15- How many destination alternate aerodromes shall be selected when meteorological information is not available at destination aerodrome?

- A) One
- B) Two
- C) At least one
- D) At least two

16- An alternate aerodrome at which an aircraft can land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure is known as:

- A) En-route alternate aerodrome
- B) Destination alternate aerodrome
- C) Take-off alternate aerodrome
- D) ETOPS alternate aerodrome

17- The aerodrome from which a flight departs may also be used as:

- A) En-route alternate aerodrome
- B) Destination alternate aerodrome
- C) Takeoff alternate aerodrome
- D) A or B is correct

18- A list which identifies any external parts of an aircraft type which may be missing at the commencement of a flight is known as:

- A) MEL
- B) CDL
- C) MMEL
- D) Checklist

19- The acronym of an automatically activated ELT which is rigidly attached to an aircraft but readily removable from the aircraft is called:

- A) ELT (AP)
- B) ELT (AF)
- C) ELT (AD)
- D) ELT (S)

20- Which of ICAO Annexes shall be applicable to the operation of airplanes by operators authorized to conduct international commercial air transport operations?

- A) Annex 6 Part III
- B) Annex 6 Part II
- C) Annex 6 Part I
- D) Annex 8



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21- A manual associated with the certification of airworthiness is:

- A) Operation manual
- B) Flight manual
- C) Air traffic manual
- D) A and B are correct

22- MDA/H is specified altitude or height in:

- A) Circling approach procedure (2D)
- B) Precision approach procedure (3D)
- C) Non-precision approach procedures (2D)
- D) A or C is correct

23- A person who engage in the control and supervision of flight operations, who supports, briefs and/or assists the pilot-in-command in the safe conduct of the flight is called:

- A) Pilot-in-command
- B) ATC
- C) Flight operations officer/flight dispatcher
- D) Co-pilot

24- The operational control is responsibility of:

- A) Pilot-in-command
- B) Operator
- C) State
- D) All answers are correct

25- If the incident occurs and necessitates to submit a report by pilot-in-command, it shall be made normally within:

- A) 10 days
- B) 90 days
- C) 1 month
- D) 3 months

26- Flight safety analysis program shall be established as part of safety management system by:

- A) State of operator
- B) Operator
- C) State
- D) State of registry



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27- The method of control and operational supervision shall be approved:

- A) State of operator
- B) Operator
- C) State of registry
- D) State

28- If an emergency situation which endangers the safety of the airplane necessitates the taking of action which involves a violation of local regulations or procedures, when the pilot shall notify the appropriate local authority?

- A) Within 10 days
- B) Within 5 days
- C) At termination of flight
- D) Without delay

29- A list which provides for the operation of aircraft, subject to specified conditions, with particular equipment inoperative, established for the aircraft type is known as:

- A) MMEL
- B) CDL
- C) MEL
- D) Checklist

30- CDL shall be approved by:

- A) State of manufacture
- B) Operator
- C) State of operator
- D) State of design

31- DH is a specified height is referenced to:

- A) Aerodrome elevation
- B) Threshold elevation in the precision
- C) Runway elevation
- D) Threshold elevation in the non-precision

32- What is the lowest height in precision approach at which missed approach must be initiated?

- A) MDH
- B) DH
- C) OCA
- D) DA



33- What is the lowest height as aerodrome operating minima for VOR/DME approach?

- A) MDH
- B) OCH
- C) DH
- D) TCH

34- Flight time is commenced from the moment an aircraft:

- A) First moves with own power
- B) First moves with push back system
- C) Moves with own power for the purpose of taking off
- D) First moves for the purpose of taking off

35- An aircraft means any machine:

- A) Power driven
- B) Heavier than air
- C) Lighter than air
- D) A, B and C are correct

36- The Maximum certificated take-off mass of large airplane is:

- A) Over 27000 kg
- B) Over 5700 kg
- C) Over 7000 kg
- D) Over 13600 kg

37- What is the name of manual which contain limitation within which the aircraft is to be considered airworthy?

- A) Technical manual
- B) Operations manual
- C) Flight manual
- D) Airworthiness manual

38- How many times in a year, pilot proficiency check shall take place?

- A) One
- B) Two (twice)
- C) Three
- D) Four



39- Which of the following DH and RVR are determined as minima for the precision approach CAT I operations?

- A) 200 ft / 550 m
- B) 100 ft / 300 m
- C) No DH / 175 m
- D) No DH / 50 m

40- An instrument approach and landing using precision lateral and vertical guidance is known as:

- A) Precision APCH (3D)
- B) Non-precision APCH (2D)
- C) Circling APCH (2D)
- D) APCH with vertical guidance (APV) (3D)

41- A containment value expressed as a distance in nautical miles from the intended position within which flights would be for at least 95 per cent of the total flying time is known as:

- A) RNAV
- B) RNP
- C) RVSM
- D) RNP type

42- Flight crew members shall demonstrate the ability to speak and understand the language used for radiotelephony communications as specified in:

- A) Annex 6
- B) Annex 1
- C) Annex 18
- D) Annex 17

43- The Maximum certificated take-off mass of small airplane is:

- A) 27000 kg or less
- B) 7000 kg or less
- C) 5700 kg or less
- D) 13600 kg or less

44- Who is responsible to implement a safety management system?

- A) State of the operator
- B) Operator
- C) State
- D) ICAO



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45- An operators establish and maintain a flight data analysis program as part of its safety management system for an airplane of a maximum certificated take-off mass:

- A) 27000 kg or less
- B) In excess of 27000 kg
- C) 5700 kg or more
- D) 13600 kg or less

46- Which of ICAO Annex shall be applicable to international general aviation operations with airplanes?

- A) Annex 6 Part II
- B) Annex 6 Part III
- C) Annex 6 Part I
- D) Annex 8

47- Which of the following terms shall be used to indicate aerodrome operating minima for Circling approach?

- A) MDA/H + Visibility/RVR
- B) DA/H + Visibility/RVR
- C) A + cloud condition
- D) B + cloud condition

48- Who is responsible to establish flight safety analysis program?

- A) State of operator
- B) Operator
- C) State
- D) State of registry

49- Which of ICAO Annex shall be applicable to international commercial air transport operations or international general aviation operations with helicopters?

- A) Annex 6 Part III
- B) Annex 6 Part II
- C) Annex 6 Part I
- D) Annex 8

50- A manual which contain procedures, instructions and guidance for use by operational personnel in the execution of their duties is called:

- A) Maintenance manual
- B) Operations manual
- C) Flight manual
- D) MEL



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51- Pilot in command is responsible for the:

- A) Operation and safety of aircraft during flight time
- B) Operation and control of aircraft during flight time
- C) Operation and control and safety of aircraft
- D) All answers are correct

52- Who is responsible to approve and sign the operational flight plan?

- A) ATS
- B) Operator
- C) Pilot-in-command
- D) State

53- Operational manual shall be provided by:

- A) Pilot-in-command
- B) State
- C) State of operator
- D) All answers are incorrect

54- An airplane shall not be operated under the IFR or at night by a single pilot unless approved by the:

- A) State of operator
- B) Operator
- C) State
- D) State of registry

55- When an en-route aeroplane encounter with one power unit inoperative, shall be able:

- A) To fly IFR
- B) To fly not below cruising level
- C) To fly not below minimum flight altitude
- D) To fly to alternate

56- Each flight crew member required to be at their station during:

- A) En-route
- B) Takeoff and Landing
- C) Cruise climb
- D) Only landing

57- Who is responsible for the safety of all passengers when the doors are closed?

- A) Cabin crew
- B) Pilot-in-command
- C) Operator
- D) Passenger himself



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58- Fuel and oil record shall be retained by the operator for a period of:

- A) 25 days
- B) 30 days
- C) 90 days
- D) 3 months

59- The operator shall record the total cosmic radiation dose received by each crew member above 15000 m (49000 ft) over a period of:

- A) 12 month
- B) 12 month flight time
- C) 12 consecutive months
- D) 12 consecutive days

60- The amount of destination alternate fuel for turbine engine airplane where the aerodrome of intended landing is an isolated aerodrome is:

- A) Departure to Destination + 2 hrs fuel
- B) Departure to Destination + 2 hrs normal consumption
- C) Departure to Destination + 2 hrs Increased cruise consumption
- D) Departure to Destination + 2 hrs normal cruise consumption

61- How many destination alternate aerodromes shall be specified in flight plan for IFR flights?

- A) One
- B) Two
- C) At least one
- D) None

62- What is the meaning of trip fuel?

- A) Fuel required to fly from take-off, until landing at the alternate aerodrome
- B) Fuel required to fly from taxi, until landing at the destination aerodrome
- C) Fuel required to fly from take-off, until landing at the destination aerodrome
- D) Fuel required to fly from taxi, until holding at 1500 ft above destination aerodrome

63- The method of specifying of minimum flight altitude shall be included in:

- A) Operations manual
- B) Aircraft operating manual
- C) Training manual
- D) Flight manual



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64- En-route alternate aerodromes shall be selected and specified in:

- A) ATS flight plan
- B) Operational flight plan
- C) A or B is correct
- D) A and B are correct

65- Threshold crossing height (TCH) shall be established for:

- A) Precision approach (3D)
- B) Approach with vertical guidance (APV)(3D)
- C) Non precision approach (2D)
- D) A and B are correct

66- Flight preparation form shall be completed and certified by:

- A) Operator
- B) Pilot-in-command
- C) Maintenance
- D) State of operator

67- The amount of fuel required for reciprocating engine (piston) airplanes when no destination alternate aerodrome is:

- A) Departure to Destination + 30 min
- B) Departure to Destination + 45 pounds
- C) Departure to Destination + 45 min
- D) Departure to Destination + 60 min

68- The level above destination or alternate aerodrome which shall be considered in fuel computing for turbine engine airplanes is:

- A) 4500 ft
- B) 1500 ft
- C) 3000 ft
- D) 2000 ft

69- When an En-route airplane (3 or more engines) encounter with any two engines becoming inoperative, shall be able to fly to:

- A) Nearest aerodrome
- B) En-route alternate
- C) Destination
- D) Destination alternante



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70- A take-off alternate aerodrome shall be selected and specified in:

- A) Operational flight plan
- B) ATS flight plan
- C) Filed flight plan
- D) Repetitive flight plan

71- Category II and Category III instrument approach and landing operations shall not be authorized unless information is provided.

- A) DH
- B) RVR
- C) Visibility
- D) Radar

72- For which of the following pressure, the non-pressurized airplane, shall have sufficient breathing oxygen for all crew and 10 percent of passengers:

- A) 376 hPa
- B) 609 hPa
- C) 623 hPa
- D) Less than 620 hPa

73- When an airplane shall have quick donning type of oxygen mask?

- A) Operating at an altitude with pressure of less than 700 hPa
- B) Operating at an altitude with pressure of less than 673 hPa
- C) Operating at an altitude with pressure of less than 620 hPa
- D) Operating at an altitude with pressure of less than 376 hPa

74- When shall be an airplane equipped with an indicator to measure total cosmic radiations?

- A) Operating above 15000 ft
- B) Operating above 25000 ft
- C) Operating above 49000 ft
- D) Operating above 29000 ft

75- Who is responsible to establish regulations for the purpose of managing fatigue?

- A) State
- B) Operator
- C) Flight standard
- D) State of operator



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76- Who is responsible to provide operations manual?

- A) State of operator
- B) Operator
- C) State
- D) ICAO

77- Who is responsible to approve and publish an instrument approach procedure?

- A) Operator
- B) State of operator
- C) ATC
- D) State

78- When the pilot-in-command shall report any suspected defects to the operator?

- A) Without delay
- B) At the termination of flight
- C) Normally within 10 days
- D) Any time

79- Who is requiring that the aerodrome operating minima be established?

- A) State of operator
- B) State
- C) ICAO
- D) Operator

80- Within which flight plan destination alternate must be informed?

- A) Operational flight plan
- B) ATS flight plan
- C) A and B are correct
- D) A or B is correct

81- The aerodrome operating minima shall be established by?

- A) State
- B) ICAO
- C) State of operator
- D) Operator

82- RNP 4 means:

- A) 4 NM total performance with on-board performance monitoring and alerting.
- B) 4 NM lateral performance with on-board performance monitoring and alerting.
- C) 4 NM lateral and horizontal performance with on-board performance monitoring.
- D) 4 NM horizontal performances with on-board performance monitoring and alerting.



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83- Air operator certificate shall be issued by:

- A) State of operator
- B) Operator
- C) State
- D) State of registry

84- Completed flight preparation form shall be kept by operator for:

- A) 3 months
- B) 6 month
- C) 90 days
- D) 12 month

85- When the descend shall not be continued beyond aerodrome operating minima (MDA/H or DA/H)?

- A) At night
- B) In the case of radio failure
- C) In emergency
- D) In any case

86- Who is responsible for operation and safety of airplane and all persons on board during flight time?

- A) Co-pilot
- B) Operator
- C) Pilot-in-command
- D) State

87- Which flight shall carry the amount of breathing oxygen sufficient for all crew members and 10 percent of passengers?

- A) When pressure compartment is 700
- B) When pressure compartment is 620
- C) When pressure compartment is 376
- D) Between A and B

88- Which manual contain the operating limitation?

- A) Flight manual
- B) Operational manual
- C) Annex 6
- D) Annex 1



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89- The 727 aeroplane shall be able in the event of 2 engine failure to continue to fly to?

- A) Destination
- B) En-route alternate
- C) Any airport
- D) Suitable airport

90- Within which manual, the method of determination of minimum flight altitude shall be included?

- A) Annex 2
- B) Annex 6
- C) Operations manual
- D) DOC 4444

91- Who is responsible for notifying the nearest appropriate authority by the quickest available means of any accident involving the aeroplane, resulting in serious injury or death of any person or substantial damage to the aeroplane or property.

- A) State
- B) Pilot-in-command
- C) Air traffic control
- D) Operator

92- Who is responsible to approve the flight time limitation?

- A) Operator
- B) State of operator
- C) ATC
- D) ICAO

93- Which manual shall include the checklist?

- A) Annex 6
- B) Flight manual
- C) Aircraft operating manual
- D) B and C are correct

94- For which type of airplane, the 15% of fuel shall be considered?

- A) Reciprocating engine (Piston)
- B) Turbine engine
- C) A and B are correct
- D) Jet engine



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95- If, after entering the final approach segment or after descending below 300 m (1000 ft) above the aerodrome, the reported visibility or controlling RVR falls below the specified minimum, the approach may be continued to:

- A) DH
- B) MDH
- C) OCH
- D) A or B is correct

96- Safety harness includes:

- A) Shoulder straps
- B) Seat belt
- C) A and B are correct
- D) A or B is correct

97- Which of the following manual contain procedures that shall be initiated by flight operations officer / flight dispatcher in the event of an emergency?

- A) Technical manual
- B) Operations manual
- C) Flight manual
- D) Aircraft operating manual

98- An operator shall ensure that any inadequacy of facilities observed in the course of operations is reported to:

- A) State of operator, without delay
- B) State, at the termination of flight
- C) Authority responsible for them, without delay
- D) State of operator, within 10 days

99- The method for establishing the minimum flight altitudes should be approved by:

- A) State of operator
- B) Operator
- C) Air traffic control
- D) State of registry

100- What is the amount of contingency fuel?

- A) 5% of planned trip fuel
- B) 10% trip fuel
- C) 5% of total fuel
- D) 5 minutes of holding fuel



101- Where RVR is used, the controlling RVR is the:

- A) Stop-end RVR
- B) Mid-point RVR
- C) Touchdown RVR
- D) All answers are correct

102- For instrument approach and landing operations, aerodrome operating minima below visibility should not be authorized unless RVR information is provided.

- A) 1200 meter
- B) 300 meter
- C) 550 meter
- D) 800 meter

103- An instrument approach shall not be continued below above the aerodrome elevation or into the final approach segment unless the reported visibility or controlling RVR is above the specified minimum.

- A) 300 m (1000 ft)
- B) Glide slope
- C) 600 m (2000 ft)
- D) 450 m (1500 ft)

104- An operator shall not engage in commercial air transport operations unless in possession of a valid air operator certificate issued by:

- A) State of operator
- B) State of manufacture
- C) State
- D) State of registry

105- The take-off alternate aerodrome shall be located for aeroplanes having two power-units within a distance from the aerodrome of departure:

- A) Not more than a distance equivalent to a flight time of one hour
- B) Not less than a distance equivalent to a flight time of one hour at the single-engine cruise speed
- C) Not more than a distance equivalent to a flight time of one hour at the single-engine cruise speed
- D) Not less than a distance equivalent to a flight time of one hour

106- The flight manual shall be updated by implementing changes made mandatory by:

- A) State of operator
- B) Operator
- C) State
- D) State of registry



107- Who is responsible to establish regulation for limiting flight time and flight duty period for flight crew member?

- A) State of operator
- B) Operator
- C) State
- D) State of registry

108- All flight crew members shall communicate through boom or throat microphones:

- A) Above the transition level/altitude
- B) Below the transition level/altitude
- C) Below the transition altitude
- D) Above the transition level

109- Flight data recorder shall be capable to retain information recorded during its last:

- A) 25 hrs of flight time
- B) 25 hrs of its operation
- C) 25 hrs of last inspection
- D) 25 hrs of engine run

110- Cockpit voice recorder shall be capable of retaining the information recorded during at least the last:

- A) 30 days
- B) 30 hours
- C) 30 min
- D) any time

111- After 1 January 2016, cockpit voice recorder shall be capable of retaining the information recorded during at least the last:

- A) 30 days
- B) 25 hours
- C) 30 min
- D) 2 hours

112- A land plane shall carry life jacket when flying:

- A) More than 50 NM away from shore
- B) More than 50 SM away from shore
- C) More than 50 min away from shore
- D) More than 50 KM away from shore



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113- An aeroplane shall be fitted with emergency power supply when it has:

- A) Max mass of 15000 kg
- B) Max mass of over 15000 kg
- C) Max mass of over 5700 kg
- D) Max mass of 5700 kg

114- The operator shall not assign a pilot to act as pilot-in-command or co-pilot except within preceding 90 days, the pilot has made:

- A) At least 3 landing
- B) At least 3 Take-off
- C) A and B are correct
- D) A or B is correct

115- Flight recorder type II A shall be capable to retain information during at least the last:

- A) 30 minutes
- B) 25 hours
- C) 25 minutes
- D) 30 hours

116- How many fire extinguishers shall be located on pilot's compartment?

- A) One
- B) Two
- C) At least one
- D) At least two

117- For flights in RVSM airspace, the threshold for the alert to the flight crew when a deviation occurs from the selected flight level:

- A) shall exceed ± 300 ft
- B) shall not exceed ± 300 ft
- C) Shall not exceed ± 200 ft
- D) shall not exceed ± 100 ft

118- All aeroplanes when operated as VFR flights shall be equipped with:

- A) 2 sensitive pressure altimeter
- B) At least 2 sensitive pressure altimeter
- C) 1 sensitive pressure altimeter
- D) At least 1 sensitive pressure altimeter



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119- The instruments and equipment, including their installation in aeroplanes shall be approved or accepted by:

- A) State of operator
- B) Operator
- C) State
- D) State of registry

120- Completed journey log book should be retained for:

- A) 90 days
- B) Three months
- C) At least one year
- D) The last six months of operations

121- The FDR container is to be painted in:

- A) Orange or yellow
- B) Red
- C) Black
- D) Yellow

122- All aeroplane on all flights shall carry:

- A) Operational manual
- B) Flight manual
- C) Current suitable chart
- D) All answers are correct

123- The records of appropriate details of modifications and repairs of the aeroplane shall be kept for a minimum period of:

- A) 90 days
- B) 12 months
- C) 2 months
- D) 4 months

124- Pilot proficiency check shall be made:

- A) Twice within any month
- B) Twice within any period of one year
- C) Twice within any season
- D) One time per year



125- Which documents shall include information enable the pilot-in-command to determine the flight may be continued or not?

- A) Aeroplane flight manual
- B) ATC manual
- C) Maintenance manual
- D) Operations manual

126- What action shall be taken by a pilot-in-command following an act on unlawful interference?

- A) Submit a report to state of the operator
- B) Submit a report to appropriate authority
- C) Submit a report to designated local authority
- D) Submit a report to security authority

127- Which maintenance can release an aeroplane for flight?

- A) Qualified by operator
- B) Qualified by annex 6
- C) Qualified by annex 1
- D) Qualified by state of operator

128- Long range over water means to fly over water for more than 120 min, at cruising speed or

- A) 400 NM, whichever is lesser
- B) 400 KM, whichever is higher
- C) 400 NM, whichever is higher
- D) 400 KM, whichever is lesser

129- What is the minimum capability of emergency power supply to illuminate the artificial horizon?

- A) 45 min
- B) 30 min
- C) 60 min
- D) 120 min

130- Who is responsible to establish a training program to minimize unlawful interferences?

- A) State of operator
- B) State
- C) ICAO
- D) Operator



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131- What shall be the certificated take-off mass of an aeroplane, equipped with type II FDR?

- A) Over 5700 kg up to and including 27000 kg
- B) Over 27000 kg
- C) Over 5700 kg up to 27000 kg
- D) A and B are correct

132- The flight manual contains the information specified in:

- A) Annex 18
- B) Annex 16
- C) Annex 8
- D) Annex 6

133- Which one will warn the flight crew, the unsafe terrain clearance while not in landing configuration?

- A) RADAR
- B) ACAS
- C) GPS
- D) GPWS

134- According to which ICAO annexes the flight crew shall be licensed?

- A) Annex 6
- B) Annex 11
- C) Annex 2
- D) Annex 1

135- According to which ICAO annexes the flight operations officer/flight dispatcher shall be licensed or qualified?

- A) Annex 6
- B) Annex 1
- C) Annex 2
- D) Annex 11

136- Which type of operation should be equipped with weather radar?

- A) Pressurized aeroplane
- B) Carrying passengers
- C) A and B are correct
- D) A or B is correct



137- How long a pilot-in-command is qualified to be utilized again on a route from its last flight?

- A) 90 days
- B) 12 months
- C) 3 months
- D) 6 months

138- An operator shall not assign a pilot to act as a cruise relief pilot unless:

- A) Within the preceding 90 days that pilot has made three take-off and landing
- B) Within the preceding 12 months, that pilot has made at least a one-way qualification flight
- C) Within the preceding 90 days that pilot has operated as a pilot-in-command, co-pilot or cruise relief pilot
- D) Within the preceding 12 months, that pilot has operated as a pilot-in-command, co-pilot or cruise relief pilot

139- When a flight recorder shall be switched off?

- A) En-route
- B) Take off
- C) Landing
- D) Never

140- The flight compartment door shall be closed and locked from the time of:

- A) The external doors are closed
- B) Aeroplane commenced his taxi
- C) Embarkation
- D) Departure

141- When a pressurized aeroplane shall be equipped with a device to provide positive warning to the pilot-in-command in the case of loss of pressurization?

- A) Intends to fly at level with less than 620 hPa
- B) Intends to fly at level with less than 376 hPa
- C) Intends to fly at level with less than 600 hPa
- D) Intends to fly at level with less than 720 hPa

142- The pilot-in-command shall declare MINIMUM FUEL when:

- A) Any change to the existing clearance to that aerodrome may result in landing with less than the planned final reserve fuel.
- B) This is an emergency situation exist having committed to land at a specific aerodrome.
- C) Calculated usable fuel available is less than the planned final reserve fuel.
- D) All answers are correct



143- How many ELT shall have an aeroplanes authorized to carry more than 19 passengers after 1 July 2008?

- A) At least two ELTs, one of which shall be automatic
- B) Two ELTs of any type
- C) At least one automatic ELT
- D) At least two

144- How long is EDTO/ETOPS threshold time?

- A) 90 min
- B) 60 min
- C) 45 min
- D) 30 min

145- How many ELT shall have an aeroplanes authorized to carry more than 19 passengers?

- A) At least two ELTs, one of which shall be automatic
- B) Two ELTs of any type
- C) At least one automatic ELT
- D) At least two

146- The pilot-in-command shall declare MAYDAY FUEL when:

- A) Any change to the existing clearance to that aerodrome may result in landing with less than the planned final reserve fuel.
- B) This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.
- C) Calculated usable fuel available is less than the planned final reserve fuel.
- D) All answers are correct

147- The standard of noise certification is contained in:

- A) Annex 18
- B) Annex 16 Vol I
- C) Annex 16 Vol II
- D) Annex 8

148- How many altimeter setting shall be equipped an aeroplane intended to operate as a controlled VFR flight?

- A) One
- B) Two
- C) At least One
- D) A or B is correct



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149- Who is responsible for the submission of journey log book?

- A) Operator
- B) Pilot-in-command
- C) State
- D) State of operator

150- Which document shall contain the MEL?

- A) Aircraft operating manual
- B) Route manual
- C) Operations manual
- D) Flight manual

151- Which document specified the number and composition of flight crew member?

- A) Aeroplane flight manual
- B) Annex 6
- C) Operations manual
- D) Aircraft operating manual

152- How many ELT shall have an aeroplanes authorized to carry 19 passengers or less?

- A) One ELT
- B) Two ELTs of any type
- C) At least one automatic ELT
- D) At least one ELT of any type

153- After 1 January 2005 all aeroplanes of a maximum certificated take-off mass of over 5700 kg shall be equipped with:

- A) Type I FDR
- B) Type II FDR
- C) Type IA FDR
- D) Type IIA FDR

154- Flight data recorder type IA, I and II shall be capable to retain information during at least the last:

- A) 30 hours
- B) 25 hours
- C) 30 minutes
- D) 25 minutes



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155- What shall be the type of FDR with maximum mass of 27000 kg?

- A) Type II
- B) Type I
- C) Type IIA
- D) All answers are correct

156- For flights in defined portions of airspace where minimum navigation performance specifications (MNPS) are prescribed, an aeroplane has been authorized by thefor MNPS operations.

- A) State of operator
- B) Operator
- C) State
- D) State of registry

157- The color of the markings of break-in points shall be:

- A) Red
- B) Yellow
- C) Black
- D) A or B is correct

158- Single engine aeroplanes shall only be operated in conditions of, and over such routes and diversions there from, that permit a safe forced landing to be executed in the event of engine failure:

- A) VMC
- B) IMC
- C) Weather and light
- D) Daylight

159- Information for pilots and flight operations personnel on flight procedure parameters and operational procedures are contained in:

- A) Annex 6
- B) Annex 8
- C) PANS-ATM
- D) PANS-OPS Volume I

160- A seat or berth for each person over an age to be determined by:

- A) State of operator
- B) Operator
- C) State
- D) State of registry



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161- Ground and flight training program shall be approved by:

- A) State of operator
- B) Operator
- C) State
- D) State of registry

162- The operator shall include in the operations manual:

- A) MMEL
- B) CDL
- C) MEL
- D) B and C are correct

163- All turbine engine aircraft with maximum certificated take-off mass in excess ofor authorized to carry more than, for which the individual certificate of airworthiness is first issued on or after 1 Jan 2004, shall be equipped with GPWS which has a forward looking terrain avoidance function.

- A) 5700 kg – 9 passengers
- B) 27000 kg – 30 passengers
- C) 15000 kg – 15 passengers
- D) 15000 kg – 9 passengers

164- An operator shall not employ electronic navigation data products for application in the air and on the ground unless approved by:

- A) Operator
- B) State of operator
- C) State
- D) State of registry

165- For flights in defined portions of airspace where a RVSM is applied, an aeroplane shall be authorized by thefor operation in the airspace concerned.

- A) State of operator
- B) Operator
- C) State
- D) State of registry

166- VFR flights which are operated as controlled flights shall be equipped with:

- A) VFR instruments
- B) IFR instruments
- C) GPWS
- D) ELT



167- For flights in defined portions of airspace or on routes where an RCP type has been prescribed, an aeroplane shall be authorized by the for operations in such airspace.

- A) State of Operator
- B) Operator
- C) State
- D) State of Registry

168- The total number of oxygen dispensing units on an aeroplane shall:

- A) Exceed the number of passenger and cabin crew seats by at least 5 percent
- B) Equal to the number of passenger and cabin crew seats
- C) Exceed the number of passenger and cabin crew seats by at least 10 percent
- D) Exceed the number of passenger seats

169- Navigation for flights under the visual flight rules is accomplished by:

- A) Instrument
- B) Visual reference to landmarks
- C) VMC
- D) IMC

170- Flight recorder comprises:

- A) Cockpit voice recorder
- B) Flight data recorder
- C) A or B is correct
- D) A and B are correct

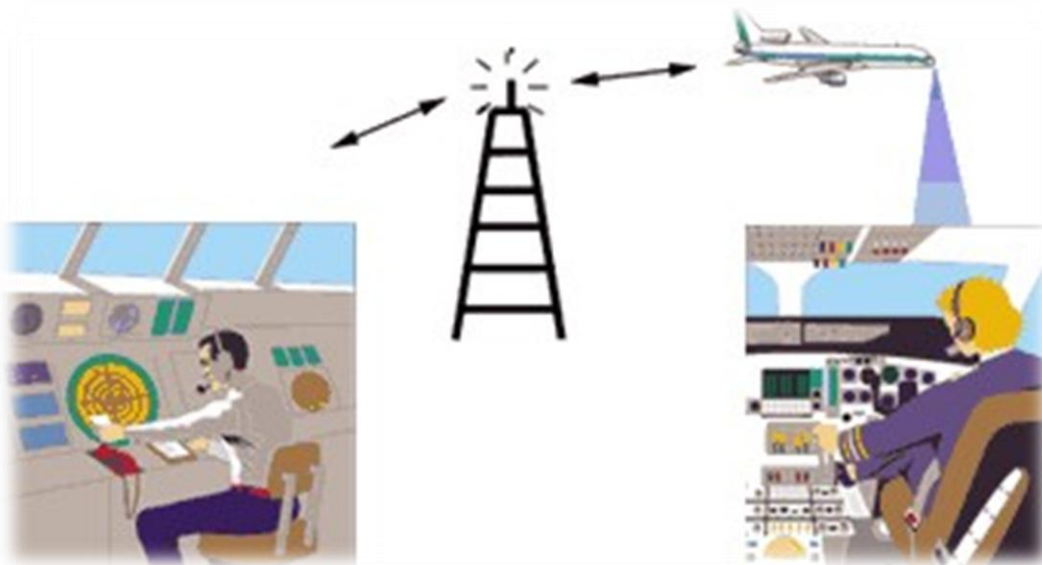


QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	D	26	B	51	A	76	B
2	D	27	A	52	C	77	D
3	A	28	D	53	D	78	B
4	D	29	C	54	A	79	A
5	C	30	D	55	C	80	C
6	C	31	B	56	B	81	D
7	A	32	B	57	B	82	B
8	D	33	A	58	D	83	A
9	C	34	D	59	C	84	A
10	C	35	D	60	D	85	D
11	B	36	B	61	C	86	C
12	D	37	C	62	C	87	D
13	D	38	B	63	A	88	A
14	A	39	A	64	D	89	B
15	B	40	A	65	D	90	C
16	C	41	D	66	B	91	B
17	D	42	B	67	C	92	B
18	B	43	C	68	B	93	D
19	A	44	B	69	B	94	A
20	C	45	B	70	A	95	D
21	B	46	A	71	B	96	C
22	D	47	C	72	C	97	B
23	C	48	B	73	D	98	C
24	B	49	A	74	C	99	A
25	A	50	B	75	D	100	A



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	C	121	A	141	B	161	A
102	D	122	D	142	A	162	D
103	A	123	A	143	A	163	A
104	A	124	B	144	B	164	B
105	C	125	D	145	C	165	A
106	D	126	C	146	C	166	B
107	A	127	C	147	B	167	A
108	B	128	A	148	B	168	C
109	B	129	B	149	B	169	B
110	C	130	D	150	C	170	D
111	D	131	A	151	C		
112	A	132	C	152	D		
113	C	133	D	153	C		
114	C	134	D	154	B		
115	A	135	B	155	A		
116	C	136	C	156	A		
117	B	137	B	157	D		
118	C	138	C	158	C		
119	D	139	D	159	D		
120	D	140	A	160	A		

ANNEX 10



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1- Which word or phrase shall be used if you want to say "REDUCE YOUR RATE OF SPEECH"?

- A) SPEAK SLOWER.
- B) WORDS TWICE.
- C) REPEAT.
- D) SAY AGAIN.

2- Which phrase should a pilot use to inform ATC that he is initiating a missed approach procedure?

- A) GOING AROUND.
- B) MISSED APPROACH.
- C) PULLING UP.
- D) OVERSHOOTING.

3- Which phrase shall be used if you want to say "COMMUNICATION IS DIFFICULT, PLEASE SEND EVERY WORD OR GROUP OF WORD TWICE"?

- A) WORDS TWICE.
- B) SAY AGAIN, SAY AGAIN.
- C) REPEAT TWICE.
- D) MESSAGE SECOND TIME.

4- Which word shall be used to ask a station whether you have correctly received a message, clearance, instruction?

- A) CONFIRM.
- B) CORRECT.
- C) ACKNOWLEDGE.
- D) VERIFY.

5- How shall a pilot inform the control tower that he has to abandon takeoff maneuver?

- A) STOPPING.
- B) ABANDONING TAKEOFF.
- C) ABORTING TAKEOFF.
- D) CANCELLING TAKEOFF.

6- What does the instruction "MAHAN 345 STANDBY 118.9 FOR TOWER" mean?

- A) MAHAN 345 should standby on the current frequency.
- B) MAHAN 345 should change frequency to 118.9 on which aerodrome data are being broadcast.
- C) MAHAN 345 should contact TOWER on 118.9.
- D) MAHAN 345 should listen on frequency 118.9 on which TOWER will initiate further communications.



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7- How long the test signal shall be made?

- A) 10 seconds
- B) Minimum 10 seconds
- C) Maximum 10 seconds
- D) All answers are incorrect

8- Which of the following message shall be handled by interpilot air-to-air communication when necessary?

- A) Regulatory messages
- B) Safety messages
- C) Meteorological messages
- D) A and B are correct

9- How long elapse time is required between the first and second call?

- A) 10 seconds
- B) At least 10 seconds
- C) Maximum 10 seconds
- D) None

10- What language shall be used by air-ground radiotelephony communication?

- A) Language used by ground station
- B) English language
- C) A or B are correct
- D) A or one of the ICAO languages

11- Which publication shall indicate the languages used by ground station?

- A) AIP
- B) Annex 10
- C) Doc. 4444
- D) Annex 2

12- Which phraseology shall a pilot use if he receives an instruction from ATC which he cannot carry out?

- A) Unable.
- B) Negative instruction.
- C) Impossible to make it.
- D) Disregard.



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13- Which word or phrase shall be used to indicate that a change has been made to your last clearance and this new clearance supersedes your previous clearance or part thereof?

- A) RECLEARED.
- B) CLEARED.
- C) APPROVED.
- D) BREAK BREAK.

14- Which word or phrase shall be used to indicate a separation between portions of a message?

- A) BREAK.
- B) STOP.
- C) I SAY AGAIN.
- D) OVER.

15- Which word shall be used to indicate that an error has been made in a transmission or message?

- A) CORRECTION.
- B) CORRECT.
- C) NEGATIVE.
- D) DISREGARD.

16- What does the word "MONITOR" mean?

- A) Examine a system or procedure.
- B) Wait and I will call you.
- C) Establish radio contact with ...
- D) Listen out on (frequency).

17- Which word or phrase shall be used when giving authorization to proceed under specified conditions?

- A) APPROVED.
- B) GO AHEAD.
- C) CLEARED.
- D) I SAY AGAIN: PROCEED.

18- Which ICAO annexes specifies the required level of language proficiency?

- A) Annex 1
- B) Annex 2
- C) Annex 6
- D) Annex 10



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19- How the number of altimeter setting shall be transmitted?

- A) Whole thousand
- B) A + whole hundred
- C) Each digit separately
- D) All answers are correct

20- How the altitude of 15,500 (ft) shall be transmitted?

- A) Fifteen thousand, five hundred.
- B) One five thousand, five hundred.
- C) One five five zero zero.
- D) One five five hundred.

21- The rate of speech should not be?

- A) Less than 100 words per minutes
- B) Less than 60 words per minutes
- C) More than 100 words per minutes
- D) More than 60 words per minutes

22- For which of the following phrases "ROGER" is used?

- A) READ BACK
- B) AFFIRM
- C) NEGATIVE
- D) NONE

23- If you are requested to "REPORT FLIGHT CONDITIONS", what does that mean?

- A) Indicate weather conditions as wind, visibility, temperature.
- B) Indicate whether you are flying in IMC or in VMC.
- C) Indicate if visibility is sufficient for landing
- D) Indicate whether you are flying I FR or VFR.

24- When an aeronautical station broadcasts information to more than one station, the call starts with:

- A) "Message to all aircraft on this frequency".
- B) "Please listen".
- C) "All stations".
- D) "General broadcast".

25- The instruction "REPORT" means:

- A) Pass me the following information.
- B) File an ATSU report on landing.
- C) Return to home base.
- D) Read back this clearance.



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26- What would you say if you are having trouble with communications and wish to have everything repeated twice?

- A) I SAY AGAIN.
- B) WORDS TWICE.
- C) PLEASE REPEAT.
- D) SPEAK TWICE.

27- Certain RT procedures require messages to be broadcast as a general call using a particular frequency. Such messages would be preceded with the phrase:

- A) All aircraft on frequency.
- B) All aircraft.
- C) Now hear this.
- D) All stations.

28- The correct way to say "YES" on the RT is:

- A) AFFIRMATIVE
- B) AFFIRM
- C) YES
- D) ROGER

29- The suffix of the call sign of direction finding station is...

- A) Information
- B) Radio
- C) Homer
- D) Delivery

30- The suffix of the call sign of an approach control unit providing radar service for departure traffic is:

- A) Approach
- B) Departure
- C) Radar
- D) Control

31- The full call sign may consist of radiotelephony designator of the operator and:

- A) The full characters of registration mark
- B) The last three characters of registration mark
- C) The last four characters of registration mark
- D) The first and last two characters of registration mark



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32- Which of the following term may be used for abbreviated call sign?

- A) Aircraft operating agency designator
- B) Aircraft model
- C) Aircraft manufacture
- D) All answers are correct

33- How many times during air-ground communication the message shall be transmitted by an aircraft after the phrase "TRANSMITTING BLIND"?

- A) One
- B) Twice
- C) At least one
- D) At least two

34- During which case of radio failure, the aircraft station shall advise the time of its next intended transmission?

- A) Air-ground
- B) Ground-to-air
- C) Receiver failure
- D) All answers are incorrect

35- How many preselected audio tones may be used to determine "SELCAL"?

- A) 4
- B) 3
- C) 2
- D) 1

36- Where the "SELCAL" should be submitted?

- A) Operational flight plan
- B) Operating manual
- C) Departure message
- D) ATS flight plan

37- If "SELCAL" remain unanswered, when an aeronautical station may revert to voice communication?

- A) After 2 calls on the primary frequencies
- B) After 2 calls on the secondary frequencies
- C) A and B
- D) A or B



38- When the aircraft radiotelephony call sign may be changed?

- A) During IFR
- B) Interest of safety
- C) Bad weather
- D) Emergency

39- Who is authorized to change the aircraft radiotelephony call sign temporarily?

- A) Pilot-in-Command
- B) Operator
- C) ATC unit
- D) Dispatcher

40- What is the inter-pilot air-to-air channel?

- A) 121.5MHz
- B) 123.45 MHz
- C) 123.45 kHz
- D) 243 kHz

41- Which of the following frequencies, are separated by 25 kHz?

- A) 123.45MHz
- B) 118.0MHz
- C) 119.0MHz
- D) All answers are correct

42- Which of the following channel are separated by 8.33 kHz?

- A) 121.5 MHz
- B) 123.45 MHz
- C) 118.025 MHz
- D) 133.02 MHz

43- A "FINAL" call is made when the aircraft turns on to final approach within ---- from the landing threshold.

- A) 8 NM
- B) 8km
- C) between 4 NM and 8 NM
- D) 4 NM

44- What does the word "NEGATIVE" mean?

- A) I say again.
- B) Consider that transmission as not sent.
- C) Annul the previously transmitted clearance.
- D) That is not correct.



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- 45- What is the radiotelephony call sign suffix for the aeronautical station providing radar service (in general)?**
- A) RADAR
 - B) CONTROL
 - C) RADAR CONTROL
 - D) RADAR SERVICE
- 46- What is the radiotelephony call sign suffix for the aeronautical station indicating clearance delivery?**
- A) CLEARANCE DELIVERY
 - B) CLEARANCE
 - C) DELIVERY
 - D) RADIO
- 47- What is the radiotelephony call sign for the aeronautical station indicating approach control radar arrival?**
- A) RADAR
 - B) CONTROL
 - C) ARRIVAL
 - D) APPROACH
- 48- What is the radiotelephony call sign for the aeronautical station indicating precision approach radar?**
- A) ARRIVAL
 - B) APPROACH
 - C) RADAR
 - D) Precision
- 49- What is the radiotelephony call sign for the aeronautical station providing approach control (no radar service)?**
- A) RADAR
 - B) ARRIVAL
 - C) APPROACH
 - D) CONTROL
- 50- What is the radiotelephony call sign for the aeronautical station indicating area control center (no radar)?**
- A) APPROACH
 - B) CENTER
 - C) CONTROL
 - D) RADAR



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51- A pilot may file a flight plan with an ATSU during flight. Which air traffic service unit should normally be used for this purpose?

- A) FIS
- B) RADAR
- C) APPROACH
- D) TOWER

52- What is the correct call sign of IRAN AIR 345 in the initial call to the aerodrome control tower and the approach control unit, if the aircraft has a maximum takeoff weight of more than 136 tons?

- A) IRAN AIR 345.
- B) Heavy IRAN AIR 345.
- C) IRAN AIR 345 heavy.
- D) IRAN AIR 345 wide body.

53- For which bands of frequencies, the SELCAL should be utilized?

- A) VHF + HF
- B) VHF + UHF + MF
- C) VHF
- D) HF only

54- What phrase shall request for verification of numbers?

- A) ACKNOWLEDGE the number
- B) READ BACK the number
- C) SAY AGAIN the number
- D) CHECK the number

55- If an ATC clearance is not suitable to the pilot in command, he may:

- A) Proceed according to the operational flight plan.
- B) Request and obtain an amended clearance.
- C) Follow the given clearance.
- D) Both A and C are correct.

56- What is the meaning of "Over" in radiotelephony?

- A) My transmission is ended and I expect a response from you.
- B) My transmission ended and no response is expected.
- C) Repeat all of your last transmission.
- D) Pass me the following information



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57- What is the abbreviated call sign of ZAGROS 2345?

- A) No abbreviated form.
- B) ZAGROS 345.
- C) ZAGROS 45.
- D) 2345.

58- The correct abbreviation for G-ZULU is:

- A) GOLF ZULU
- B) GOLF LIMA UNIFORM
- C) GOLF ZULU LIMA UNIFORM
- D) LIMA UNIFORM

59- ATA 1020, an aircraft in the HEAVY weight category, should make first contact with an ATSU as follows:

- A) HEAVY ATA 1020
- B) ATA 1020 HEAVY
- C) VIRGIN ATA 1020
- D) ATA 1020

60- Blind transmission shall be made:

- A) On the designated frequency (frequency in use).
- B) To all available aeronautical stations.
- C) On regional guard frequencies only.
- D) During IFR flights only.

61- Test transmissions should include the word(s):

- A) TEST
- B) RADIO CHECK
- C) TEST TRANSMISSION
- D) TESTING, TESTING

62- What is the meaning of “Out” in radiotelephony?

- A) My transmission ended and any response is expected.
- B) This exchange of transmission is ended and no response is expected.
- C) Repeat all of your last transmission.
- D) Pass me the following information.

63- What is the meaning of “Say again” in radiotelephony?

- A) My transmission ended and no response is expected.
- B) Repeat all or the following part of your last transmission.
- C) Repeat all of your last transmission.
- D) Pass me the following information.



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64- When transmitting a message preceded by the phrase "TRANSMITTING BLIND DUE TO RECEIVER FAILURE" during an enroute flight, the aircraft station shall also:

- A) Land at the nearest airfield/airport.
- B) Join base leg when approaching the airfield for landing.
- C) Advise the time of its next intended transmission.
- D) Return to the airport of departure.

65- A message preceded by the phrase "TRANSMITTING BLIND DUE TO RECEIVER FAILURE" shall be transmitted:

- A) On the regional guard frequency.
- B) On the frequency presently in use.
- C) On the international emergency frequency.
- D) On all available aeronautical stations.

66- What is the correct way for the pilot to acknowledge that ATIS Information Golf has been received?

- A) Information Golf.
- B) Weather Golf received.
- C) We have the Information.
- D) We have the ATIS Golf.

67- A time of "13:20" hour is transmitted as:

- A) One three two zero or two zero.
- B) Thirteen twenty hours.
- C) Twenty.
- D) Twenty past eleven.

68- Before transmitting the pilot should:

- A) Make sure that the aircraft is leveled off.
- B) Listen out on the frequency to ensure no interference with another station already transmitting will occur.
- C) Always write the message and read it during the transmission.
- D) Make sure that the emergency frequency is tuned in at the same Time.

69- My message will be more effective and understandable if I:

- A) Maintain the speaking volume clear with constant level.
- B) Use the words twice method.
- C) Stress the end of message in distress message.
- D) Stress every beginning of message.



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70- What is meant by good microphone technique?

- A) Keep the microphone close away since it improves the readability.
- B) Speak very loudly into the microphone.
- C) Use a normal conversation tone, speak short and distinctly with plain language.
- D) Make less use of hesitation sounds as ER.

71- In the event that a pilot is required to make a blind transmission, this should be made:

- A) Only once on the designated frequency.
- B) Twice on the designated frequency.
- C) On the emergency frequency only.
- D) During VFR flights only.

72- What shall the pilot read back for ATC instruction "CLIMB TO 2500 FEET"?

- A) Climbing to two point five.
- B) Up to two thousand five hundred.
- C) Climbing to two thousand five hundred feet.
- D) Climbing to two thousand five hundred.

73- What is the correct reply to the instruction "CLIMB TO FL280"?

- A) Recleared Level Two Eight Zero.
- B) Climb Two Eight Zero.
- C) Climb to Two Hundred and Eighty.
- D) Climb to Flight Level Two Eight Zero.

74- What is the correct reply to an ATC instruction which you cannot comply with?

- A) Negative comply.
- B) Negative instruction.
- C) Negative compliance.
- D) Unable.

75- Clearances relating to the runway in use shall be read back only if the aircraft is to:

- A) Enter, land on, take off from, cross and backtrack.
- B) Enter, cross and backtrack.
- C) Land on and take off from.
- D) Enter, land on, take off from and backtrack.

76- What does "SQUAWK IDENT" mean?

- A) Select the SSR transponder code to 7000.
- B) Select the SSR transponder mode to "ALT".
- C) Operate the SSR transponder "special position identification" feature.
- D) State the aircraft call sign three times.



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77- What does the phrase "SQUAWK 1234" mean?

- A) Give a short count for DF (direction finder).
- B) Select code 1234 on the SSR transponder.
- C) Make a test transmission on 123, 4 MHz.
- D) Standby on frequency 123, 4 MHz.

78- RADAR instruct aircraft X-BC: "X-BC SQUAWK IDNET" what does this mean?

- A) X-BC shall reselect his assigned mode and code.
- B) Radar identification has been achieved by correlating an observed radar blip with aircraft XV-ABC.
- C) X-BC should perform an identification turn of at least 020 degrees.
- D) X-BC shall push the IDENT button.

79- The message addressed to an Area Control Centre "REQUEST RADAR VECTORS TO CIRCUMNAVIGATE ADVERSE WEATHER" is:

- A) A meteorological message.
- B) A flight safety message.
- C) An urgency message.
- D) A message relating to direction finding.

80- A message concerning aircraft parts and material urgently required is:

- A) A flight security message.
- B) An urgency message.
- C) A flight safety message.
- D) A flight regularity message.

81- Aeronautical messages are given an order of priority, which of the following statements reflects the correct order of priority?

- A) Meteorological messages take precedence over direction finding messages.
- B) Flight safety messages will be handled before urgency messages.
- C) Messages relating to direction finding take precedence over flight regularity messages.
- D) Flight safety messages take precedence over direction finding messages.

82- What is the radiotelephony call sign suffix for the aeronautical station indicating aerodrome control service?

- A) Apron
- B) Control
- C) Aerodrome
- D) Tower



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83- For aircraft call sign "Easy G-ABCD" the correct abbreviation is:

- A) Easy Charlie Delta
- B) Golf Charlie Delta
- C) Easy Golf Charlie Delta
- D) Easy Delta

84- RADAR instructs aircraft X-BC: "X-BC SQUAWK STANDBY". What does this mean?

- A) X-BC is requested to standby on the frequency.
- B) X-BC is requested to switch the transponder to standby position.
- C) X-BC is requested to standby for radar vectors.
- D) X-BC is requested to standby as the radar controller is busy.

85- RADAR informs aircraft X-BC: "X-BC IDENTIFIED". What does this mean?

- A) Radar identification has been achieved.
- B) X-BC is not visible on the radar screen.
- C) X-BC should perform an identification turn.
- D) X-BC should operate the IDENT button.

86- Which one of the following category of message has priority?

- A) Urgency.
- B) Distress.
- C) Safety.
- D) Regularity.

87- A Radar Information Service (RIS) provides:

- A) Radar separation from all other traffic.
- B) Information for IFR traffic only.
- C) The bearing, distance and if known, the altitude of conflicting traffic.
- D) Traffic information and avoiding action.

88- Which of the following frequencies is an international emergency frequency?

- A) 122.500 MHz
- B) 121.500 MHz
- C) 121.050 MHz
- D) 121.005 MHz

89- Which of the messages listed below shall not be handled by the aeronautical mobile service?

- A) Meteorological messages.
- B) Radio teletype messages.
- C) Flight safety messages.
- D) Urgency messages.



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90- What does the word "CHECK" mean?

- A) I understand your message.
- B) Confirm your last transmission.
- C) Read back my last instruction.
- D) Examine a system or procedure.

91- Which phrase shall be used if you want to say "I WOULD LIKE TO KNOW "or "I WISH TO OBTAIN"?

- A) Confirm
- B) Report
- C) Acknowledge
- D) Request

92- How shall a pilot inform a radar control unit that the aircraft is not equipped with transponder?

- A) No SSR.
- B) Negative transponder.
- C) Transponder not available.
- D) Negative squawk.

93- Which phrase shall be used if the repetition of an entire message is required?

- A) What was your message?
- B) Repeat your message.
- C) Say again.
- D) Repeat your last transmission.

94- What does the word "APPROVED" mean?

- A) Permission for proposed action granted.
- B) That is correct.
- C) Authorized to proceed under the conditions specified.
- D) I repeat for clarity or emphasis.

95- The phrase "UNDER RADAR CONTROL" means:

- A) ATC instructions may be obeyed at the pilot's discretion.
- B) ATC instructions must be obeyed unless avoiding immediate danger.
- C) ATC information is advisory.
- D) ATC will provide information on other traffic but no avoiding action will be given.

96- What phrase shall be used when asking for the readability of a transmission?

- A) Read you loud and clear.
- B) Read back.
- C) Report readability.
- D) How do you read?



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97- What is meant by the phrase "READABILITY 4"?

- A) Readable now and then.
- B) Readable.
- C) Perfectly readable.
- D) Readable but with difficulty.

98- What is meant by the phrase "READABILITY 2"?

- A) Readable but with difficulty.
- B) Readable.
- C) Unreadable.
- D) Readable now and then.

99- How shall a pilot inform the control tower that he is prepared for takeoff?

- A) Ready to go.
- B) Ready for takeoff.
- C) Ready to line-up.
- D) Ready for departure.

100- The expression "TRANSMITTING BLIND DUE TO RECEIVER FAILURE" implies that no answer is expected. It shall be used by:

- A) An aircraft station being aware of receiver failure.
- B) An aircraft station doing blind transmissions at a "non-towered" airfield.
- C) A radar controller performing a PAR or SRE final approach.
- D) A ground station broadcasting information to all listening stations.

101- After suffering a radio receiver failure, the pilots should make blind transmissions preceded by the phrase "TRANSMITTING BLIND DUE TO RECEIVER FAILURE" and subsequently:

- A) Hold for 5 minutes.
- B) Proceed to the pre-planned alternate.
- C) Enter the next enroute holding pattern encountered.
- D) Advise the time of the next intended transmission.

102- Must a general call be acknowledged?

- A) Yes, but only from the station first called.
- B) No.
- C) Yes, if individual stations are subsequently called to acknowledge receipt.
- D) Yes, from all stations in a random sequence.

103- Which elements of instructions or information shall always be read back?

- A) QNH, SSR code, approach aid serviceability.
- B) QNH, weather information, runway-in-use.
- C) ATC clearance, speed instructions, runway state information.
- D) SSR code, QNH, takeoff clearance, speed instructions.



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104- ATC clears TABAN 345 to descend from FL100 to FL80. What is the correct read back by the pilot?

- A) Descending to 80, TABAN 345.
- B) Leaving flight level 100 descending to flight level 80, TABAN 345.
- C) Down to flight level 80, TABAN 345.
- D) Leaving 100 to 80, TABAN 345.

105- The correct phraseology to instruct an aircraft to cease the MODE C SSR reply because of incorrect indications is:

- A) SQUAWK STANDBY
- B) STOP SQUAWK CHARLIE
- C) STRANGLE THE PARROT
- D) SELECT MODE ALPHA

106- RADAR instructs aircraft X-BC: "X-BC SQUAWK STANDBY". What does this mean?

- A) X-BC is requested to standby on the frequency.
- B) X-BC is requested to switch to standby position.
- C) X-BC is requested to standby for radar vectors.
- D) X-BC is requested to standby as the radar controller is busy.

107- All messages relating to an aircraft's climb or descent to a HEIGHT or ALTITUDE should:

- A) Employ the word "TO" follow immediately by the word HEIGHT or ALTITUDE.
- B) Avoid using the word "TO" altogether.
- C) Employ the word "TO" follow immediately by the QFE or QNH.
- D) Be preceded by the required altimeter subscale setting.

108- In case of a SSR transponder failure occurring after departure of an IFR flight, the pilot shall:

- A) Land at the nearest suitable aerodrome for repair.
- B) Inform the competent ATC unit immediately.
- C) Squawk 7600.
- D) Continue the flight in VMC.

109- The distress communication and silence conditions shall be terminated by transmitting a message. Which words shall this message include?

- A) Disregard distress communication, OUT.
- B) Emergency communication finished.
- C) MAYDAY traffic ended.
- D) Distress traffic ended.



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110- Radio silence can be imposed by an aeronautical station in case of:

- A) Technical difficulties.
- B) Urgency communication.
- C) Overload of the frequency.
- D) Distress traffic.

111- Which of the following messages shall a station in control of distress use to impose silence?

- A) STOP TRANSMITTING, EMERGENCY.
- B) STOP TRANSMITTING, DISTRESS.
- C) STOP TRANSMITTING, MAYDAY.
- D) ALL STATIONS IN THIS FREQUENCY, MAYDAY TRAFFIC.

112- What does the instruction "ORBIT RIGHT" mean?

- A) Make 360° turns to the right.
- B) Turn right to avoid other traffic.
- C) Right-hand circuits are in use.
- D) Leave the runway to the right.

113- Which phrase shall be used if you want to say "AN ERROR HAS BEEN MADE IN THIS TRANSMISSION". The correct version is?

- A) QNH 1017, negative QNH 1016.
- B) QNH 1017, correction QNH 1016.
- C) QNH 1017, negative 1016.
- D) QNH 1017, negative I say again 1016.

114- What phrase(s) shall be used to confirm that a message has been repeated correctly?

- A) That is right.
- B) Correct.
- C) Affirm.
- D) That is affirmative.

115- When an aircraft station receives the call "ALL STATIONS MEHRABAD RADAR, DISTRESS TRAFFIC ENDED" it is requested:

- A) To discontinue communication with MEHRABAD RADAR.
- B) To impose silence to other stations in its vicinity.
- C) To acknowledge receipt of this message.
- D) To resume normal communication with MEHRABAD RADAR.



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116- The distress signal and the distress message to be sent by an aircraft in distress should be on:

- A) The FIS frequency designated for the airspace concerned.
- B) The emergency frequency in any case.
- C) The regional guard frequency.
- D) The air-ground frequency in use at the time.

117- When an aircraft station receives the call "ALL STATIONS MEHRABAD RADAR, STOP TRANSMITTING MAYDAY" it is requested:

- A) To continue normal communication on the frequency in use.
- B) Not to interfere with the distress communication.
- C) To assist Mehrabad RADAR in handling the distress traffic.
- D) To leave the frequency in use.

118- In a distress situation it may be necessary to impose silence either on all stations or on a particular station. This action of imposing silence may be performed:

- A) Only by the ground station controlling the frequency.
- B) By either the aircraft in distress or the station in control of the distress incident.
- C) By any station who considers it necessary to impose silence.
- D) Only by the distress and diversion cell at the Rescue Control Centre (RCC).

119- On hearing an urgency message a pilot shall:

- A) Impose radio silence on the frequency in use.
- B) Acknowledge the message immediately.
- C) Monitor the frequency to ensure assistance if required.
- D) Change the frequency, because radio silence will be imposed on the frequency in use.

120- Which of the following calls is a "GENERAL CALL"?

- A) EP-DEF Tehran CONTROL
- B) EP-EFG, EP-FGH over.
- C) ALL STATIONS Tehran CONTROL.
- D) EP-ABC, EP-BCD, EP-CDE Tehran CONTROL.

121- How should aircraft EP-ABC call Shiraz TOWER on initial call?

- A) TOWER EP-ABC
- B) Shiraz TOWER E-BC
- C) Shiraz EP-ABC
- D) Shiraz TOWER EP-ABC



122- A signal sent by radiotelephony consisting of the spoken words "PANPAN, PANPAN, PANPAN" means:

- A) An aircraft on final approach is starting the missed approach procedure.
- B) Imminent danger threatens the aircraft and immediate assistance is required.
- C) The aircraft is diverting from the route cleared because of a thunderstorm and asks for immediate preclearance.
- D) The aircraft has a very urgent message to transmit concerning the safety of a ship, aircraft or other vehicle, but immediate assistance is not required.

123- An aerodrome located at Payam notified as having an Aerodrome Flight Information Service (AFIS) will identify itself to aircraft using the call sign:

- A) Payam information
- B) Payam radio
- C) Payam tower
- D) Payam ground

124- Which of the following abbreviated call signs of Cherokee EP-ABC is correct?

- A) Cherokee E-BC
- B) Cherokee EP-BC
- C) Cherokee BC
- D) Cherokee E-ABC

125- Aircraft E-BC has been instructed to contact Shiraz TOWER on frequency 119.0, what is the correct response to indicate that it will follow this instruction?

- A) Shiraz TOWER E-BC.
- B) Will change to TOWER E-BC.
- C) Changing over E-BC.
- D) 119.0 E-BC.



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	A	26	B	51	A	76	C
2	A	27	D	52	C	77	B
3	A	28	B	53	A	78	D
4	A	29	C	54	B	79	A
5	A	30	B	55	B	80	D
6	D	31	C	56	A	81	C
7	C	32	D	57	A	82	D
8	D	33	B	58	B	83	A
9	B	34	C	59	B	84	B
10	C	35	A	60	A	85	A
11	A	36	D	61	B	86	B
12	A	37	C	62	B	87	C
13	A	38	B	63	B	88	B
14	A	39	C	64	C	89	B
15	A	40	B	65	B	90	D
16	D	41	D	66	A	91	D
17	C	42	C	67	A	92	B
18	A	43	D	68	B	93	C
19	C	44	D	69	A	94	A
20	B	45	A	70	C	95	B
21	C	46	C	71	B	96	D
22	D	47	C	72	D	97	B
23	B	48	D	73	D	98	D
24	C	49	C	74	D	99	D
25	A	50	C	75	A	100	A



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QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	D	108	B	115	D	122	D
102	C	109	D	116	D	123	A
103	D	110	D	117	B	124	A
104	B	111	C	118	B	125	D
105	B	112	A	119	C		
106	B	113	B	120	C		
107	A	114	B	121	D		



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ANNEX 11



➤ Annex 11 – 14th edition, AMDT 50-A



1- What is the correct definition of emergency phase?

- A) A generic term meaning as the case maybe, uncertainly phase, alert phase or distress phase.
- B) A generic term meaning as the case maybe, uncertainly phase, alert phase.
- C) A generic term meaning as the case maybe, uncertainly phase or distress phase.
- D) A generic term meaning as the case maybe distress phase.

2- “DETRESFA” is code word used to designate:

- A) Alert phase
- B) Distress phase
- C) Uncertainly phase
- D) Urgent phase

3- “ALERFA” is code word used to designate:

- A) Alert phase
- B) Distress phase
- C) Uncertainly phase
- D) Urgent phase

4- “INCERFA” is code word used to designate:

- A) Alert phase
- B) Distress phase
- C) Uncertainly phase
- D) Urgent phase

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5- “A situation where in apprehension exists as to the safety of an aircraft and its occupants” is used for:

- A) Alert phase
- B) Distress phase
- C) Uncertainly phase
- D) Urgent phase

6- “Direct speech conversation may be conducted between three or more locations simultaneously” is known as:

- A) Direct communication
- B) Conference communication
- C) General communication
- D) Data-link communication



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7- What is the abbreviation code “ATIS”?

- A) Aerodrome terminal information system
- B) Automatic terminal information system
- C) Automatic terminal information service
- D) Aerodrome terminal information service

8- Which ways are used to transmit information by ATIS?

- A) Data-link ATIS (D-ATIS)
- B) Voice ATIS
- C) Direct ATIS
- D) A and B are correct

9- “D-ATIS” is used to transmit information for arriving or departing aircraft by:

- A) Data-link
- B) Voice
- C) Data-communication
- D) DME

10- “A situation where in there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger or required immediate assistance” is known as:

- A) Alert phase
- B) Distress phase
- C) Uncertainly phase
- D) Urgent phase

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11- What is the downstream clearance?

- A) The clearance that issued by tower to aircraft on the ground
- B) A clearance issued to an aircraft by an uncontrolled unit
- C) A clearance issued to an aircraft by an air traffic control unit that is not the current controlling authority of the aircraft
- D) A clearance issued by control unit

12- What is the responsibility of rescue coordination center?

- A) Promoting efficient organization of SAR services
- B) Coordinating the control of SAR operation
- C) Issuing clearance for initiating SAR procedure
- D) A and B are correct



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13- What is the transfer of control point?

- A) A define point along the flight path that air traffic control service to the aircraft is transferred from one control unit or control position to next.
- B) A point same as changeover point but is used between two NDBs.
- C) A point that used for changing frequency.
- D) All answers are correct.

14- What is the name of reporting point on area navigation routes?

- A) Position report point
- B) Way point
- C) Change over point
- D) Transfer of control point

15- What is the objective of the air traffic control service?

- 1) Prevent collision between aircraft
 - 2) Prevent collision between aircraft on movement area
 - 3) Expedite flow of air traffic
 - 4) Maintain orderly flow of air traffic
- A) 1,2,3
 - B) 1,2,4
 - C) 1,3,4
 - D) 1,2,3,4

16- What is the division of air traffic service?

- 1) Air traffic control service
 - 2) Flight information services
 - 3) Alerting services
 - 4) Air traffic uncontrolled service
- A) 1,2,3
 - B) 1,2,4
 - C) 2,3,4
 - D) 1,3,4

17- How many units are divided in air traffic control service?

- A) 4
- B) 3
- C) 2
- D) 1



18- Which types of service must be provided in flight information region?

- A) Flight information service
- B) Alerting service
- C) Advisory service
- D) A and B are correct

19- What is the speed limitation for IFR flight in class "B" airspace?

- A) 250 kts (IAS)
- B) 250 kts (TAS)
- C) 250 kts (G/S)
- D) Not applicable

20- Which classification of airspace the IFR flight does not subject to ATC clearance?

- A) C
- B) D
- C) E
- D) F

21- How the separation shall be provided between IFR and VFR in class "C" airspace?

- A) IFR from IFR
- B) IFR from VFR
- C) IFR from IFR but IFR from VFR only receive traffic information
- D) A and B are correct

22- What is the maximum indicated airspeed for VFR flight in class "D" airspace below 10000 ft?

- A) 200 kts
- B) 250 kts
- C) 300 kts
- D) 350 kts

23- Continuous two-way communication must be applied for all type of traffic except:

- A) VFR flights in class "E"
- B) VFR flights in class "D"
- C) IFR flights in class "F"
- D) IFR flights in class "G"

24- What type of services are provided for VFR flight within class "F" airspace:

- A) Flight information service
- B) Alerting service
- C) Air traffic control service
- D) Air traffic advisory service



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25- What type of separation is expected for VFR flight within class “F”?

- A) VFR from IFR
- B) VFR from VFR
- C) VFR from VFR (traffic information if request)
- D) No service is provided

26- Where an upper flight information region (UIR) is established, the procedures applicable there:

- A) Have to be as indicated by ICAO council.
- B) Have to be as agreed at the regional air navigation meetings.
- C) Need not to be identical with those applicable in the underlying flight information region.
- D) Have to be the same as in the underlying flight information region.

27- When is the suffix Y applied to the designator of an ATS route to indicate turns between 30° and 90°?

- A) Above FL200 with a tangential arc of 15 NM.
- B) FL200 and above with a tangential arc of 22.5 NM.
- C) Above FL190 with a tangential arc of 25 NM.
- D) FL190 and below with a tangential arc of 15 NM.

28- In the airway designator UA1Y, what does the prefix U mean?

- A) Uniform.
- B) Upper.
- C) Undesignated.
- D) Unidirectional.

29- The speed limitation for both IFR flights and VFR flights inside ATS airspace classified as B, when flying below 3050 m (10000 ft) AMLS, is:

- A) 250 kts IAS.
- B) Not applicable.
- C) 250 kts TAS.
- D) 260 kts IAS.

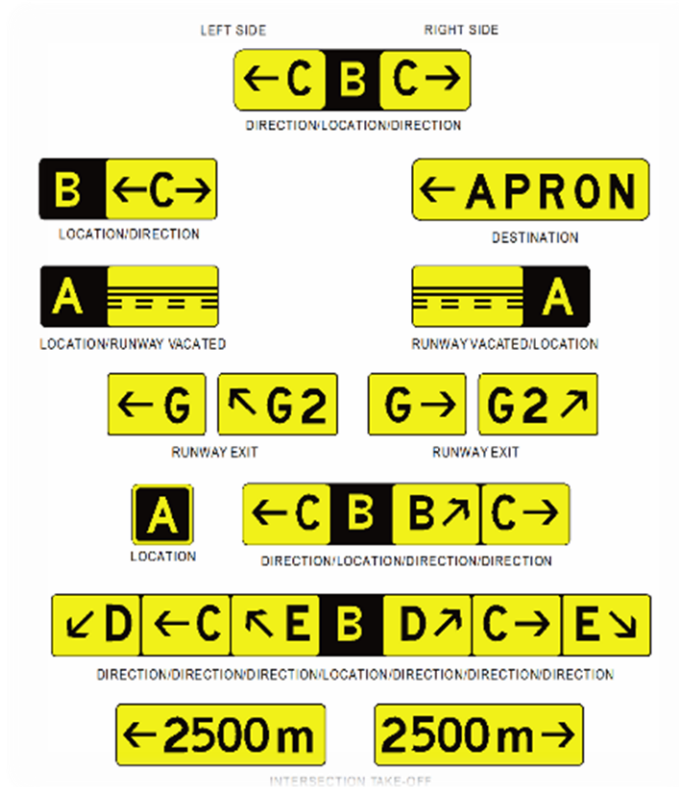
30- When on a RNP 1 route is indicated A342Z, means that all turns shall be made within the allowable RNP tolerance of a tangential arc between the straight leg segments with a radius of:

- A) 15 NM on the route between 30° and 90° at and above FL200.
- B) 15 NM on the route between 30° and 90° at and below FL190.
- C) 22.5 NM on the route between 30° and 90° at and above FL250.
- D) 25 NM on the route between 30° and 90° at and below FL190.



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	A	9	A	17	B	25	D
2	B	10	B	18	D	26	C
3	A	11	C	19	D	27	B
4	C	12	D	20	D	28	B
5	A	13	A	21	D	29	B
6	B	14	B	22	B	30	B
7	C	15	C	23	A		
8	D	16	A	24	A		

ANNEX 14





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1- Based on what criteria(s), the aerodrome reference code shall be determined?

- A) Wingspan.
- B) Outer main gear wheel span.
- C) Aeroplane reference field length.
- D) All answers are correct.

2- What shall be the capability of signalling lamp to transmit the message per minute?

- A) 4 words.
- B) At least 4 words.
- C) words.
- D) At least 3 words.

3- What shall be the minimum and maximum length of runway center line strip marking plus a gap in (m)?

- A) 50-60.
- B) 50-75.
- C) 60-80.
- D) 40-60.

4- When the aiming point marking shall be provided at 400M from threshold, provided the RWY length is:

- A) 900 m.
- B) 2000 m.
- C) 3000 m.
- D) All answers are correct.

5- What shall be the length of touchdown zone if RWY length is 2355 m?

- A) 400 m.
- B) 500 m.
- C) 600 m.
- D) 700 m.

6- What shall be the color of aerodrome beacon signal alternating with white flashes at land aerodrome?

- A) Yellow.
- B) Green.
- C) Red.
- D) None.

7- What is the minimum length of simple approach lighting system?

- A) 400 m.
- B) 420 m.
- C) 300 m.
- D) 150 m.



8- How many cross bar shall be provided for precision approach CAT I (single source)?

- A) 2
- B) 3
- C) 4
- D) 5

9- Which of the following RWY shall have center line lights?

- A) CAT I
- B) CAT II
- C) CAT III
- D) B and C are correct

10- What shall be the color of the background of mandatory sign?

- A) Red
- B) White
- C) Yellow
- D) Black

11- From what height, the wind direction indicator shall be visible?

- A) 200 m
- B) 300 m
- C) At least 300 m
- D) All answers are correct

12- The runway designated number shall be provided from:

- A) Magnetic (N)
- B) True (N)
- C) Grid (N)
- D) Compass (N)

13- What factor shall be considered to provide threshold marking?

- A) RWY length
- B) RWY width
- C) Both A and B are correct
- D) None

14- When the aiming point marking shall be provided at 300 M from threshold, RWY Length is:

- A) 4000 m
- B) 3000 m
- C) 1000 m
- D) 2000 m



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15- What shall be the length of touchdown zone if RWY length is 3050 m?

- A) 900 m
- B) 800 m
- C) 700 m
- D) 600 m

16- What shall be the frequency of total flashes per minute of aerodrome beacon?

- A) 10-20
- B) 10-30
- C) 20-30
- D) 20-40

17- What is the length of precision approach lighting CAT II?

- A) 300 m
- B) 600 m
- C) 750 m
- D) 900 m

18- At what distance from threshold the crossbar of precision approach CAT I (barrette) shall be provided?

- A) 150 m
- B) 270 m
- C) 300 m
- D) 420 m

19- What shall be the color of last 300 m of RWY center line lights?

- A) White
- B) Red
- C) A and B are correct
- D) None

20- What shall be the color of the background of information sign?

- A) Red
- B) White
- C) Yellow
- D) Black

21- What is PAPI?

- A) Precision Approach Power Indicator.
- B) Precision Approach Path Indicator.
- C) Precision Approach Power Index.
- D) Precision Approach Path Index.



22- The “Stopway” is a defined rectangular area on the ground at the end of takeoff run available prepared as a suitable area where:

- A) A landing aircraft can be stopped only in emergency.
- B) A landing aircraft can be stopped if overcoming the end of runway.
- C) An aircraft can be stopped in the case of an abandoned takeoff.
- D) An aircraft taking-off or landing can be stopped.

23- Information signs have a background with a inscription.

- A) Red - White
- B) Yellow - Black
- C) Black - White
- D) Black – Yellow

24- Runway threshold wing bar lights shall be fixed unidirectional lights showing in the direction of approach to the runway.

- A) Green.
- B) Red.
- C) White.
- D) Blue.

25- Which of the following group shows the correct designators for three parallel runways seen from the direction of the approach?

- A) 29, 29C, 29.
- B) 29R, 29C, 29L.
- C) 29L, 29, 29R.
- D) 29L, 29C, 29R.

26- The runway edge lights shall be:

- A) Green.
- B) Blue.
- C) White.
- D) Red.

27- When taxiing on a surface with white markings, you are rolling on a:

- A) Movement area.
- B) Taxiway.
- C) Clearway.
- D) Runway.



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28- Taxiway markings and aircraft stand markings are:

- A) White.
- B) Grey.
- C) Yellow.
- D) Red.

29- Taxiway edge lights shall be:

- A) Fixed showing green.
- B) Fixed showing blue.
- C) Fixed showing yellow.
- D) Flashing showing blue.

30- Runway end lights shall be:

- A) Fixed; uni-directional; red.
- B) Fixed; Omni-directional; red.
- C) Fixed; uni-directional; green.
- D) Fixed; Omni-directional; green.

31- Which of the following describes threshold lights in the direction of the approach to the runway?

- A) Red unidirectional.
- B) Green Omni-directional.
- C) Red Omni-directional.
- D) Green unidirectional.

32- What shape is a landing direction indicator?

- A) T
- B) I
- C) V
- D) Y

33- Runway direction is indicated by two digits:

- A) The units are expressed in 10° to the nearest 10° of True North.
- B) The units are expressed in 10° to the nearest 5° of True North.
- C) The units are expressed in 10° to the nearest 10° of the Magnetic North.
- D) The units are expressed in 10° to the nearest 5° of the Magnetic North.

34- The color of the fixed, unidirectional runway threshold and wing bar lights shall be:

- A) Yellow
- B) White
- C) Green
- D) Blue



35- What is the name for a taxiway connected to a runway at an acute angle designed to allow airplanes to turn off at higher speeds than are achieved on other exits thereby minimizing runway occupancy time?

- A) Rapid turn off lane.
- B) High speed exit lane.
- C) Rapid exit taxiway.
- D) Acute angle exit.

36- What color are emergency vehicles painted that are used on the maneuvering area of an aerodrome?

- A) Green.
- B) Orange.
- C) A single conspicuous color, preferably red or yellowish green.
- D) White and red chevrons.

37- A slightly high glide slope indication from a precision approach path indicator is:

- A) Four white lights.
- B) Three white lights and one red lights.
- C) Two white lights and two red lights.
- D) Three red lights and one white lights.

38- The numbers 08 and 26 on the approach ends of the runway indicate that the runway is oriented approximately:

- A) 008° and 026° magnetic.
- B) 080° and 260° true.
- C) 080° and 260° magnetic.
- D) 008° and 026° true.

39- When approaching taxiway holding lines from the side with the continuous line, the pilot:

- A) May continue taxiing.
- B) Should not cross the lines without ATC clearance.
- C) Should continue taxiing until all parts of the aircraft have crossed the lines.
- D) May continue taxiing if stop bars are switched on.

40- What is the purpose of the runway/runway hold position sign?

- A) Denotes entrance to runway from a taxiway.
- B) Denotes area protected for an aircraft approaching or departing a runway.
- C) Denotes intersecting runways.
- D) A and B are correct.



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41- The large "X" s depicted on runway surface denotes that:

- A) Taxiway/Runway holding position marking.
- B) Displaced threshold area.
- C) Overrun area.
- D) Closed runway.

42- The area up to displaced threshold is used for:

- A) Taxiing, takeoff roll.
- B) Takeoff and landing only.
- C) Landing and taxiing only.
- D) Taxiing, takeoff and landing.

43- To set the high intensity runway lights on medium intensity (Pilot Controlled Lighting System), the pilot should click the microphone seven times, and then click it:

- A) One time within four seconds.
- B) Three times within three seconds.
- C) Five times within five seconds.
- D) Seven times within five seconds.

44- A lighted heliport may be identified by a:

- A) Green, yellow, and white rotating beacon.
- B) Flashing yellow light.
- C) Blue lighted square landing area.
- D) Two quick white flashes between green flashes.

45- When approaching taxiway holding lines from the side with the dashed lines, the pilot:

- A) May continue taxiing.
- B) Should not cross the lines without ATC clearance.
- C) Should continue taxiing until all parts of the aircraft have crossed the lines.
- D) Should not cross the lines until the stop bars are switched off.

46- What is the purpose of the taxiway/runway hold position sign?

- A) Denotes entrance to runway from a taxiway.
- B) Denotes area protected for an aircraft approaching or departing a runway.
- C) Denotes intersecting runways.
- D) Denotes intersecting taxiways.

47- The true bearing of two parallel runways is 288° and magnetic variation at aerodrome is +4°. The runway designators as seen by pilot in direction of approaching to runway, are:

- A) 29R – 29L.
- B) 29L – 29R.
- C) 28L – 28R.
- D) 28R – 28L.



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48- The Stop bars installed at a runway-holding position shall be and shall show in the direction of approach to the runway.

- A) Unidirectional; green.
- B) Omnidirectional; red.
- C) Omnidirectional; green.
- D) Unidirectional; red

49- Location signs consist of an inscription in on a background.

- A) Red; black
- B) Black; red
- C) Yellow; black
- D) Black; yellow

50- Taxiway center line lights shall be:

- A) Fixed lights showing red.
- B) Fixed lights showing white.
- C) Fixed lights showing yellow.
- D) Fixed lights showing green.



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QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	D	14	D	27	D	40	C
2	B	15	A	28	C	41	D
3	B	16	C	29	B	42	A
4	C	17	D	30	A	43	C
5	C	18	C	31	D	44	A
6	B	19	B	32	A	45	C
7	B	20	C	33	C	46	A
8	D	21	B	34	C	47	C
9	D	22	C	35	C	48	D
10	A	23	B	36	C	49	C
11	C	24	A	37	B	50	D
12	A	25	D	38	C		
13	B	26	C	39	B		



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DOCUMENT 4444



➤ Document 4444- 15th edition, AMDT 6



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1- What expression shall be used by a pilot, to cancel its IFR flight?

- A) Now in VMC
- B) Cancelling my IFR flight
- C) Request cancelling
- D) Changing to VFR

2- How many category of airplane specified for the purpose of wake turbulence?

- A) One
- B) Two
- C) Three
- D) Four

3- When the heavy wake turbulence aircraft shall say the word heavy to ATS unit?

- A) Before take-off
- B) Leaving holding
- C) Before landing
- D) At initial contact

4- If designated reporting point is not specified for position report, the first position report shall be made?

- A) 30 minutes after departure
- B) 60 minutes after departure
- C) 45 minutes after departure
- D) None

5- How long after the first position report, the next position report shall be made on a route not defined by specified reporting points?

- A) 30 minutes
- B) 45 minutes
- C) 60 minutes
- D) A or B is correct

6- When the speed shall be included in the position report?

- A) All the time
- B) Assigned speed by ATC
- C) During approach
- D) Initial contact



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- 7- Which of the following aircraft may include in its special air report the moderate turbulence?**
- A) Transonic
 - B) Supersonic
 - C) Subsonic
 - D) A and B are correct
- 8- What is the minimum vertical separation below FL410 in RVSM area?**
- A) 2000 ft
 - B) 1000 m
 - C) 1000 ft
 - D) 2000 m
- 9- Which letter is used in a flight plan to indicate that the flight commences in accordance with VFR and subsequently changes to IFR?**
- A) I
 - B) Z
 - C) V
 - D) Y
- 10- Repetitive flight plans (RPLs) shall be used for flights operated regularly on the same day(s) of consecutive weeks and:**
- A) On at least 20 days consecutively.
 - B) On at least ten occasions or every day over a period of at least 20 consecutive days.
 - C) On at least ten occasions or every day over a period of at least ten consecutive days.
 - D) On at least 20 occasions.
- 11- Which letter is used in a flight plan to indicate that the flight commences in accordance with IFR and subsequently changes to VFR?**
- A) Y
 - B) I
 - C) V
 - D) Z
- 12- The planned cruising speed for the first leg or all of the cruising portion of the flight must be entered in the speed box of a flight plan form, this speed is the:**
- A) Indicated air speed (IAS).
 - B) Estimated ground speed (G/S).
 - C) True air speed (TAS).
 - D) True air speed at 65% power.



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13- A flight plan should be amended or a new flight plan submitted and the old flight plan cancelled in the event of a delay. For controlled flights, this should be done in the event of a delay in excess of:

- A) 30 minutes.
- B) 60 minutes.
- C) 20 minutes.
- D) 45 minutes.

14- When VMC climb may be authorized?

- A) Night
- B) Within class C, D, E
- C) Day light
- D) Moon light

15- Within which class of airspace the VMC descend may be authorized?

- A) C
- B) D
- C) E
- D) B and C are correct

16- What significant change of tailwind component shall be reported to aircraft during approach?

- A) 2 kts
- B) 5 kts
- C) 8 kts
- D) 10 kts

17- How far from runway edge, an airplane shall be held, if holding marking is not provided and runway length is 2185 meters?

- A) 90 m
- B) 70 m
- C) 50 m
- D) 30 m

18- What SSR code shall be selected by an emergency airplane?

- A) 7500
- B) 7700
- C) 7600
- D) 7400



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19- Within which class of airspace the advisory service shall be provided?

- A) C
- B) E
- C) G
- D) F

20- Advisory service is not based on:

- A) Advice
- B) Suggest
- C) Clearance
- D) Information

21- Operation normal may be made between:

- A) 20-30 minutes
- B) 20-40 minutes
- C) 30-40 minutes
- D) 20-50 minutes

22- When a pilot is unable to comply with ATC instruction shall say:

- A) Unable to comply
- B) Unable to follow
- C) Unable
- D) Unable to do

23- The acknowledge of traffic information by pilot may be:

- A) Looking out
- B) Traffic in sight
- C) Negative contact
- D) All answers are correct

24- What phrases may be used by an airplane if requires visual inspection:

- A) Request low approach
- B) Request low pass
- C) Request low go
- D) Request go around

25- If the intention is to change from IFR to VFR at some point during the flight, the letter _____ is to be inserted in item _____ of the flight plan.

- A) V; 8
- B) Y; 8
- C) X; 9
- D) Y; 9



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26- What type of operation may be cleared for visual approach?

- A) VFR
- B) IFR
- C) Controlled IFR
- D) Uncontrolled IFR

27- The acknowledgment of missed approaching is:

- A) Missed approach
- B) Going around
- C) Missing approach
- D) Overshooting

28- Who decides whether to fly under IFR or VFR in VMC?

- A) The PIC.
- B) The ATS authority.
- C) The Operator.
- D) Either A or B.

29- When, in airspace where VFR are permitted, the pilot-in-command of an IFR flight wishes to continue his flight in accordance with visual flight rules, until the destination is reached:

1-Pilot must request "cancelling my IFR flight".

2-VMC must be for reasonable period.

3-He/she may request his IFR flight plan to be changed to a VFR flight plan.

4-VMC must be uninterrupted.

The correct combination of statements is:

- A) 1,2,4
- B) 1,2,3
- C) 2,3,4
- D) 1,3,4

30- At or below what level, the VMC climb or descent may be authorized?

- A) 5000 ft.
- B) 3000 ft.
- C) 10000 ft.
- D) All answers are correct.

31- What type of operation may be cleared for VMC ascend?

- A) IFR
- B) VFR
- C) Controlled flight
- D) Controlled IFR



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32- The cloud information other than "CB" shall be reported to arriving aircraft where the cloud is?

- A) Below 5000 Ft.
- B) Below the minimum sector altitude
- C) Below the highest minimum sector altitude
- D) "A" or "C" whichever is higher

33- How far from runway edge shall an aircraft hold its position when runway holding position is not marked and the runway length is 1100 ft?

- A) 30 meter
- B) 50 meter
- C) 90 meter
- D) 45 meter

34- Which of the following information is included in flight information service?

- A) SIGMET
- B) Volcanic activity
- C) Radioactive materials
- D) All answers are correct

35- What is the maximum characters of aircraft identification to be inserted in flight plan?

- A) 5
- B) 6
- C) 7
- D) 8

36- When an aircraft files the flight plan for the various stages and the purpose of intermediate stop, the initial clearance limit will be?

- A) FIR boundary
- B) First destination
- C) Last destination
- D) None

37- Under which condition, an aircraft may be exempted to report its position over compulsory reporting point?

- A) Specified by the operator
- B) Specified by the pilot
- C) Specified by the appropriate ATS authority
- D) Specified by ATC



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38- Change from IFR to VFR will always take place:

- A) When the aircraft is leaving controlled airspace during VMC.
- B) At the clearance limit, irrespective of the weather conditions.
- C) As instructed by an air traffic control unit
- D) During uninterrupted VMC when pilot request "cancelling my IFR flight"

39- If a pilot wishes to cancel an IFR flight plan and proceed under VFR in VMC, he must inform ATC and include the phrase:

- A) Cancelling IFR flight plan.
- B) Cancelling my IFR flight.
- C) Cancelling my flight.
- D) Cancelling IFR.

40- Within which class of airspace, the VMC climb or descent may be authorized?

- A) B
- B) C
- C) G
- D) E

41- The area control service shall be provided by.....

- A) Aerodrome control tower
- B) ACC
- C) Approach control unit
- D) Information

42- Who is responsible to be ensure that before departure, the aircraft has appropriate RNP and RVSM approval for the areas concerned?

- A) ATC
- B) Operator
- C) State
- D) Pilot

43- For the purpose of wake turbulence, the heavy category aircraft in initial contact shall say the word "HEAVY" to?

- A) Approach
- B) Center
- C) Tower
- D) ATS units



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44- When an aircraft cruising level is called height?

- A) Above transition level
- B) Altitude
- C) Above transition altitude
- D) None

45- Which of the following element of position report shall be reported in initial call after changing to a new radio frequency?

- A) Next position
- B) Flight level
- C) Altitude
- D) "B" and "C" are correct

46- Which letter is used in a flight plan to indicate that the flight is in under IFR?

- A) Z
- B) Y
- C) V
- D) I

47- Which of the following ATC unit may provide approach control service?

- A) ACC
- B) Aerodrome control tower
- C) Approach
- D) All answers are correct

48- When an aircraft maintaining a level within transition layer, it is?

- A) Flight level
- B) Height
- C) Altitude
- D) All answers are incorrect

49- How long after the first position report, on a route not defined by significant reporting point, the position report shall take place?

- A) Half an hour
- B) One hour
- C) 30 minutes
- D) At least one hour



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50- What is the contents of basic ADS report?

- A) Latitude and longitude
- B) Level and time
- C) "A" and "B" + figure of merit
- D) None

51- What is the minimum vertical separation, between same track flights above FL410?

- A) 1000 ft
- B) 2000 ft
- C) 1500 ft
- D) 4000 ft

52- What is the significant change of crosswind component to be reported to an aircraft on the final approach?

- A) 10 kts
- B) 5 kts
- C) 2 kts
- D) None

53- To which type of operation, the advisory service shall be provided?

- A) IFR
- B) VFR
- C) Controlled flight
- D) All answers are correct

54- Changing of flight rules from IFR to VFR is possible:

- A) If the commander so requests.
- B) If instructed by ATC as long as VMC is forecast during the next 30 minutes.
- C) If instructed by ATC as long as VMC is forecast during the next 60 minutes.
- D) Only when leaving controlled airspace.

55- Who is responsible to submit RPL?

- A) Pilot-in-command
- B) Dispatcher
- C) Ground designator
- D) Operator

56- When the aircraft has ADS equipment, what letter shall be inserted in flight plan?

- A) N
- B) D
- C) C
- D) S



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57- If an uncontrolled VFR operating between point "A" and "B" at 5500 ft, what characters shall be inserted in flight plan?

- A) A055
- B) F055
- C) VFR
- D) 5500

58- If during the filling flight plan, the total number of person to be carried is unknown, what shall be inserted in flight plan?

- A) Crew list
- B) TBN
- C) "A" or "B" is correct
- D) None

59- Which of the following letter shall be inserted in item 10 of flight plan where the transponder is mode "A" (4 digits- 4096 codes) and mode "C"?

- A) A
- B) X
- C) C
- D) P

60- If the cruising speed of an airplane is 430 nautical miles per hour, which of the following characters shall be filled in flight plan?

- A) 430 kts
- B) N430
- C) 0430 kts
- D) N0430

61- What characters shall be inserted in flight plan to indicate flight level 95?

- A) F095
- B) FL95
- C) F95
- D) FL095

62- How many sections are provided in routine air report?

- A) 1
- B) 2
- C) 3
- D) 4



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63- What is the first part of routine air report?

- A) Weather information
- B) Operational information
- C) Passengers information
- D) Position report

64- What significant change of headwind component shall be reported to aircraft during approach?

- A) 10 Kts
- B) 5 Kts
- C) 7 Kts
- D) 2 Kts

65- Along which of the following designated ATS routes, RNAV distance- based separation may be applied between RNAV- equipped aircraft?

- A) RNAV route
- B) NDB routes
- C) VOR routes
- D) "A" or "C" is correct

66- When a pilot is unable to comply with ATC instruction, shall transmit?

- A) Unable
- B) Unable to comply
- C) Cannot comply
- D) All answers are correct

67- What is the minimum distance of taxi holding position of a runway with a length above 2500 m, when there is not taxi holding position marking?

- A) 50 m, from runway edge.
- B) 50 m, from runway centerline.
- C) 90 m, from runway edge.
- D) 30 m, from runway center line.

68- At least how many alternate aerodrome shall be specified for an IFR flight in flight plan?

- A) One.
- B) Two.
- C) 1 or 2.
- D) None.



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69- When an airplane is at initial approach altitude, what shall be ceiling till the pilot request visual approach?

- A) Equal to initial approach altitude.
- B) Lower than initial approach altitude.
- C) Higher than initial approach altitude.
- D) All answers are incorrect.

70- Which of the following aircraft may request visual approach?

- A) VFR.
- B) SVFR.
- C) IFR.
- D) CVFR.

71- When VMC descend may authorize?

- A) Day light
- B) Night.
- C) Heavy traffic.
- D) Emergency.

72- According which of the following basis the advisory service shall be provide?

- A) Advise.
- B) Traffic information.
- C) Suggest.
- D) All answers are correct.

73- How long a flight plan for an uncontrolled flight is valid?

- A) 30 min.
- B) 10 min.
- C) 60 min.
- D) 40 min.

74- Advisory service based on:

- A) Suggestion.
- B) Advice.
- C) Clearance.
- D) A and B are correct.

75- The flight plan should be amended if ETD is for controlled flight exceed:

- A) One hour.
- B) Two hours.
- C) 30 min.
- D) None.



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76- VMC ascend may be authorized during:

- A) Night.
- B) Day light hour.
- C) Sunset and sunrise.
- D) All answers are correct.

77- Heavy wake turbulence aircraft shall say the word heavy after the call sign in initial contact to:

- A) Approach control unit.
- B) Area control center.
- C) Aerodrome control tower.
- D) Any ATSU

78- Clearance limit is the point to which ----- is granted an air traffic control clearance:

- A) An aircraft.
- B) Approach.
- C) Passenger.
- D) Clearance.

79- When should you contact departure control after takeoff on an IFR flight?

- A) When instructed by tower.
- B) Prior to penetrating clouds.
- C) When established on the assigned heading.
- D) Upon leaving 9000 ft.

80- RPLs shall be submitted only for:

- A) IFR flight for one mount.
- B) IFR and VFR flights.
- C) IFR flights operated regularly at least ten consecutive days.
- D) VFR flights operated regularly at least ten consecutive days.

81- The wake turbulence category "HEAVY" is applied to aircraft of (MTOM):

- A) 126000 lbs or more.
- B) 40000 lbs or more.
- C) More than 136000 lbs.
- D) 136000 kg or more.

82- The Takeoff Mass of MEDIUM aircraft is as follows:

- A) Less than 136000 kg but more than 7000 kg
- B) Less than 132000 kg but more than 7000 kg.
- C) Less than 136000 kg but more than 9000 kg.
- D) Less than 132000 kg but more than 9000 kg.



83- Aircraft in which wake turbulence category shall include their category immediately after the call sign in the initial radiotelephony contact with the aerodrome control tower or the approach control office prior to departure or arrival?

- A) HEAVY aircraft
- B) MEDIUM aircraft.
- C) MEDIUM and HEAVY aircraft.
- D) MEDIUM, HEAVY and LIGHT aircraft.

84- Cruising level IFR during cruise within controlled airspace shall be given as flight level (FL):

- A) Only in airspace class A.
- B) When QNH is higher than the standard pressure 1013 hPa.
- C) Above the transition altitude when applicable.
- D) If the obstacle clearance is more than 2000 feet.

85- When should ATC pass the QNH to an aircraft?

- A) With clearance to enter the traffic pattern.
- B) At the start of radar vectoring.
- C) In taxi clearance prior takeoff.
- D) Only A and C above are correct.

86- Unless instructed otherwise by an air traffic controller, when passing through the transition layer, a pilot shall report the vertical position of the aircraft as:

- A) Either altitude or flight level during a climb.
- B) Flight level in a descent.
- C) Altitude in a climb.
- D) Altitude in a descent.

87- When should position reports be made?

- A) When passing designated significant points referred to as "on request reporting points".
- B) At the discretion of the commander.
- C) When passing each designated compulsory reporting point.
- D) At one hourly intervals.

88- The positions reports shall contain the following elements of information in the order listed:

- A) Aircraft identification, position, time, flight level or altitude, next position and time over and ensuing significant point.
- B) Aircraft identification, position, flight level or altitude, time, next position and time over and ensuing significant point.
- C) Aircraft identification, position, time, true airspeed, flight level or altitude, next position and time over.
- D) Aircraft identification, position, time, flight level or altitude, next position and time over.



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89- What does ACC mean?

- A) Advisory route.
- B) Area control center.
- C) Acknowledge.
- D) Approach control center.

90- What does ADR mean?

- A) Advisory route.
- B) Aerodrome.
- C) Advisory distress route.
- D) Altitude dead reckoning.

91- A control area or portion thereof established in the form of a corridor equipped with radio navigation aids is also known as:

- A) A Terminal Maneuvering Area.
- B) An upper air route.
- C) An airway.
- D) A SVFR entry/exit corridor.

92- What is the objective of the alerting service?

- A) To prevent collisions between aircraft.
- B) To provide the advisory service.
- C) To notify appropriate organizations regarding aircraft in need of assistance.
- D) Provide advice and information useful to the safe and efficient conduct of flights.

93- At least which services have to be provided by ATS within a flight information region?

- A) Flight information service and alerting service.
- B) Flight information service.
- C) Flight information service and air traffic advisory service
- D) Flight information service and air traffic control service.

94- The abbreviation RNP means:

- A) Required navigation precision.
- B) Requested navigation position.
- C) Required navigation performance.
- D) Required navigation point.

95- Air Traffic Service unit means:

- A) Flight Information Centers and Air Services reporting offices.
- B) Air Traffic Control units and Flight Information Centers.
- C) Air Traffic Control units and Air Services reporting offices.
- D) Air Traffic Control units, Flight Information Centers or Air Traffic Services Reporting offices.



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96- Which does ATC term "Radar Contact" signify?

- A) You will be given traffic advisories until advised that the service has been terminated or that radar contact has been lost.
- B) Your aircraft has been identified and you will receive separation from all aircraft while in contact with this radar facility.
- C) Your aircraft has been identified on the radar display and radar flight instructions will be provided until radar identification is terminated.
- D) ATC is receiving your transponder and will furnish vectors and traffic advisories until you are advised that contact has been lost

97- What is meant by RNP4?

- A) The fix tolerance factor of the navigational equipment is 4%.
- B) Navigation accuracy of 4 NM during 95% of the flight.
- C) Minimum requirements to fly RNAV routes.
- D) All answers are correct.

98- The Air Traffic Control unit has reported "radar contact", what does that mean to the pilot?

- A) Position reports may be omitted.
- B) The pilot does not have to follow up the position of the aircraft.
- C) The aircraft is subject to positive control.
- D) The radar identity of the aircraft has been established.

99- What does ACC mean?

- A) Advisory route.
- B) Area control center.
- C) Acknowledge.
- D) Approach control center.

100- What is the objective of the alerting service?

- A) To prevent collisions between aircraft.
- B) To provide the advisory service.
- C) To notify appropriate organizations regarding aircraft in need of assistance.
- D) Provide advice and information useful to the safe and efficient conduct of flights.

101- Which of the following statements regarding alerting service is correct?

- A) The alert phase is established when no communication has been received from an aircraft within a period of thirty minutes after the time a communication should have been received.
- B) Aircraft in the vicinity of an aircraft known or to be believed to be the subject of unlawful interference, shall be informed about this.
- C) Alerting service and Flight Information Service are often provided by the same ATS unit.
- D) The distress phase is established when an aircraft known or believed to be the subject of unlawful interference.



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102- Clearance limit is a point:

- A) To which a specific clearance is valid.
- B) From which a specific clearance is valid.
- C) Where an airway clearance is amended.
- D) To which a specific clearance is valid and this point is determined by PIC.

103- The Approach Control Service is an Air Traffic Control Service:

- A) For IFR flights arriving and departing.
- B) Provided for IFR and VFR flights within a Control Zone.
- C) Provided for IFR traffic within a Control Zone.
- D) Provided for the arriving and departing controlled flights.

104- What does the abbreviation AFIS stand for?

- A) Aerodrome Flashing Identification Signal.
- B) Automatic Flight Information Service.
- C) Aeronautical Flight Information System.
- D) Aerodrome Flight Information Service.

105- In the event of a delay for an uncontrolled flight which a flight plan has been submitted, the flight plan should be amended or a new flight plan submitted and the old one cancelled, when:

- A) The delay is more than 30 minutes of the estimated time off-blocks.
- B) The delay is more than 60 minutes of the estimated time off-blocks.
- C) The delay is more than 60 minutes of the estimated time of departure.
- D) The delay is more than 30 minutes of the estimated time of departure.

106- The controlling authority for a CTA is an:

- A) TWR
- B) ACC
- C) APP
- D) GND

107- You receive an IFR en-route clearance stating: Clearance expires at 0920, What does it mean?

- A) If not airborne until 0920 a new clearance has to be issued.
- B) Do not take off before 0920.
- C) The takeoff clearance is expected at 0920.
- D) After 0920 return to the ramp and file a new flight plan.

108- IFR clearance is always valid:

- A) To the clearance limit.
- B) For a maximum period of 30 minutes.
- C) Until landing at the aerodrome of destination.
- D) For a maximum period of 5 minutes.



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109- Who decides whether to fly under IFR or VFR in VMC?

- A) The PIC.
- B) The ATS authority.
- C) The Operator.
- D) Either A or B

110- What does the term "omit position reports" mean?

- A) Miss out the next position report.
- B) The flight is exempt from making position reports.
- C) Only report at compulsory reporting points.
- D) Only report when passing VOR stations.

111- An aircraft captain should transmit special aircraft observations when he encounters:

- A) Other conditions that the captain considers may affect the safety of other aircraft.
- B) Moderate turbulence, hail or CB clouds during supersonic or transonic flight.
- C) Severe turbulence or icing.
- D) All answers are correct.

112- "ESSENTIAL TRAFFIC" is that controlled flight to which the provision of separation by ATC is applicable, but which, in relation to a particular controlled flight is not separated therefore by the appropriate separation minima. Whenever separation minima are not applied. The following flights are considered essential traffic one to each other:

- A) Controlled VFR flights and VFR flights.
- B) All IFR flight in controlled airspaces and VFR.
- C) All IFR flights.
- D) Only controlled IFR flights.

113- When can separation in the vicinity of an aerodrome be reduced?

- A) At any time when the pilot requests.
- B) When the pilot has the aircraft ahead in visual contact.
- C) Only at the controller's discretion.
- D) Never.

114- Essential traffic information shall be given to:

- A) All controlled flights at any time.
- B) All flights that are "known" to ATC.
- C) Controlled flights, whenever they constitute essential traffic to each other.
- D) All aircraft at the discretion of the air traffic controller.



115- During the final approach which of the following information will be transmitted to the pilot without delay?

- 1) The sudden occurrence of hazards.
- 2) Significant variations in the current surface wind expressed in terms of minimum and maximum values.
- 3) Significant changes in runway and taxiway surface conditions.
- 4) Changes in the operational status of the required visual or non-visual aids.

- A) 1, 2, 3, 4
- B) 1, 2, 3
- C) 2, 3, 4
- D) 1, 2, 4

116- Which of the following has the highest order of priority?

- A) Aircraft taking-off.
- B) Aircraft landing.
- C) Aircraft taxiing.
- D) Aircraft being towed by a vehicle.

117- What does a clearance for "immediate takeoff" mean?

- A) Line up immediately after the landing aircraft.
- B) Have all the appropriate checks complete before entering the runway.
- C) The subsequent taxi and takeoff shall be completed in one continuous movement.
- D) Enter the runway, apply the brakes, set full power, release the brakes and take off without further clearance.

118- What is the primary reason for Radar in ATC?

- A) Separation.
- B) Helping when communications have failed.
- C) To assist pilots with technical problems.
- D) To assist pilots of aircraft that are lost.

119- Regarding Aerodrome Flight Information Service (AFIS):

- A) It can only supply limited services to the users and under no circumstances may it supply ATC services.
- B) Its purpose is to supply ATC services but it is not a state organization.
- C) It has the same privileges and prerogatives as an ATC organization but its activity is neither continuous nor regular.
- D) Its only purpose is to relay ATC information to the aircraft in flight or on the ground.



120- An Air Traffic Control Unit:

- A) May not ask an aircraft to change its call sign after accepting the flight plan.
- B) May ask an aircraft to temporarily change its call sign for safety reasons when there is a risk of confusion between two or more similar call signs.
- C) May require to change the call sign for safety reasons when there is a risk of confusion between two or more similar call signs providing the aircraft is on a repetitive flight plan.
- D) Must not ask an aircraft to change its call sign.



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	B	26	C	51	D	76	B
2	C	27	B	52	B	77	D
3	D	28	A	53	A	78	A
4	A	29	A	54	A	79	A
5	C	30	D	55	D	80	C
6	B	31	C	56	B	81	D
7	D	32	D	57	C	82	A
8	C	33	A	58	B	83	A
9	B	34	D	59	C	84	C
10	C	35	C	60	D	85	D
11	A	36	B	61	A	86	D
12	C	37	D	62	C	87	C
13	A	38	D	63	D	88	A
14	C	39	B	64	A	89	B
15	D	40	D	65	D	90	A
16	A	41	B	66	A	91	C
17	C	42	B	67	A	92	C
18	B	43	D	68	B	93	A
19	D	44	D	69	D	94	C
20	C	45	D	70	C	95	D
21	B	46	D	71	A	96	C
22	C	47	D	72	D	97	B
23	D	48	D	73	C	98	D
24	B	49	B	74	D	99	B
25	B	50	C	75	C	100	C



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QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	C	108	A	115	D		
102	A	109	A	116	B		
103	D	110	B	117	C		
104	D	111	D	118	A		
105	B	112	B	119	A		
106	B	113	B	120	B		
107	A	114	C				



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FLIGHT PLANNING





IRANBOOKLET



1- Runway 30 is being used for landing. Which surface wind would exceed the airplane's crosswind capability of $0.2 V_{SO}$, if V_{SO} is 60 knots?

- A) 260° at 10 knots
- B) 275° at 25 knots
- C) 315° at 35 knots
- D) 320° at 40 knots

2- If the reported surface wind is 010° at 18 knots, what is the crosswind component for RWY08 during landing?

- A) 7 knots
- B) 15 knots
- C) 17 knots
- D) 21 knots

3- The surface wind is 180° at 25 knots. What is the crosswind component for RWY13 during landing?

- A) 25 knots
- B) 22 knots
- C) 21 knots
- D) 19 knots

4- Given:

Fuel flow: 6.5 t/hr
Specific gravity: 0.80
Mach number: 0.68
OAT: -30°C
Headwind component: 25 kts

What is the specific fuel consumption?

- A) 16.7 kg/NM air distance.
- B) 13.4 kg/NM ground distance.
- C) 13.4 kg/NM air distance.
- D) 16.7 kg/NM ground distance.

5- Given:

TAS: 485 kts
OAT: $\text{ISA}+10^\circ\text{C}$
P.A: FL360

Calculate the Mach number.

- A) 0.79
- B) 0.90
- C) 0.83
- D) 0.87



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6- Given:

TAS: 487 kts
P.A: FL330
Temperature: ISA + 15° C

Calculate the Mach number.

- A) 0.81
- B) 0.87
- C) 0.76
- D) 0.78

7- If the headwind component is 50 kts, the FL330, temperature ISA -7 °C and the ground speed is 495 kts, what is the Mach number?

- A) 1.00
- B) 0.79
- C) 0.95
- D) 0.75

8- Given:

Fuel flow: 42 US Gal/hr
Specific gravity: 0.72
TAS: 210 kts

What is the specific fuel consumption?

- A) 1.052 kg/NM air distance.
- B) 0.757 kg/NM air distance.
- C) 0.144 kg/NM air distance.
- D) 0.545 kg/NM air distance.

9- Given:

Fuel flow: 28 Imp Gal/hr
Specific gravity: 0.72
TAS: 154 mph

What is the specific fuel consumption?

- A) 0.60 kg/NM air distance.
- B) 0.68 kg/NM air distance.
- C) 1.46 kg/NM air distance.
- D) 0.50 kg/NM air distance.



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10- You want to fly 12000 ft above a frozen lake (elevation 930 ft AMSL). You have obtained QNH from an airfield in the area. Climbing, you observe that the air temperature at FL080 is -20°C. What should your indicated altitude be when you are 12,000 ft above the frozen lake?

- A) 14350 ft
- B) 12000 ft
- C) 12560 ft
- D) 13950 ft

11- An aircraft at FL370 is required to commence descent at 120 NM from a VOR and to cross the facility at FL130. If the mean ground speed for the descent is 288 kts, the minimum rate of descent required is:

- A) 960 ft/min.
- B) 860 ft/min.
- C) 890 ft/min.
- D) 920 ft/min.

12- Given:

Distance A to B:	325 NM
Planned G/S:	315 kts
ATD:	1130 UTC

1205 UTC - fix obtained 165 NM along track. What G/S must be maintained from the fix in order to achieve planned ETA at B?

- A) 335 kts
- B) 375 kts
- C) 395 kts
- D) 355 kts

13- A fuel amount of 160 US Gal allows endurance of 3 hrs 10 min with a light twin engine piston aircraft. What is the corresponding fuel flow per engine?

- A) 25.3 US Gal/hr
- B) 50.5 US Gal/hr
- C) 51.6 US Gal/hr
- D) 25.8 US Gal/hr

14- Find the speed of sound if the ambient air temperature is -45 °C at FL360.

- A) 555 Kts
- B) 586 Mph
- C) 586 Kts
- D) 555 Mph



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15- Determine the rate of climb (ft/min) by the following information:

Ground Speed: 110 Kts
Climb Gradient: 330 ft/NM

- A) 506
- B) 605
- C) 565
- D) 665

16- An aircraft, following a 215° true track at variation 3°W, must fly over a 10600 ft obstacle with a minimum obstacle clearance of 1500 ft. Knowing the QNH received from an airport close by, which is almost at sea-level, is 1035 and the temperature is ISA -15°C, the minimum flight level will be:

- A) 140
- B) 120
- C) 130
- D) 150

17- Given TAS 500 kts and OAT -40 °C, Mach number is:

- A) 0.80
- B) 0.82
- C) 0.84
- D) 0.88

18- Given the following data determine the maximum possible takeoff fuel:

Fuel density: 0.78 kg/lit
Dry Operating Mass: 33500 kg
Traffic Load: 10600 kg
Maximum Allowable Takeoff Mass: 66200 kg
Taxi Fuel: 200 kg
Tank capacity: 22500 liters

- A) 17350 kg
- B) 22100 kg
- C) 17550 kg
- D) 22300 kg

19- A turbine-engine aircraft burns fuel at 200 gallons per hour (GPH) with a fuel density of 0.80 what is the fuel flow if fuel density is 0.75?

- A) 213 GPH
- B) 208 GPH
- C) 200 GPH
- D) 188 GPH



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20- The final reserve fuel for aeroplanes with turbine engines is:

- A) Fuel to fly for 45 minutes at holding speed at 1000 ft (300 m) above aerodrome elevation in standard conditions.
- B) Fuel to fly for 45 minutes at holding speed at 1500 ft (450 m) above aerodrome elevation in standard conditions.
- C) Fuel to fly for 30 minutes at holding speed at 1500 ft (450 m) above aerodrome elevation in standard conditions.
- D) Fuel to fly for 60 minutes at holding speed at 1500 ft (450 m) above aerodrome elevation in standard conditions.

21- Given:

Maximum Allowable Takeoff Mass:	64400 kg
Maximum Landing Mass:	56200 kg
Maximum Zero Fuel Mass:	53000 kg
Dry Operating Mass:	35500 kg
Estimated load:	14500 kg
Estimated Trip Fuel:	4900 kg
Minimum takeoff fuel:	7400 kg

Find maximum additional load.

- A) 7000 kg
- B) 4000 kg
- C) 3000 kg
- D) 5600 kg

22- For a planned flight the calculated fuel is as follows:

Flight time:	3 hrs : 6 min
Taxi fuel:	8 kg
Block Fuel:	118 kg

The reserve fuel, at any time, should not be less than 30% of the remaining trip fuel. How much fuel should remain after 2 hours flight time?

- A) 27 kg Trip Fuel and 8 kg reserve fuel.
- B) 39 kg Trip Fuel and 11.7 kg reserve fuel.
- C) 30 kg Trip Fuel and 9 kg reserve fuel.
- D) 39 kg Trip Fuel and no reserve fuel.



23- An operator (turbojet engine) shall ensure that calculation of usable fuel for a flight for which destination alternate is required includes, taxi fuel, Trip Fuel, contingency fuel and fuel to fly for:

- A) 45 minutes plus 15% of the flight time planned to be spent at cruising level or two hours whichever is less.
- B) 3 hours at normal cruise consumption.
- C) 30 minutes at holding speed at 450 m above alternate aerodrome elevation in standard conditions.
- D) 30 minutes at holding speed at 450 m above MSL in standard conditions.

24- An operator shall ensure that calculation of usable fuel for an IFR flight with a turbojet aeroplane for which no destination alternate is required includes, taxi fuel, trip fuel, contingency fuel and fuel to fly for:

- A) 45 minutes plus 10% of the flight time planned to be spent at cruising level or two hours whichever is less.
- B) 2 hours at normal cruise consumption.
- C) 45 minutes at holding speed at 450 m above aerodrome elevation in standard conditions.
- D) 45 minutes at holding speed at 450 m above MSL in standard conditions.

25- The quantity of fuel which is calculated to be necessary for a jet aeroplane to fly IFR from departure aerodrome to the destination aerodrome is 5352 kg. Fuel consumption in holding mode is 6000 kg/hr. Alternate fuel is 4380 kg. Contingency should be 5% of Trip Fuel. What is the minimum required quantity of fuel which should be on board at takeoff?

- A) 13370 kg
- B) 14500 kg
- C) 13000 kg
- D) 13220 kg

26- The trip fuel for a jet aeroplane to fly from the departure aerodrome to the destination aerodrome is 5350 kg. Fuel consumption in holding mode is 6000 kg/hr. The quantity of fuel which is needed to carry out one go-around and land on the alternate airfield is 4380 kg. The destination aerodrome has a single runway. What is the minimum quantity of fuel which should be on board at takeoff?

- A) 13000 kg
- B) 13230 kg
- C) 14730 kg
- D) 11730 kg



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27- You must fly IFR on an airway oriented 135° magnetic with a MSA at 7800 ft, knowing the QNH is 1025 hPa and the temperature is ISA + 10, the minimum flight level you must fly at is:

- A) 075
- B) 080
- C) 090
- D) 070

28- For a flight to an offshore platform, an alternate aerodrome is compulsory, except if:

- 1) Flight duration does not exceed two hours.
- 2) During the period from two hours before to two hours after the estimated landing time, the forecast conditions of ceiling and visibility are not less than one and a half times the applicable minima.
- 3) The platform is available and no other flight either from or to the platform is expected between the estimated time of departure and one half hour after the estimated landing time.

- A) 1,2,3
- B) 1,2
- C) 1,3
- D) 2,3

29- An aircraft flying at 7500 ft is cleared to descend to be level at 1000 ft, 6 NM before reaching a beacon. If ground speed is 156 kts and Rate of Descent is 800 ft/min, how many nautical miles before the beacon should descent begin?

- A) 15.0
- B) 30.2
- C) 27.1
- D) 11.1

30- An aircraft is flying at MACH 0.84 at FL330. The static air temperature is -48°C and the headwind component 52 kts. At 1338 UTC the controller requests the pilot to cross the meridian of 030°W at 1500 UTC. Given the distance to go is 570 NM, the reduced Mach number should be:

- A) 0.72
- B) 0.74
- C) 0.76
- D) 0.80

31- You are flying on compass heading of 252° variation is 22°E , deviation is 3°W and your INS is showing a drift of 9° to the right. The true track is?

- A) 242°
- B) 262°
- C) 280°
- D) 224°



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32- After flying for 16 min at 100 kts TAS with a 20 kts tailwind component, you have to return to the airfield of departure. You will arrive after:

- A) 20 min.
- B) 24 min.
- C) 10 min 40 sec.
- D) 16 min.

33- An airplane flies at an airspeed of 380 kts, it flies from A to B and back to A. Distance AB is 480 NM. When going from A to B, it experiences a headwind component at 60 kts. The wind remains constant. The duration of the flight will be:

- A) 3 hrs. 00 min
- B) 2 hrs. 35 min
- C) 2 hrs. 10 min
- D) 2 hrs. 32 min

34- Flight planning chart for an airplane states that the time to reach the cruising level at a given gross mass is 36 minutes and the distance travelled is 157 NM (zero wind). What will be the distance travelled with an average tailwind component of 60 kts?

- A) 193 NM
- B) 128 NM
- C) 157 NM
- D) 228 NM

35- In the cruise at FL155 at 260 kts TAS, the pilot plans for a 500 (ft/min) descent in order to fly overhead Rasht VOR at 2000 feet (QNH 1030). TAS will remain constant during descent, wind is negligible, and temperature is standard. The pilot must start the descent at a distance from Rasht VOR:

- A) 140 NM
- B) 120 NM
- C) 110 NM
- D) 130 NM

36- An aircraft flight planning chart states that the time to reach FL190 at a given gross mass is 22 minutes with a still air distance of 66 NM. The ground distance travelled when the average headwind component is 35 kts will be:

- A) 53 NM
- B) 61 NM
- C) 79 NM
- D) 85 NM



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37- How many feet you have to climb to reach FL075?

Given:

Departure aerodrome elevation: 1500 ft

QNH: 1023 hPa

Temperature: ISA

(Assume 1 hPa is 30 ft)

- A) 6300 ft.
- B) 6000 ft.
- C) 6600 ft.
- D) 7800 ft.

38- An aircraft takes 14 minutes to climb to FL290 covering 71 NAM, what is the ground distance covered in a 30 kts headwind?

- A) 71 NGM
- B) 57 NGM
- C) 78 NGM
- D) 64 NGM

39- A sector distance is 450 NM long. The TAS is 460 kts. The wind component is 40 kts tailwind.

What is the still air distance?

- A) 414 Nautical Air Miles (NAM).
- B) 499 Nautical Air Miles (NAM).
- C) 406 Nautical Air Miles (NAM).
- D) 511 Nautical Air Miles (NAM).

40- An aircraft is in cruising flight at FL095 and TAS 155 kts. The pilot intends to descend at 500 (ft/min) to arrive overhead the Bandar Abbas VOR/DME at 2000 ft (QNH 1030 hPa). The TAS remains constant in the descent, wind is negligible, temperature standard. At which distance from Bandar Abbas VOR/DME should the pilot commence the descent? (1hPa=27 ft)

- A) 41 NM
- B) 48 NM
- C) 38 NM
- D) 45 NM

41- A descent is planned from FL340 so as to arrive at FL100 at a distance 6 NM from a VORTAC, at a G/S of 280 kts and a rate of descent of 1200 ft/min. The distance from the VORTAC when descent is started is:

- A) 65 NM
- B) 99 NM
- C) 27 NM
- D) 93 NM



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42- ATC require a descent from FL270 to FL160 to be level 6 NM before a VOR. If rate of descent is 800 feet per minute, mean groundspeed is 256 kts, how far out from the VOR must descent be started?

- A) 59 NM
- B) 65 NM
- C) 144 NM
- D) 150 NM

43- In a flight plan when the destination aerodrome is A and the alternate aerodrome is B, the final reserve fuel for a turbojet engine airplane corresponds to:

- A) 15 minutes holding 2000 feet above aerodrome A.
- B) 30 minutes holding 2000 feet above aerodrome B.
- C) 30 minutes holding 1500 feet above aerodrome B.
- D) 30 minutes holding 1500 feet above aerodrome A.

44- A jet airplane is to fly from A to B. The minimum final reserve fuel must allow for:

- A) 20 minutes hold over alternate airfield.
- B) 30 minutes hold at 1500 ft above destination aerodrome elevation, when no alternate is required.
- C) 30 minutes hold at 1500 ft above mean sea level.
- D) 15 minutes hold at 1500 ft above destination aerodrome elevation.

45- Given:

Dry Operating Mass (DOM):	33510 kg
Load:	7600 kg
Trip Fuel:	2040 kg
Final reserve fuel:	983 kg
Alternate fuel:	1100 kg
Contingency fuel:	5% of Trip Fuel

If the flight is performed as planned, which of the listed estimated masses is correct?

- A) Estimated Takeoff Mass is 45233 kg.
- B) Estimated Landing Mass at destination is 43295 kg.
- C) Estimated Landing Mass at destination is 43193 kg.
- D) Estimated Landing Mass at alternate is 42093 kg.



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46- When calculating the fuel required to carry out a given flight, one must take into account:

- 1) The wind
- 2) Foreseeable airborne delays
- 3) Other weather forecasts
- 4) Any foreseeable conditions which may delay landing

The combination which provides the correct statement is:

- A) 1, 2, 3
- B) 1, 3
- C) 2, 4
- D) 1, 2, 3, 4

47- The measured course 042°T. The variation in the area is 6°W and the wind is calm. The deviation is 4°W. In order to follow this course, the pilot must fly a compass heading of:

- A) 040°
- B) 044°
- C) 052°
- D) 058°

48- At 1000 UTC Shanwick Oceanic clear you to enter the Oceanic Control Area at 47°00' N 008°W, 220 track miles from your current position, at time 1033 UTC. At FL200, ISA conditions and with TAS 430 kts, headwind 30 kts, FMS being unavailable, what is the required Mach number to comply with this instruction?

- A) M 0.75
- B) M 0.70
- C) M 0.60
- D) M 0.80

49- What is the new CG location if 800 lbs of cargo are moved from the forward cargo hold to the aft cargo hold?

Airplane gross weight:	150000 lbs
CG prior to shift:	998.0" aft of datum
Arm of FWD component:	667.0" aft of datum
Arm of aft component:	1160" aft of datum

- A) 1003.5 inches
- B) 1000.6 inches
- C) 996.0 inches
- D) 994.8 inches



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50- What is the new CG location if 1000 lbs of cargo are moved from the aft compartment to the forward compartment?

Airplane gross weight: 155000 lbs
CG prior to shift: 1000" aft of datum
Arm of FWD component: 670" aft of datum
Arm of aft component: 1166" aft of datum

- A) 998.5 inches
- B) 998.0 inches
- C) 997.5 inches
- D) 996.8 inches

51- If 225 pounds of weight be shifted from station 64.0" to station 172.0", the CG would be at:

Total weight: 10340 lbs
CG prior to shift: station 110.0"

- A) 107.65
- B) 112.35
- C) 108.65
- D) 110.35

52- What is the new CG after gear and flap retraction, if total moment displacement is 8840 in-lbs (aft)?

Total weight: 6800 lbs
CG prior to shift: station 91.7"

- A) 92.0"
- B) 93.0"
- C) 90.4"
- D) 95.0"

53- After gear and flaps retraction, there was a reduction in total moment by 10800 in- lbs, where would the CG be located? (AFT)

Total weight: 13520 lbs
CG location: station 117"

- A) 117.8
- B) 116.2
- C) 118.0
- D) 116.8



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54- Given:

Total weight: 4137 lbs
CG location station: 67.8"
Fuel consumption: 13.7 GPH
Fuel CG station: 68.0"

After 1 hour 30 minutes of flight time, the CG would be located at station: (assume 1 USG is 6 lbs)

- A) 67.79
- B) 68.79
- C) 70.78
- D) 72.78

55- Could 100 pounds of weight be removed from station 30.0 without exceeding aft CG limit?

Total weight: 2800 lbs
CG location: station 85.0"
Aft CG limit: station 87.0"

- A) Yes, the new CG will be located at station 85.92.
- B) No, the new CG will be located at station 87.15.
- C) No, the new CG will be located at station 87.04.
- D) Yes, the new CG will be located at station 85.02.

56- What is the maximum allowable weight that may be carried on a pallet which has the dimension of 76×76 inches?

Floor load limit: 186 lbs/sq ft
Pallet weight: 93 lbs
Tie down devices: 39 lbs

- A) 7421.3
- B) 7250.3
- C) 7328.7
- D) 71200.1

57- What is the maximum allowable weight that may be carried on a pallet which has the dimensions of 36×48 inches?

Floor load limit: 169 lbs/sq ft
Pallet weight: 47 lbs
Tie down devices: 33 lbs

- A) 1948 pounds
- B) 1995 pounds
- C) 1981 pounds
- D) 1990 pounds



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62- (Refer to figure I-10) What is the time to alternate?

Given:

Distance to Alternate: 400 NM
Landing Mass at Alternate: 50000 kg
Tailwind component: 50 kts

- A) 96 minutes
- B) 25 minutes
- C) 50 minutes
- D) 58 minutes

63- (Refer to figure I-11) An aircraft cruising at FL350 in light and variable winds turn at waypoint "ALPHA" weighing 53500 kg and later turns waypoint "BRAVO" now weighing 50200 kg. Assuming standard conditions what is the TAS, distance and specific fuel consumption between "ALPHA" and "BRAVO"?

- A) 429 kts, 627 NM, 5.26 kg/NM.
- B) 426 kts, 631 NM, 5.22 kg/NM.
- C) 429 kts, 627 NM, 6.25 kg/NM.
- D) 429 kts, 573 NM, 5.24 kg/NM.

64- (Refer to figure I-12) For a long distance flight at FL390, "Long Range" regime, divided into four flight legs with the following characteristics:

Leg 1

Ground distance: 2000 NM
Headwind component: 50 kts

Leg 2

Ground distance: 1000 NM
Headwind component: 30 kts

Leg 3

Ground distance: 500 NM
Tailwind component: 100 kts

Leg 4

Ground distance: 1000 NM
Headwind component: 70 kts

The air distance of the entire flight is approximately:

- A) 5040 NM
- B) 4900 NM
- C) 5120 NM
- D) 4630 NM



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65- (Refer to figure I-13) For a turbojet aeroplane flying with a mass of 190000 kg, at Mach 0.82, and knowing that the temperature at flight level FL370 is - 35°C, the optimum flight altitude calculated using the annex is:

- A) 37400 ft
- B) 37800 ft
- C) 34800 ft
- D) 38600 ft

66- (Refer to figure I-14) Find the short distance cruise altitude for the twin jet aeroplane.

Given:

Brake release mass: 45000 kg
Temperature: ISA + 20 °C
Trip distance: 50 Nautical Air Miles (NAM)

- A) 11000 ft
- B) 12500 ft
- C) 10000 ft
- D) 7500 ft

67- (Refer to figure I-15) Find the fuel flow for the twin jet aeroplane.

Given:

Cruise: Mach 0.74 at FL310
Weight: 50000 kg
Temperature: ISA

- A) 2560 kg / hr
- B) 1150 kg / hr
- C) 2994 kg / hr
- D) 2300 kg / hr

68- The following fuel consumption figures are given for a jet airplane:

Standard taxi fuel: 600 kg
Average cruise consumption: 10000 kg/hr
Holding fuel consumption at 1500 ft above alternate airfield elevation: 8000 kg/hr
Flight time from departure to destination: 6 hrs
Fuel for diversion to alternate: 10200 kg
Forecast visibility at destination: 2000 m
The minimum ramp fuel load is:

- A) 77800 kg
- B) 74800 kg
- C) 79800 kg
- D) 77200 kg



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69- An aeroplane has the following masses:

Estimated LM:	50000 kg
Trip Fuel:	4300 kg
Contingency fuel:	215 kg
Alternate fuel (final reserve included):	2100 kg
Taxi:	500 kg
Block Fuel:	7115 kg

Before departure the captain orders to make the Block Fuel 9000 kg. After this change the trip fuel in the operational flight plan should read:

- A) 4300 kg
- B) 6185 kg
- C) 9000 kg
- D) 6400 kg

70- (Refer to figure I-16) A descent is planned at 0.74M/250 KIAS from 35000 ft to 5000 ft. How much fuel will be consumed during this descent?

- A) 278 kg
- B) 290 kg
- C) 150 kg
- D) 140 kg

71- (Refer to figure I-17) Find time, fuel, still air distance and TAS for an en-route climb 280/0.74 to FL350.

Given:

Brake release mass:	64000 kg
Temperature:	ISA +10 °C
Airport elevation:	3000 ft

- A) 25 min, 1875 kg, 148 Nautical Air Miles (NAM), 391 kts.
- B) 26 min, 2050 kg, 157 Nautical Air Miles (NAM), 399 kts.
- C) 20 min, 1750 kg, 117 Nautical Air Miles (NAM), 288 kts.
- D) 26 min, 1975 kg, 157 Nautical Air Miles (NAM), 399 kts.

72- (Refer to figure I-16) What is the time, fuel required and nautical air miles to descend from FL350 to sea level in turbulent air given an estimated landing weight of 50000 kg?

- A) 20 min, 325 kg, 99 NAM
- B) 22 min, 290 kg, 108 NAM
- C) 22 min, 290 kg, 105 NAM
- D) 20 min, 275 kg, 99 NAM



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73- (Refer to figure I-10) What is the alternate fuel required?

Given:

Distance to Alternate: 450 NM
Landing Mass at Alternate: 45000 kg
Tailwind component: 50 kts

- A) 2900 kg
- B) 2750 kg
- C) 3050 kg
- D) 2500 kg

74- (Refer to figure I-10) What is the alternate fuel required?

Given:

Distance to alternate: 400 NM
Landing Mass at alternate: 50000 kg
Headwind component: 25 kts

- A) 2550 kg
- B) 2800 kg
- C) 2900 kg
- D) 2650 kg

75- The quantity of fuel which is calculated to be necessary for a jet airplane to fly IFR from departure aerodrome to the destination aerodrome is 6532 kg. Fuel consumption in holding mode is 7000 kg/hr. Alternate fuel is 5356 kg. Contingency should be 5% of Trip Fuel. What is the minimum required quantity of fuel which should be on board at takeoff?

- A) 19215 kg
- B) 15656 kg
- C) 15715 kg
- D) 19521 kg

76- (Refer to figure I-18) What is the fuel required to fly from C to D?

Given:

Cruise: LRC at FL340
Distance C-D: 3200 NM
Temperature: ISA +12 °C
Tailwind component: 50 kts
Gross mass at C: 55000 kg

- A) 17500 kg
- B) 14200 kg
- C) 17800 kg
- D) 14500 kg



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77- (Refer to figure I-19) What is the trip fuel?

Given:

Temperature: ISA +15°C
Brake release mass: 62000 kg
Trip time: 5 hrs 20 min

- A) 13800 kg
- B) 13000 kg
- C) 13200 kg
- D) 13500 kg

78- (Refer to figure I-20) What are the climb fuel and time?

Given:

Track: 340° (T)
W/V: 280°/40 kts
Aerodrome elevation: 387 ft
Temperature: ISA -10 °C
Brake release mass: 52000 kg
Cruise at: FL280

- A) 15 min, 1100 kg.
- B) 12 min, 1100 kg.
- C) 10 min, 1000 kg.
- D) 11 min, 1000 kg.

79- (Refer to figure I-10) What is the fuel and time to alternate?

Given:

Estimated dry operation mass: 35500 kg
Estimated load: 14500 kg
Final reserve fuel: 1200 kg
Distance to alternate: 95 NM
Average true track: 219°
Headwind component: 10 kts

- A) 1100 kg; 44 min.
- B) 1100 kg; 25 min.
- C) 800 kg; 24 min.
- D) 800 kg; 40 min.



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80- (Refer to figure I-21) An aircraft climbs out from an aerodrome at MSL to FL250, under ISA +20°C conditions. If the brake release weight is 60000 kg, what is the fuel and ground distance covered with a 40 kts tailwind?

- A) 1100 kg, 62 NGM.
- B) 1100 kg, 48 NGM.
- C) 1300 kg, 64 NGM.
- D) 1300 kg, 81 NGM.

81- (Refer to figure I-22) The fuel required for 45 minutes holding, in a racetrack pattern, at PA 5000 ft, mean gross mass 47000 kg, is:

- A) 1635 kg
- B) 1090 kg
- C) 1690 kg
- D) 1125 kg

82- (Refer to figure I-22) Mean gross mass is 47000 kg. Find the fuel required for 15 minutes holding in a straight and level flight at 5000 ft:

- A) 2180 kg
- B) 1090 kg
- C) 518 kg
- D) 545 kg

83- (Refer to figure I-10) Using the simplified flight planning (alternate planning), find fuel required and trip time to alternate.

Given:

Basic Operating weight:	35500 kg
Pay load:	14500 kg
Final reserve fuel:	1200 kg
Distance to alternate:	95 NM
Tailwind component:	10 kts

- A) 800 kg, 0.7 hrs.
- B) 1000 kg, 40 min.
- C) 800 kg, 24 min.
- D) 1000 kg, 24 min.

84- (Refer to figure I-23) What would be the change in fuel required if the temperature at FL280 was -31°C?

- A) + 0.3%
- B) - 0.3%
- C) + 0.6%
- D) - 0.6%



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85- Given:

Wind: 330°/40 Kts
True course: 300°
TAS: 200 Kts
Variation: -5°
Deviation: +3°

Find ground speed and compass heading.

- A) 165 Kts – 308°
- B) 235 Kts – 304°
- C) 220 Kts – 298°
- D) 180 Kts – 302°

86- Determine the amount of drift angle for an airplane that is flying at FL320 from Shiraz at 360 Kts TAS to Esfahan via R659 on 346° magnetic direction and experiencing wind from 300° at 60 Kts.

- A) 5°
- B) 7°
- C) 9°
- D) 11°

87- What is the A320's ground speed at FL380 with 0.79 Mach number from Mashhad to Sabzevar via A416 on magnetic direction 265° and experiencing wind from 065° at 80 Kts and OAT is ISA+10°C?

- A) 530 Kts
- B) 383 Kts
- C) 538 Kts
- D) 388 Kts

88- Calculate A320's Mach number at FL320 with TAS 450 Kts and deviation from ISA is -20°C?

- A) 0.72
- B) 0.75
- C) 0.83
- D) 0.80

89- What is the specific range formula versus specific amount of fuel?

- A) $(TAS \times \text{Specific Amount of Fuel}) / (\text{Fuel Flow} \times \text{Number of Engines})$
- B) $TAS / (\text{SFC} \times \text{Number of Engines})$
- C) $GS / (\text{Fuel Flow} \times \text{Number of Engines})$
- D) $GS / (\text{SFC} \times \text{Total Drag} \times \text{Number of Engines})$



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90- What is the B727 specific range (NAM/1000 lbs fuel) at FL320 at 425 TAS and 2100 PPH/engine Fuel consumption?

- A) 67.5
- B) 202
- C) 101
- D) 50.59

91- Given:

TAS: 350 Kts
P.A: FL300
Wind: 350° / 70 Kts
True course: 300°
Fuel flow: 3400 PPH/engine

Twin jet engine airplane

Find the specific range (NAM/1000 lbs fuel).

- A) 51.4
- B) 60
- C) 45
- D) 70

92- What is the cabin rate of climb, if:

Field elevation: 2000 ft
Enroute cruise altitude: FL290
Airplane rate of climb: 1500 ft/min
Pressurization begins at: 1000 ft AGL
Cabin altitude at cruise: 5500 ft

- A) 317 ft/min
- B) 145 ft/min
- C) 260 ft/min
- D) 130 ft/min

93- What is the cabin rate of climb, if:

Field elevation: 3500 ft
Enroute cruise altitude: FL180
Airplane rate of climb: 1350 ft/min
Pressurization begins at: 1000 ft AGL
Cabin altitude at cruise: 5500 ft

- A) 150 ft/min
- B) 135 ft/min
- C) 100 ft/min
- D) 80 ft/min



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94- What is the cabin altitude at cruise flight level, if:

Field elevation: 500 ft
Enroute cruise altitude: FL310
Airplane rate of climb: 1780 ft/min
Begin pressurization: 1000 ft AGL
Cabin rate of climb: 209 ft/min

- A) 4000 ft
- B) 4970 ft
- C) 5250 ft
- D) 6000 ft

95- What is the cabin altitude at cruise flight level, if:

Field elevation: 2500 ft
Enroute cruise altitude: FL350
Time to climb: 20.8 min
Begin pressurization: 500 ft AGL
Cabin rate of climb: 144 ft/min

- A) 4000 ft
- B) 5000 ft
- C) 6000 ft
- D) 7000 ft

96- What would be the airplane magnetic heading to return to planned track when:

Magnetic heading: 213°
Miles flown: 14 mile
Miles to destination: 72 mile
Miles off course: 2 miles to the left

- A) 233°
- B) 223°
- C) 203°
- D) 193°

97- What would be the airplane magnetic heading to return to planned track when:

Magnetic heading: 147°
Miles flown: 114 mile
Miles to destination: 177 mile
Miles off course: 6 miles to the left

- A) 162°
- B) 142°
- C) 152°
- D) 132°



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98- What would be the airplane magnetic heading to return to planned track when:

Magnetic heading: 211°
Miles flown: 28 mile
Miles to destination: 100 mile
Miles off course: 3 miles to the right

- A) 219°
- B) 229°
- C) 193°
- D) 203°

99- What is the correct formula to calculate "Range"?

- A) Endurance \times Speed
- B) Time \times Fuel Flow
- C) Fuel \div Fuel Flow
- D) Speed \div Endurance

100- What is the ISA temperature value at FL390?

- A) -63°C
- B) -66°C
- C) -51°C
- D) -56.5°C



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	D	26	B	51	B	76	D
2	C	27	C	52	B	77	D
3	D	28	A	53	A	78	D
4	D	29	C	54	A	79	B
5	C	30	D	55	C	80	D
6	A	31	C	56	C	81	A
7	C	32	B	57	A	82	C
8	D	33	B	58	B	83	D
9	B	34	A	59	B	84	C
10	D	35	B	60	A	85	A
11	A	36	A	61	B	86	B
12	D	37	A	62	D	87	C
13	A	38	D	63	A	88	D
14	C	39	A	64	B	89	A
15	B	40	A	65	A	90	A
16	A	41	B	66	C	91	A
17	C	42	B	67	D	92	B
18	A	43	C	68	A	93	C
19	A	44	B	69	A	94	B
20	C	45	B	70	C	95	C
21	C	46	D	71	D	96	B
22	C	47	C	72	D	97	C
23	C	48	B	73	D	98	D
24	B	49	B	74	B	99	A
25	C	50	D	75	C	100	D

HUMAN PERFORMANCE





1- Acute stress quickly leads to:

- A) A state of over activation beyond the control of willpower.
- B) The mobilization of resources required to cope with the stressor.
- C) A decrease in the amount of resources mobilized to face the situation.
- D) A permanent state of incapacitation.

2- Which of the following statements concerning stress is correct?

- A) Stress is a necessary way of demonstrating ones own work.
- B) Stress will be evaluated differently depending on whether it improves or reduces performance.
- C) Stress always creates a state of high tension which decreases cognitive and behavioral performance.
- D) Stress is evaluated as a positive mechanism only in connection with precise tasks of the kind encountered in aeronautics.

3- What is the effect of stress on performance?

- 1) It always reduces performance.
- 2) Optimum performance is obtained with optimum arousal.
- 3) Excessive stress weakens performance.
- 4) Insufficient stress weakens performance.

The combination of correct statements is:

- A) 1, 2, 3
- B) 1, 3, 4
- C) 1, 2, 4
- D) 2, 3, 4

4- Which of the following may be affected by stress?

- 1) Attention
- 2) Concentration
- 3) Memory
- 4) Judgment

- A) 1, 4
- B) 1, 2, 3, 4
- C) 1, 3
- D) 2, 3, 4

5- What are easily observable indications of stress?

- A) Lowering of the blood pressure.
- B) Faster, deep inhalation, stabbing pain around the heart.
- C) Rising of the blood pressure, pupils narrowing, stabbing pain around the heart.
- D) Perspiration, flushed skin, dilated pupils, fast breathing.



6- In relation to the word stress as it affects human beings, which of the following responses is correct?

- A) Reactive stressors relate purely to a pilot's physical condition.
- B) All forms of stress should be avoided.
- C) Stress is a term used to describe how a person reacts to demands placed upon him/her.
- D) Self-imposed obligations will not create stress.

7- In case of in-flight stress, one should:

- A) Only trust in oneself, being sure to know the own limits.
- B) Use all available resources of the crew.
- C) Demonstrate aggressiveness to stimulate the crew.
- D) Always carry out a breathing exercise.

8- What are the effects of excessive stress?

- A) It increases vigilance for a longer period than stress itself, but may focus attention inappropriately.
- B) It reduces vigilance and focuses attention.
- C) It activates resources stored in memory.
- D) It has very little immediate effect on vigilance and attention.

9- Which statement about acute or chronic fatigue is incorrect?

- A) Chronic fatigue may be caused by inadequate recuperation from periods of acute fatigue.
- B) Acute fatigue generally has psychological roots.
- C) Chronic fatigue may lead to a person being totally apathetic and indifferent to what goes on around them.
- D) Acute fatigue is felt after a period of significant exertion or emotional excitement.

10- Pilot stress reactions:

- A) Are related to an internationally recognized list of stressors where the top-ten items should be avoided by every means.
- B) Seem to be the same for most pilots.
- C) Differ from pilot to pilot, depending on how a person manages the particular stressors.
- D) Do not change with the environment or different situations but mainly with the characters themselves.

11- Which of the following statements is true?

- A) Stressors accumulate thus increasing the likelihood to exhaustion.
- B) Stressors are independent from each other.
- C) Stress should always be avoided under any circumstances.
- D) People are capable of living without stress.



12- Stress management programs usually involve:

- A) The use of psychoactive drugs.
- B) Only the removal of stress.
- C) Only the prevention of stress.
- D) The prevention and/or the removal of stress.

13- The effects of sleep deprivation on performance:

- 1) Increase with altitude
- 2) Decrease with altitude
- 3) Increase with higher workload
- 4) Decrease with higher workload

- A) 1, 3, 4
- B) 1, 2, 3
- C) 1, 3
- D) 2, 3, 4

14- Stress is above all:

- A) A phenomenon which is specific to modern man.
- B) A psychosomatic disease that one can learn to control.
- C) A response of man to his problems, which automatically leads to a reduction in his performance.
- D) The best adaptation phenomenon that man possesses for responding to the various situation which he may have to face.

15- A person being exposed to extreme or prolonged stress factors can perceive:

- A) Coping stress.
- B) Distress (stress reactions).
- C) Eustress.
- D) Stressors.

16- Check the following statements:

- 1) A stressor causes activation.
- 2) Activation stimulates a person to cope with it.

- A) 1 and 2 are both not correct.
- B) 1 is correct, 2 is not correct.
- C) 1 is not correct, 2 is correct.
- D) 1 and 2 are both correct.



17- Which of the following physical stimuli may cause stress reactions?

- 1) Noise
- 2) Interpersonal conflict
- 3) Temperature
- 4) Administrative problem
- 5) Hunger

The combination of correct statements is:

- A) 3, 4, 5
- B) 1, 3, 4
- C) 1, 3, 5
- D) 2, 3, 5

18- Physical stress takes place when:

- A) The perceived demand is greater than the perceived ability.
- B) The brain can no longer cope due to either quantitative or qualitative overload.
- C) Outside conditions put a strain upon the homeostatic mechanisms of the body.
- D) Overload of the neurons in the nervous system.

19- Stress is a response which is prompted by the occurrence of various stressors. Of these, which can be called physiological?

- A) Noise, temperature (low or high), humidity, sleep deprivation.
- B) Noise, hunger, conflicts, death.
- C) Heat, humidity, fatigue, administrative problems.
- D) Temperature, hunger, thirst, divorce.

20- In order to overcome an overload of work during the flight, it is necessary to:

- 1) Know how to use one's own reserve of resources in order to ease the burden of the crew.
- 2) Divide up tasks among the crew.
- 3) Abandon automatic mode and instead process as much information as possible consciously.
- 4) Drop certain tasks and stick to high-level priorities.

The correct statements are:

- A) 1, 2, 3
- B) 1, 3
- C) 1, 2, 4
- D) 3, 4



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21- The physiology of stress is now well known:

- A) The only stress hormone is adrenaline.
- B) Stress promotes an increase in physical strength rather than promoting mental performance.
- C) Stress develops in 2 stages, sublimation of performance and then acceleration of heart rate and increase in vision.
- D) Stress slows down the production of sugar by the organism and thereby slows down the heart rate.

22- Concerning the relation between performance and stress, which of the following statement is correct?

- A) A student will learn faster and better under severe stress.
- B) A moderate level of stress may improve performance.
- C) Domestic stress will not affect the pilot's performance because he is able to leave this type of stress on the ground.
- D) A well trained pilot is able to eliminate any kind of stress completely when he is scheduled to fly.

23- Vertigo can be brought on by:

- A) Disease, accelerations, pressure changes and flashing lights.
- B) Accelerations and flashing lights.
- C) Disease only.
- D) Accelerations and pressure changes.

24- The part of the eye that bends the light the most is:

- A) Fluid in the eye.
- B) The iris.
- C) The lens.
- D) The cornea.

25- Below are four statements about rods and cones. Which one is true?

- A) Cones give the best visual acuity.
- B) Rods are sensitive to color and small details.
- C) Rods are concentrated around the outer edges of the fovea.
- D) Cones are effective in both daylight and darkness.

26- If the pilot of an aircraft approaches a runway that is wider than normal, one of the possible consequences could be that:

- A) He would choose a visual touchdown point too far into the runway.
- B) He would flare at a too low altitude.
- C) The aircraft would touch down after he expects to.
- D) He would touch down with excess speed.



27- Which one of the following statements is correct regarding the use of cockpit lighting for night flight?

- A) Reducing the light intensity to a minimum level will eliminate blind spots.
- B) Coloration shown on maps is least affected by the use of direct red lighting.
- C) Cockpit lighting may only be used during short intervals to protect the light adaption.
- D) The use of regular white light, such as flash light, will impair night adaption.

28- The common illusion created by linear acceleration or deceleration is:

- A) A banking sensation due to disturbances in the fluid circulation in the inner ear.
- B) A feeling that the aircraft has started to pitch up when the aircraft decelerates, causing an automatic attempt to push the nose down.
- C) A pitch up feeling when the aircraft accelerates.
- D) A combined pitch up and banking sensations.

29- Among the physiological responses to stress are:

- A) Dry mouth, anxiety and sweating.
- B) Increased heart rate, apprehension and sweating.
- C) Sweating, dry mouth and breathing difficulties.
- D) Anxiety, fatigue and fear.

30- The optic system of the eye consists of:

- A) Uvea, sclera, retina.
- B) Cornea, lens, vitreous humor.
- C) Retina, optic nerve, blind spot.
- D) Rods, cones, fovea centralize.

31- How long does it take to develop full night vision adaption?

- A) 30 seconds
- B) 10 minutes
- C) 30 minutes
- D) 1 hour

32- A sudden change from climb to straight and level flight can give you an illusion of:

- A) Tumbling backwards.
- B) A nose up attitude.
- C) Turning to the left.
- D) A nose low attitude.



33- Disorientation is more likely to occur when the pilot is:

- 1) Flying in IMC
- 2) Frequently changing between inside and outside references
- 3) Flying from IMC into VMC
- 4) Approaching over still water at night

- A) 1, 2, 4
- B) 1, 2, 3
- C) 2, 3, 4
- D) 1, 3, 4

34- While flying VFR "wings level" on top of clouds at 10000 ft, your artificial horizon indicates a 20° bank.

- A) No attitude correction is needed since you know that your vision is more reliable than the instrument with regards to spatial orientation.
- B) You pull the circuit breaker to the artificial horizon knowing that perceptual illusions called "leans" might severely impair your control of the aircraft.
- C) You take the proper action by "leaning" toward the lower end of the artificial horizon, thus compensating for the perceptual illusion.
- D) You trust the instrument and level off according to the instrument read-out.

35- When the weather is foggy, on approach, a pilot may get a feeling of:

- A) His/her visual field shrinking (e.g. tunnel vision).
- B) The airfield being further away than actually is.
- C) His/her eyes focusing on infinity.
- D) Aircraft altitude being lower than it actually is.

36- What factors can lead to a deterioration in vision?

- 1) Hypoxia.
- 2) Smoking.
- 3) Poor diet, lacking vitamin A.
- 4) Exposure to bright lights.

Which of the following lists all the correct statements?

- A) 2, 3
- B) 1, 3
- C) 1, 2, 3, 4
- D) 1,3,4

37- What can cause spatial disorientation?

- A) Reference to well-defined external visual references, such as the horizon.
- B) Damage to the receptor cells in the eyes.
- C) False perception of orientation of the aircraft with respect to spatial references.
- D) Flying in clear daylight conditions.



38- To prevent empty field myopia at higher altitudes:

- A) It is recommended that a pilot focuses on an object known to be approximately one metre away.
- B) It is recommended that a pilot uses short sharp scans, or periodically focuses on a distant object such as a wingtip or cloud edge.
- C) One should concentrate only on instruments.
- D) One should book an appointment with an ophthalmologist as soon as possible.

39- The human vestibular system performs spatial orientation by:

- A) Measuring linear and radial acceleration within the inner ear.
- B) Comparing the body's position to gravity over the tympanic membrane.
- C) Comparing linear and radial speeds of the body to the attitude of the aircraft.
- D) Measuring fluid movements in the tympanic membrane of the middle ear.

40- The fovea is:

- A) The area of best day vision and best night vision.
- B) The area of the blind spot (optic disc).
- C) Where the optic nerves come together with the pupil.
- D) The area of best day vision and of reduced value at night.

41- One of the major protective measures against illusions is:

- A) Wearing of good quality sun glasses.
- B) Regular eye tests.
- C) Comprehensive briefing and debriefing.
- D) Wearing polarized sun glasses.

42- On approach, by day in snowy conditions, without reference to glide slope information:

- A) There is a risk of you underestimating your speed.
- B) Judgment of height is extremely difficult.
- C) Estimation of height and distance is not a problem for a well-trained pilot.
- D) There is a risk of you entering a spin.

43- Illusions that pilots experience in conditions of fog or mist are that:

- A) Objects appear closer than they really are and lead to steep approaches.
- B) Objects appear closer than they really are and lead to shallow approaches.
- C) Objects appear further away than they really are and lead to shallow approaches.
- D) Objects appear further away than they really are and can lead to steep approaches.

44- If warned of an imminent thunderstorm:

- A) No specific action is advised with regards to the adjustment of the brightness of cockpit lights.
- B) Cockpit lights should be dimmed.
- C) Cockpit lights should be turned off.
- D) Cockpit lights should be turned up.



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45- During poor weather conditions a pilot should fly with reference to instruments because:

- A) His attention will be distracted automatically under these conditions.
- B) Perception of distance and speed is difficult in an environment of low contrast.
- C) The danger of a "greying out" will make it impossible to determine the height above the terrain.
- D) Pressure differences can cause the altimeter to give wrong information.

46- An illusion of obtaining greater height above ground can occur when:

- A) Accelerating at low altitude.
- B) Suddenly flying over small trees after prolonged flying over tall trees.
- C) Decelerating at low altitude.
- D) Flying over high terrain in low visibility.

47- A forward acceleration, without visual reference, can cause:

- A) An illusion of a turn in the opposite direction.
- B) An illusion of backward tilt because it results in backward displacement of the otolithic membranes.
- C) An illusion of descent, because it results in backward displacement of the otolithic membranes.
- D) Alternobar illusion.

48- The retina of the eye:

- A) Only regulates the light that falls into the eye.
- B) Filters the UV light.
- C) Is the muscle changing the size of the crystalline lens.
- D) Is the light-sensitive inner lining of the eye containing the photoreceptors essential for vision.

49- The vestibular system:

- A) Consists of the outer, middle and inner ear.
- B) Is the body's motion and gravity sensing organs.
- C) Should always be trusted to judge an aeroplanes attitude.
- D) Is the body's sound, motion, and gravity sensing organ.

50- Myopia is commonly called:

- A) Farsightedness.
- B) Nearsightedness.
- C) Nutritional deficiency.
- D) Color blindness.



51- Why are the eyes more sensitive (better night vision), after 30 - 45 minutes in a dark environment?

- A) The pupil is expanded and the Iodopsin level is increased, improving night sensitivity.
- B) Light bleaches out visual purple (rhodopsine).
- C) For night vision to take place, visual purple must build up in the rods.
- D) Light bleaches out visual purple (rhodopsine) for night vision to take place, visual purple must build up in the rods.

52- The kinesthetic sense does not orient an individual to his surroundings, but informs him of:

- A) The relative motion and relative position of his body parts.
- B) A touch on the skin.
- C) The condition in the body itself.
- D) His surroundings.

53- When focusing on near objects:

- A) The cornea gets smaller.
- B) The shape of lens gets more spherical.
- C) The pupil gets larger.
- D) The shape of lens gets flatter.

54- Linear acceleration when flying straight and level in IMC may give the illusion of:

- A) Descending
- B) Yawing
- C) Spinning
- D) Climbing

55- The inner ears able to perceive:

1) Angular acceleration

2) Linear acceleration

3) Noise

- A) 1 and 2 are correct, 3 is false.
- B) 2 is correct, 1 and 3 are both false.
- C) 1 and 2 and 3 are correct.
- D) 2 and 3 are correct, 1 is false.



56- Which of the following systems are involved in the appearance of motion sickness?

- 1) Hearing.
- 2) The vestibular system.
- 3) Vision.
- 4) The proprioceptive sense (seat-of-the-pants sense).
- 5) The gastrointestinal system.

- A) 1, 3, 4, 5
- B) 1, 2, 5
- C) 2, 3, 4
- D) 1, 2, 3

57- With regard to illusions due to perceptive conflicts, it may be said that they:

- A) Originate from a conflict between instrument readings and external visual perceptions.
- B) Are mainly due to a sensory conflict concerning perception of the vertical and the horizontal between the vestibular and the visual system.
- C) Are caused by the absence of internal visual cues exclusively.
- D) Are caused by a conflictual disagreement concerning attitudinal perception between the various members of a crew.

58- The ability of the human eye to read alphanumeric information (piercing vision):

- A) Is limited to daytime using the rod cells.
- B) Is limited to the foveal area of the retina.
- C) Is almost equally shared by the entire retina.
- D) Is governed by peripheral vision over an area of approximately 20° of angle.

59- Excessive exposure to noise damages:

- A) The eardrum.
- B) The semicircular canals.
- C) The ossicles.
- D) The sensitive membrane in the cochlea.

60- The phenomenon of accommodation, which enables a clear image to be obtained, is accomplished by which of the following?

- A) The retina.
- B) The rods.
- C) The cones.
- D) The crystalline lens.



61- The so-called Coriolis effect (a conflict in information processing in the brain) in spatial disorientation occurs:

- A) On stimulating the saccule and the utricle of the inner ear.
- B) On stimulating the cochlea intensely.
- C) When no semicircular canal is stimulated.
- D) On stimulating several semicircular canals simultaneously.

62- The semicircular canals form part of the:

- A) Middle ear.
- B) Eardrum.
- C) External ear.
- D) Inner ear.

63- Hypoxia affects visual performance. A pilot may:

- A) Get color blindness accompanied by severe headache.
- B) Get blurred and/or tunnel vision.
- C) Have a reduction of 25% in visual acuity at 8000 ft.
- D) Be unable to maintain piercing vision below 5000 ft.

64- Pilot's vertigo is:

- A) The impression of climbing when banking.
- B) A sensation of rotation during flight due to multiple irritation of several semicircular canals at the same time.
- C) The impression of flying straight and level while the aircraft is spinning.
- D) A sudden loss of visual perception during flight due to multiple irritation of the utriculus and sacculus at the same time.

65- Starting a coordinated level turn can make the pilot believe to:

- A) Descent.
- B) Turn into the opposite direction.
- C) Increase the rate of turn into the same direction.
- D) Climb.

66- Vertigo is the result of:

- A) Oculogyral illusion.
- B) Autokinetic illusion.
- C) Elevator illusion.
- D) Coriolis effect.



67- How can a pilot overcome a vertigo encountered during a real or simulated instrument flight?

- 1) Establish and maintain an effective instrument crosscheck.**
 - 2) Always believe the instruments, never trust your sense of feeling.**
 - 3) Ignore arising illusions.**
 - 4) Move the head sideward and back and forth to shake off illusions.**
- A) Only 4 is correct.
B) 1, 2, 3 and 4 are correct.
C) 1, 2 and 3 are correct.
D) 1 and 2 are correct, 3 and 4 are false.

68- Which sensations does a pilot get, when he is rolling out of a coordinated level turn?

- A) Flying straight and level.
B) Climbing.
C) Turning into the original direction.
D) Descending and turning into the opposite direction.

69- Being pressed into the seat can cause illusions and/or false reactions in a pilot lacking visual contact to the ground, because this sensation:

- A) Will not stimulate the seat-of-the-pants sense.
B) Corresponds with the sensation a pilot gets when starting a climb or performing a level turn.
C) Corresponds with the sensation a pilots gets, when flying straight and level or starting a descent.
D) Makes the pilot to pull up the nose to compensate for level flight.

70- The probability to suffer from airsickness is higher when:

- A) The passenger has taken anti-motion sickness remedies prior flight.
B) The student is motivated and adapted to the specific stimuli of flying.
C) The student has good outside visual reference.
D) The passenger or student is afraid and/or demotivated to fly.

71- What could the crew do in order to avoid airsickness with passengers?

- 1) Avoid turbulences.**
 - 2) Avoid flying through rough weather.**
 - 3) Seat passenger close to the center of gravity.**
 - 4) Give pertinent information.**
- A) 1, 2, 3 and 4 are correct.
B) 1, 2 and 3 are correct, 4 is false.
C) 3 and 4 are correct, 1 and 2 are false.
D) Only 4 is correct.



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72- Which of the following components belong to the middle ear?

- A) Ossicles
- B) Otoliths
- C) Endolymph
- D) Semicircular canals

73- A pilot approaching a runway which is narrower than normal may feel he is at a greater height than he actually is, to compensate he may fly a:

- A) Higher than normal approach with the tendency to overshoot.
- B) Flatter than normal approach with the tendency to undershoot.
- C) Compensatory glide path and land long.
- D) Compensatory glide path and stall out.

74- Adaptation is:

- A) The reflection of the light at the cornea.
- B) The adjustment of the crystalline lens to focus light on the retina.
- C) The adjustment of the eyes to high or low levels of illumination.
- D) The change of the diameter of the pupil.

75- Illuminated anti-collision lights in IMC:

- A) Can cause color illusions.
- B) Will improve the pilot's depth perception.
- C) Will affect the pilot's binocular vision.
- D) Can cause disorientation.

76- The semicircular canals of the inner ear monitor:

- A) Relative speed and linear accelerations.
- B) Movements with constant speeds.
- C) Angular accelerations.
- D) Gravity.

77- Among the factors which affect night vision are:

- A) Age, cabin altitudes above 8000 ft, smoking and alcohol.
- B) Age, cabin altitudes above 8000 ft, smoking, alcohol and lack of vitamin C.
- C) Age, cabin altitudes above 8000 ft, smoking, alcohol and lack of vitamin D.
- D) Age, cabin altitudes above 8000 ft, smoking, alcohol and lack of vitamin B.

78- If coping with a stress situation is impossible, one will remain in the state of:

- A) Eustress
- B) Distress
- C) Adaptation
- D) Hypoxia



79- Stress is a reaction in order to adapt to a specific situation, this reaction:

- A) Can only be controlled by medical treatment.
- B) Is purely physiological and automatic.
- C) May include various psychological and physiological elements which one can learn to manage.
- D) Is always linked to excessive fear.

80- What triggers stress in humans?

- A) Always the awareness of an emotion and a physiological activation (e.g. rapid heart rate).
- B) The subjective interpretation an individual gives to a situation experienced.
- C) Objective stimulation from the environment regards of subjective perceptions.
- D) Only strong excitations of the sensory organs: a flash of light, noise, the smell of smoke.

81- Which of the following statement(s) is/are correct?

- 1) The retina has rods on its peripheral zone and cones on its central zone.
- 2) The retina has cones and the crystalline lens has rods.
- 3) The rods allow for night vision.
- 4) The cones are located on the peripheral zone of the retina.

- A) 2, 3
- B) 1
- C) 1, 3
- D) 4

82- With vertigo the instrument-panel seems to tumble. This is due to:

- A) Conflicting information between the semicircular canals and the tympanic membrane.
- B) Tuned resonance caused by vibration.
- C) The Coriolis effect in the semicircular canals.
- D) Oxygen deficiency.

83- Positive linear acceleration when flying in IMC may cause a false sensation of:

- A) Vertigo.
- B) Pitching down.
- C) Apparent sideward movement of objects in the field of vision.
- D) Pitching up.

84- Without visual reference, what illusion could the pilot get, when he is stopping the rotation to recover from a spin? He will get the illusion of:

- A) Spinning into the same direction.
- B) Spinning into the opposite direction.
- C) Straight and level flight.
- D) Climbing and turning into the original direction of the spin.



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85- What do you do, when you are affected by pilot's vertigo?

- 1) Establish and maintain an effective instrument cross check.**
 - 2) Believe the instruments.**
 - 3) Ignore illusions.**
 - 4) Minimize head movements.**
- A) 1, 2, 3 and 4 are correct.
B) 1, 2 and 3 are correct, 4 is false.
C) 1 and 2 are correct, 3 and 4 are false.
D) Only 4 is false.

86- Visual acuity during flight at high altitudes can be affected by:

- 1) Anemia**
 - 2) Smoking in the cockpit**
 - 3) Carbon monoxide poisoning**
 - 4) Hypoxia**
- A) 1,3 and 4 are correct.
B) 1,2 and 3 are correct.
C) 2,3 and 4 are correct.
D) 1, 2, 3 and 4 are correct.

87- Orientation in flight is accomplished by:

- 1) Eyes**
 - 2) Utricles and sacculus**
 - 3) Semicircular canals**
 - 4) Seat-of-the-pants sense**
- A) 1, 2, 3 and 4 are correct.
B) Only 1 and 4 are correct.
C) 2, 3 and 4 are correct, 1 is false.
D) 2, 3 and 4 are false, only 1 is correct.

88- How can a pilot prevent spatial disorientation in flight?

- A) Establish and maintain a good instrument cross check.
B) Always try to catch outside visual cues.
C) Rely on good situational awareness believing your natural senses.
D) Rely on the kinesthetic sense.



89- When flying through a thunderstorm with lightning you can protect yourself from flash blindness by:

- 1) Turning up the intensity of cockpit lights
- 2) Looking inside the cockpit
- 3) Wearing sunglasses
- 4) Using face blinds or face curtains when installed

- A) 3 and 4 are correct, 1 and 2 are false.
- B) 1, 2 and 3 are correct, 4 is false.
- C) 1 and 2 are correct, 3 and 4 are false.
- D) 1, 2, 3 and 4 are correct.

90- Among the factors which affect acuity are:

- A) Smoking, color blindness and angular distance from the fovea.
- B) Hypoxia, age and angular distance from the fovea.
- C) Color blindness, alcohol and angular distance from the fovea.
- D) Color blindness, visibility and angular distance from the fovea.

91- Scanning at night should be performed by:

- A) Avoiding food containing vitamin A.
- B) Scanning with one eye open.
- C) Concentrated fixation on an object (image must fall on the fovea centralize).
- D) Slight eye movements to the side of the object.

92- Pilot's vertigo:

- A) Is the sensation to keep a rotation after completing a turn.
- B) Is the condition of dizziness and/or tumbling sensation caused by contradictory impulses to the central nervous system (CNS).
- C) Is the sensation of climbing caused by a strong linear acceleration.
- D) Announces the beginning of airsickness.

93- Which part of the inner ear is responsible for the perception of noise?

- A) The Eustachian tube.
- B) The semicircular canals.
- C) The sacculus and utriculus.
- D) The cochlea.

94- The so-called seat-of-the-pants sense is:

- A) Not suitable for spatial orientation when outside visual references are lost.
- B) Only to be used by experienced pilots with the permission to fly in IMC.
- C) Useful for instrument and contact flight.
- D) The only sense a pilot can rely on, when flying in IMC.



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95- A shining light is fading out (e.g. when flying into fog, dust or haze), what kind of sensation could the pilot get?

- A) The source of light moves away from him.
- B) The light source will make the pilot believe, that he is climbing.
- C) The source of light stands still.
- D) The source of light is approaching him with increasing speed.

96- In order to get color vision, it is necessary:

- A) To allow the eye a period of time to get used to the light.
- B) At night to look at the point to be observed at an angle of 15° .
- C) For there to be considerable amount of light (ambient luminosity).
- D) To avoid white light.

97- Which part of the vestibular apparatus is affected by changes in gravity and linear acceleration?

- A) The Eustachian tube.
- B) The sacculus and utriculus.
- C) The semicircular canals.
- D) The cochlea.

98- Choose the correct combination:

- 1) In case of conflicting information you can always trust your seat-of-the-pants sense.**
- 2) In case of conflicting information between the sensory organs and the instruments you must believe the instruments**

- A) 1 is correct, 2 is false.
- B) 1 is false, 2 is correct.
- C) 1 and 2 are correct.
- D) 1 and 2 are false.

99- Disorientation is more likely to occur when the pilot is:

- 1) Flying in IMC**
- 2) Frequently changing between inside and outside references**
- 3) Flying from IMC into VMC**
- 4) Having a cold**

- A) 2, 3, 4
- B) 1, 2, 4
- C) 1, 3, 4
- D) 1, 2, 3



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100- What is understood by airsickness?

- A) An illness caused by evaporation of gases in the blood.
- B) A sensory conflict within the vestibular system accompanied by nausea, vomiting and fear.
- C) An illness caused by reduced air pressure.
- D) An illness caused by an infection of the middle ear.

101- Which of the following statements is correct?

- A) Hearing is the sense which collects most information in man.
- B) 70% of information processed by man enters via the visual channel.
- C) 40% of information processed by man enters via the visual channel.
- D) The kinesthetic channel provides the most important information for flying.

102- What should a pilot do to keep his night vision (scotopic vision)?

- A) Avoid food containing high amounts of vitamin A.
- B) Not smoke before start and during flight and avoid flash blindness.
- C) Wait at least 60 minutes to night adapt before he takes off.
- D) Select meals with high contents of vitamin B and C.

103- The group of tiny bones (the hammer, anvil and stirrup) are situated in:

- A) The inner ear.
- B) The middle ear.
- C) The outer ear.
- D) The maxillary sinus.

104- All pilots are going to suffer some hearing deterioration as part of the process of growing old.

The effects of ageing:

- A) Are to cut out the high tones first.
- B) Are to cut out all tones equally.
- C) Are to cut out the low tones first.
- D) Will not affect a pilot's hearing if he is wearing earplugs all the time.

105- What is the name for the sensation of rotation occurring during flight and which is caused by multiple irritation of several semicircular canals at the same time?

- A) Sudden incapacitation.
- B) Pilot's vertigo.
- C) Seat-of-the-pants illusions.
- D) Graveyard spin.



106- The area in front of a runway threshold descends towards the threshold. Possible danger is:

- A) Approach is lower than normal and may result in a short landing.
- B) To drop far below the glide path.
- C) Approach is higher than normal and may result in a long landing.
- D) To misjudge the length of the runway.

107- Dizziness and tumbling sensations, when making head movements in a tight turn, are symptoms of:

- A) Pilot's vertigo.
- B) Flicker vertigo.
- C) Nystagmus.
- D) Oculogravic illusion.

108- The leans can be caused by:

- A) Going into a turn too quickly.
- B) Bunting the aircraft.
- C) Prolonging a turn.
- D) A carrier takeoff.

109- Why should a pilot turn his attention to the instruments when approaching on a snowed up, foggy or cloudy winter day? Because:

- A) Perception of distance and speed is difficult in an environment of low contrast.
- B) His attention will be distracted automatically under these conditions.
- C) The danger of a greying out will make it impossible to determine the height above the terrain.
- D) Pressure differences can cause the altimeter to give wrong information.

110- Which flight maneuver will most likely induce vertigo? Turning the head while:

- A) Banking.
- B) Descending.
- C) Climbing.
- D) Flying straight and level.

111- During a night flight at 10000 feet you notice that your acuity of vision has decreased, in this case you can increase your acuity by:

- A) Dim the instrument lights.
- B) Closing one eye.
- C) Scanning sectors of the field of vision.
- D) Breathing extra oxygen through the oxygen mask.



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112- Flying a coordinated level turn will:

- A) Make the seat-of-the-pants sense feel a decreased pressure along the body's vertical axis.
- B) First give the impression of climb, then the impression of descent.
- C) Make the blood being pooled in the head.
- D) Make the body's pressure receptors feel an increased pressure along the body's vertical axis.

113- Which of the following illusions are brought about by conflicts between the visual system and the vestibular system?

- 1) Illusions concerning the attitude of the aircraft.
 - 2) Autokinetic illusion (fixed point viewed as moving).
 - 3) Illusions when estimating the size and distance of objects.
 - 4) Illusions of rotation.
- A) 1, 4
 - B) 2, 3, 4
 - C) 2
 - D) 3, 4

114- To optimize one's night vision performance, it is necessary:

- 1) To spend some time getting adapted to low levels of illumination
 - 2) To increase the instrument panel lighting by reducing the cockpit lighting
 - 3) Not to focus on the point to be observed
 - 4) To avoid blinding
- A) 2
 - B) 2, 3, 4
 - C) 1, 2, 4
 - D) 1, 3, 4

115- What is the remedy for decompression sickness, or "bends"?

- A) Decrease the pressure on the body.
- B) Increase the amount of oxygen.
- C) Decrease the rate and depth of breathing.
- D) Increase the pressure on the body.

116- A person experiences increased breathing rate, which of the following is the most likely explanation?

- A) A low level of waste carbon dioxide in the lungs.
- B) A high level of waste carbon dioxide in the lungs.
- C) A high level of water vapor in the lungs.
- D) A low level of water vapor in the lungs.



117- Which one of the following signs distinguishes hypoxia from hyperventilation?

- A) Cyanosis
- B) Sensory loss
- C) Dizziness
- D) Headache

118- An altitude where the pressure is half of that at sea level a person will have to:

- A) Breathe pure oxygen.
- B) Breathe pressurized oxygen.
- C) Use supplementary oxygen.
- D) Breathe slow to avoid hypoxia.

119- The time of useful consciousness without oxygen at an altitude of 25000 ft is:

- A) 2 - 3 minutes.
- B) 30 minutes.
- C) 45 - 75 seconds.
- D) 12 seconds.

120- What is the correct remedial action if symptoms of hyperventilation occur at an altitude where hypoxia is not a consideration?

- A) Increase rate and depth of breathing.
- B) Increase rate and decrease depth of breathing.
- C) Decrease rate and increase depth of breathing.
- D) Decrease rate and depth of breathing.

121- Which gas most readily combines with hemoglobin?

- A) Oxygen
- B) Nitrogen
- C) Carbon monoxide
- D) Carbon dioxide

122- When hyperventilating you should:

- A) Descend.
- B) Control your rate and depth of breathing.
- C) Apply the Valsalva method.
- D) Use the oxygen mask.



123- Environmental sources of stress in the cockpit could be:

- 1) Noise and vibration
- 2) Acceleration
- 3) Radiation
- 4) Extreme temperatures

Which of the following lists all the correct answers?

- A) 1, 4
- B) 1, 2, 3
- C) 2, 3
- D) 1, 2, 4

124- What is the effect of increasing altitude on the total pressure and partial pressure of the main gases in the atmosphere?

- A) The total pressure will decrease and the partial pressures will remain constant.
- B) The total pressure remains constant and the partial pressures will decrease.
- C) The total pressure will decrease and the partial pressures will increase.
- D) The total pressure will decrease and the partial pressures will decrease.

125- The primary symptom of decompression sickness / illness is:

- A) Red colored cheeks and lips.
- B) The chokes.
- C) The bends.
- D) Neurological damages to the CNS.

126- The circulation of blood:

- 1) Transports oxygen to the body cells
- 2) Withdraws waste products from the cells
- 3) Conveys nutrients to the cells

Which of the following lists all the correct answers?

- A) 1, 3
- B) 2, 3
- C) 1, 2, 3
- D) 1, 2

127- The ability to withstand G forces is reduced by a number of factors, among these factors are:

- A) Hypoxia, fatigue and vibrations.
- B) Low blood sugar, obesity and hypoxia.
- C) Smoking, obesity and vibrations.
- D) Physical fitness, heat and hypotension.



128- Out of the list of possible measures to counteract hyperventilation, the most effective measure is:

- A) Breathe into a plastic or paper bag.
- B) Hold breath.
- C) Avoid strenuous flight maneuvers.
- D) Speak soothingly and get the person to breathe slowly.

129- Night vision is significantly reduced (e.g. a loss of more than 25%) at 15000 ft in which stage of hypoxia?

- A) Clinical manifestation phase.
- B) Indifferent.
- C) Compensatory.
- D) Anemic phase.

130- List the constituent parts of the blood and state their function.

- A) Red cells carry oxygen, white cells are involved in immunity and platelets coagulate blood.
- B) Red cells carry oxygen, white cells coagulate blood and platelets are involved in immunity.
- C) Red cells coagulate blood, white cells are involved in immunity, and platelets carry oxygen.
- D) Red cells are involved in immunity, white cells carry oxygen and platelets coagulate blood.

131- Hypoxic hypoxia may be caused by:

- 1) Climbing to a high altitude without using additional oxygen.
- 2) Malfunction in the oxygen supply system.
- 3) Loss of cabin pressurization at high altitude.

Which of the following lists all the correct answers?

- A) 1, 2, 3
- B) 1, 3
- C) 2, 3
- D) 1, 2

132- How will hyperventilation cause the acid-base balance of the blood to be affected?

- A) Hyperventilation causes too much oxygen to be removed from the blood causing the level of carbonic acid to fall.
- B) Hyperventilation causes too much CO₂ to be removed from the blood causing the level of carbonic acid to rise.
- C) Hyperventilation causes too much CO₂ to be removed from the blood causing the level of carbonic acid to fall.
- D) Hyperventilation causes too much oxygen to be removed from the blood causing the level of carbonic acid to rise.



133- How does an increase in altitude affect the hemoglobin oxygen saturation?

- A) As altitude increases, the hemoglobin oxygen saturation will remain constant at 57% from 24000ft.
- B) As altitude increases, the hemoglobin oxygen saturation increases.
- C) As altitude increases, the hemoglobin oxygen saturation decreases.
- D) As altitude increases, the hemoglobin oxygen saturation will remain constant at 97.5% from 10000 ft.

134- How are oxygen and carbon dioxide transported throughout the body?

- A) Diffusion
- B) Oxidization
- C) Circulation
- D) Metabolism

135- Flights immediately after scuba diving, using compressed gas, to depths greater than 10 meters:

- A) Can be performed without any danger.
- B) Are to be avoided because of the possibility of decompression sickness.
- C) Are allowed if you fly no higher than 38000 ft.
- D) Should be avoided because hypoxia may develop.

136- During hyperventilation:

- A) Acidity level of the blood is reduced.
- B) Alkalinity level of the blood is reduced.
- C) Oxygen concentration of the blood is below normal.
- D) Nitrogen concentration of the blood is above normal.

137- Define hypoxia and explain why living tissues require oxygen.

- A) Hypoxia is the lack of sufficient oxygen to meet the needs of the body tissues which require oxygen for oxidation of carbohydrates from food to produce energy.
- B) Hypoxia is the lack of sufficient oxygen to meet the needs of the body tissues which require oxygen to coagulate the blood in case of infection.
- C) Hypoxia is the lack of sufficient oxygen to meet the needs of the body tissues which require oxygen to fight infection or invading bacteria.
- D) Hypoxia is the lack of sufficient oxygen to meet the needs of the body tissues which require carbon dioxide for metabolism.

138- Decompression sickness / illness is characterized by:

- A) Negligible symptoms that need no attention or therapy.
- B) Muscle pains in small muscles such as the finger and toe muscles, which are also known as the "chokes".
- C) Over-saturated nitrogen gas molecules in the body tissues.
- D) Headache and dizziness caused by oxygen bubbles due to the low partial pressure of oxygen.



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139- Carbon monoxide is particularly dangerous because:

- 1) Its initial symptoms are not alarming.
- 2) It is colorless.
- 3) It is odorless.
- 4) It is highly toxic.
- 5) Its effects are cumulative.

- A) 1, 2, 3, 4, 5
- B) 1, 2, 3, 5
- C) 2, 3, 4
- D) 2, 3, 4, 5

140- Breathing 100% oxygen at 40000 ft is equivalent to breathing ambient air at:

- A) 14000 ft
- B) 8000 ft
- C) 10000 ft
- D) 18000 ft

141- At which altitude is it necessary to breathe 100% oxygen under pressure after a rapid decompression?

- A) Approximately 50000 ft.
- B) Approximately 14000 ft.
- C) Approximately 20000 ft.
- D) Approximately 40000 ft.

142- An increase in the amount of carbon dioxide in the blood leads to:

- A) An increase of acidity in the blood.
- B) An increased respiratory rate.
- C) A reduction of red blood cells.
- D) An improving resistance to hypoxia.

143- The purpose of cabin pressurization system is:

- A) To reduce gastrointestinal, trapped gas, middle ear and sinus problems.
- B) To allow the crew and passengers to move about freely in a comfortable environment, unencumbered by oxygen masks or other life support equipment.
- C) To prevent hypoxia.
- D) All answers are correct.

144- How does CO affect O₂ carriage in the blood?

- A) By killing red blood cells.
- B) By killing white blood cells.
- C) By binding to the hemoglobin before O₂ does.
- D) By splitting the O₂ into CO₂.



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145- How long TUC can be expected after a loss of cabin pressure at 37000 feet?

- A) 18 sec.
- B) 15 sec.
- C) 10 sec.
- D) 5 sec.

146- What may predispose a person for a heart attack?

- A) Smoking, high cholesterol level, diet or high blood pressure.
- B) Smoking, asthma, alcohol use and high blood pressure.
- C) Age, stress or low blood pressure.
- D) Family history of asthma, smoking, over exertion and weight.

147- Which statement about partial pressure is correct?

- A) Partial pressure decreases approximately 2% per 1000 feet.
- B) One can calculate the partial pressure of a gas in a mixture by using Boyle's law.
- C) The sum of the partial pressure of individual gases, in a mixture of gases, is equal to the total pressure.
- D) Partial pressure of oxygen in air is always approximately 20.

148- Carbon monoxide is always present in the exhaust gases of engines, if a pilot is exposed to carbon monoxide, which of the following responses is correct?

- A) Carbon monoxide can only affect pilots if they are exposed to them for a long period of time.
- B) When exposed to carbon monoxide for a long period of time, the body will adapt to it and no adverse physical effects are experienced.
- C) Carbon monoxide is easily recognized by odour and taste.
- D) A short exposure to relatively high concentrations of carbon monoxide can seriously affect a pilot's ability to operate an aircraft.

149- The rate and depth of breathing is primarily controlled by:

- A) The amount of nitrogen in the blood.
- B) The amount of carbon dioxide in the blood.
- C) The total atmospheric pressure.
- D) The amount of carbon monoxide in the blood.



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150- Which of the following symptoms can indicate the beginning of hypoxia?

- 1) Blue lips and finger nails.
- 2) Euphoria.
- 3) Flatulence.
- 4) Unconsciousness.

- A) 1, 2, 4
- B) 1, 2, 3
- C) 2, 3, 4
- D) 1, 3, 4

151- The severity of hypoxia depends on the:

- 1) Rate of decompression
- 2) Physical fitness
- 3) Flight level
- 4) Individual tolerance

- A) 2, 3 and 4 are correct, 1 is false.
- B) 1 and 3 are correct, 2 and 4 are false.
- C) 1, 2, 3 and 4 are correct.
- D) 1, 2 and 3 are correct, 4 is false.

152- The primary factor to control the rate and depth of breathing is the:

- A) Partial pressure of nitrogen.
- B) Partial pressure of oxygen in the blood.
- C) Total air pressure in the blood.
- D) Pressure of carbon dioxide in the blood.

153- The physiological effects of accelerations to the human body depend on:

- 1) The duration of the G force
- 2) The onset rate of the G force
- 3) The magnitude of the G force
- 4) The direction of the G force

- A) 2, 3 and 4 are correct, 1 is false.
- B) 1, 2 and 4 are correct, 3 is false.
- C) 1, 2, 3 and 4 are correct.
- D) 1, 2, 3 are correct, 4 is false.

154- The part of blood without cell is called:

- A) Serum
- B) Water
- C) Plasma
- D) Lymph



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155- The circulatory system, among other things, allows for:

- 1) Transportation of oxygen and carbon dioxide**
- 2) Transportation of information by chemical substances**

- A) Both are false.
B) 1 and 2 are correct.
C) 1 is correct and 2 is false.
D) 1 is false and 2 is correct.

156- Which data compose the ICAO standard atmosphere?

- 1) Density**
- 2) Pressure**
- 3) Temperature**
- 4) Humidity**

- A) 1, 2, 3
B) 1, 2, 4
C) 2, 3, 4
D) 3, 4

157- What is the average Time of Useful Consciousness after a rapid decompression at 40000 ft?

- A) About 40 seconds.
B) More than 1 minute.
C) About 12 seconds.
D) Between 20 seconds and 1 minute.

158- During a climb, we can observe the following with regard to the partial oxygen pressure:

- A) An increase up to 10000 ft followed by a sudden pressure drop above that altitude.
B) An increase which is inversely proportional to the decrease in atmospheric pressure.
C) An identical decrease to that for atmospheric pressure.
D) A decrease which is three times faster than the decrease in atmospheric pressure.

159- The Time of Useful Consciousness may vary according to:

- 1) Physical activity of the subjected crew**
- 2) The experience of the pilot on the type of aircraft in question**
- 3) The strength and time of decompression**
- 4) The cabin temperature**

- A) 4
B) 1, 3
C) 1, 2
D) 3, 4



160- The procedure to be followed in the event of decompression when flying above 10000 ft must:

- A) Allow for the rapid supply of oxygen in order to prevent the pilot becoming hypoxic.
- B) Allow for a rapid descent independent from sufficient supply of oxygen in order to prevent disorders due to hypoxia.
- C) Make it possible to prevent hyperventilation owing to the inhalation of 100% oxygen.
- D) Make it possible to eliminate the risk of fogging due to the sudden pressure changes.

161- What are the main clinical signs of hypoxia during explosive decompression?

- A) Headaches, fatigue, somnolence, palpitations.
- B) Increase in heart and respiratory rates, euphoria, impairment of judgment, memory disorders.
- C) Increase in heart rate, decrease in body temperature impairment of judgment.
- D) Headaches, articular pain, speeding-up of the respiratory rate, memory disorders.

162- What is the procedure above 10000 ft altitude when faced with explosive decompression?

- A) Don an oxygen mask and descend to below 10000 ft.
- B) First inform ATC.
- C) Descend to below 10000 ft and signal an emergency.
- D) Check the cabin altitude, don an oxygen mask and maintain level flight.

163- The following actions are appropriate when faced with symptoms of decompression sickness:

- 1) Climb to higher level**
 - 2) Descent to the higher of 10000 ft or MSA and land as soon as possible**
 - 3) Breathe 100% oxygen**
 - 4) Get medical advice about recompression after landing**
- A) 1, 3
 - B) 1, 2, 3
 - C) 1, 4
 - D) 2, 3, 4

164- If someone hyperventilates due to stress his blood will get:

- A) More alkaline.
- B) Less saturated with oxygen.
- C) More saturated with carbon dioxide.
- D) More acid.



165- You suffered a rapid decompression without the appearance of any decompression sickness symptoms. How long should you wait until your next flight?

- A) 36 hours.
- B) 24 hours.
- C) 10 hours.
- D) 48 hours.

166- Dry air is a mixture of gases. Their volume percentage is about:

- A) 18% oxygen, 80% nitrogen, 2% other gases.
- B) 21% oxygen, 78% nitrogen, 1% other gases.
- C) 19% oxygen, 80% nitrogen, 1% other gases.
- D) 25% oxygen, 74% nitrogen, 1% other gases.

167- Hyperventilation is:

- A) A reduction of partial oxygen pressure in the brain.
- B) An accelerated heart frequency caused by an increasing blood pressure.
- C) An accelerated heart frequency caused by a decreasing blood pressure.
- D) A normal compensatory physiological reaction to a drop in partial oxygen pressure (e.g. when climbing a high mountain).

168- During flight all crew members have one or more of the following symptoms:

- 1) Blue lips
- 2) Mental disturbances
- 3) Tingling sensations in arms and/or legs
- 4) Reduction of peripheral vision

Which is the possible cause?

- A) Hypothermia.
- B) Glaucoma.
- C) Hypoxia.
- D) Hypoglycemia.

169- The symptoms caused by gas bubbles under the skin following a decompression are called:

- A) Leans
- B) Bends
- C) Chokes
- D) Creeps

170- Pain in the joints (bends), which suddenly appear during a flight, are symptoms of:

- A) Hypoxia.
- B) Decompression sickness.
- C) Barotrauma.
- D) Air-sickness.



171- The time between inadequate oxygen supply and incapacitation is called TUC (Time of Useful Consciousness), it:

- A) Varies individually and depends on cabin pressure altitude.
- B) Is the same amount of time for every person.
- C) Is not dependent on physical or psychological pressure.
- D) Varies individually and does not depend on altitude.

172- What event can cause a hyperventilation (not required by physical need)?

- 1) Pressure breathing.
- 2) Anxiety or fear.
- 3) Overstress.
- 4) Strong pain.
- 5) Jogging.

- A) 1, 2, 3, 4 and 5 are correct.
- B) 1 and 5 are both false.
- C) 1, 2, 3 and 4 are correct, 5 is false.
- D) Only 2 and 3 are correct.

173- Spatial disorientation may be defined as:

- A) A physiological illness of the inner ear.
- B) An incorrect mental image of where you are on the map.
- C) An incorrect mental image of your position, attitude or movement in space.
- D) An incorrect mental image caused exclusively by fatigue and anxiety.

174- The utricle and the saccule organs are responsible for the perception of

- A) Angular acceleration.
- B) Linear acceleration.
- C) G-loads.
- D) A and C are correct.

175- The sensory organ(s) in the inner ear responsible for vestibular sense is (are) the:

- A) Utricle.
- B) Saccule.
- C) Semicircular canals.
- D) Semicircular canals, vestibule (static organ).

176- The sense that we rely on most for orientation is sense.

- A) Vestibular.
- B) Kinesthetic.
- C) Visual.
- D) Saccule.



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177- The primary sense(s) used in maintaining balance is(are) the:

- A) Visual.
- B) Vestibular.
- C) Kinesthetic.
- D) All answers are correct.

178- The cockpit light color that best preserves your dark adaptation is light.

- A) Green
- B) Yellow
- C) Red
- D) Blue

179- light severely distorts some colors, especially those found on aeronautical charts.

- A) Red
- B) Amber
- C) Green
- D) White

180- If you look directly at an object at night, you will see it?

- A) Less clearly because there are no as many cones as rods.
- B) Less clearly because the fovea is a night blindspot.
- C) More clearly because it is focused in the fovea.
- D) More clearly because rods see better in the dark.

181- A problem caused by the lack of visual references is known as:

- A) Autokinesis.
- B) Flicker vertigo.
- C) Empty field myopia.
- D) Somatogravic illusion.

182- The part of body which is responsible for the perception of linear acceleration is:

- A) Semicircular canals.
- B) Static organ.
- C) Kinesthetic sense.
- D) A and B are correct.

183- One of the most common types of spatial disorientation occurs when a rapid correction as made to a bank which may cause to reenter to the original attitude, is:

- A) Coriolis illusion.
- B) Graveyard spiral.
- C) Leans.
- D) Somatogravic illusion.



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184- How a pilot generally can stop the leans?

- A) Recovering from a bank attitude abruptly.
- B) Maintaining a level attitude for two minutes.
- C) Lowering the nose abruptly.
- D) B and C are correct.

185- Which of the following factors increase susceptibility of spatial disorientation?

- A) Intake of alcohol or drugs.
- B) Heavy pilot workload and fatigue.
- C) Anxiety.
- D) All answers are correct.

186- An illusion created by an abrupt change from a climb to straight and level flight is:

- A) Graveyard spiral.
- B) Inversion illusion.
- C) Coriolis illusion.
- D) Leans.

187- Which statement is incorrect?

- A) False horizon can be generated by confusing bright stars and city lights.
- B) A false horizon can occur while flying toward the shore of an ocean or large lake at night.
- C) Flying above a sloping cloud deck produce illusion of false horizon.
- D) False horizon illusion is only dangerous when actual horizon and apparent horizon are not parallel.

188- Which statement is incorrect?

- A) Motion sickness is caused by the brain receiving conflicting message about the state of the body.
- B) The symptoms of motion sickness are general discomfort, paleness, vomiting, dizziness, nausea and sweating.
- C) Passengers are less susceptible to airsickness than pilots.
- D) Avoiding quick maneuvers, warm, turbulent air, using ear plug and calming down the stressful passenger can reduce the likelihood of airsickness.

189- Awareness of position obtained by the nerves in your skin, joints and muscles is called:

- A) Vestibular sense.
- B) Kinesthetic sense.
- C) Visual sense.
- D) A and B are correct.



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190- A turn is detected by the canal in the inner ear.

- A) Lateral
- B) Horizontal
- C) Vertical
- D) Vestibule (static organ)

191- Which part of body is responsible for keeping the pressure equalized between the ear canal and middle ear?

- A) Throat.
- B) Eustachian tube.
- C) Sinuses.
- D) Cochlea.

192- Find the most common factors which cause the anemic hypoxia:

- 1) Cyanosis
 - 2) Stomach ulcer
 - 3) Diet deficiency
 - 4) Blood donation
 - 5) Excessive bleeding
 - 6) Carbon monoxide poisoning
- A) 1,3,4,5,6
 - B) 1,3,5,6
 - C) 2,5,6
 - D) 2,3,4,5,6

193- The following statements are true, except:

- A) Smoking three cigarettes during a night flight can dramatically reduce the sharpness of your vision.
- B) During rapid decompression at FL300 time of useful consciousness with moderate activity is 45 seconds.
- C) Hyperventilation cannot occur while breathing supplemental oxygen.
- D) The treatment for hyperventilation involves restoring the proper carbon dioxide level in the body.

194- Clearing your ears is difficult when you are into pressure.

- A) Less – descending – higher
- B) More – ascending – lower
- C) Less – ascending – higher
- D) More – descending – higher



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195- When Eustachian tube does not open during an ascent, the positive air pressure in the pushes the eardrum

- A) Ear canal – outward
- B) Middle ear – outward
- C) Ear canal – inward
- D) Middle ear – inward

196- Most passengers are aware of the pressure imbalance during descent. You can open the Eustachian by:

- A) Valsalva technique.
- B) Swallowing.
- C) Chewing and yawning.
- D) All answers are correct.

197- As a balloon climbs to 28000 ft, atmospheric pressure decreases and the air within the balloon and volume

- A) Expands – tripled
- B) Compresses – doubled
- C) Expand – doubled
- D) Compresses – tripled

198- After consuming alcohol heart rate and blood pressure may while your central nervous system.

- A) Decrease – depressing
- B) Decrease – stimulating
- C) Increase – depressing
- D) Increase - stimulating

199- drugs generally excite the central nervous system and produce an increase in alertness and activity.

- A) Depressant
- B) Stimulant
- C) Tranquilizer
- D) Anesthetic

200- Which gas, which is absorbed by the body during normal breathing, plays an important role in decompression sickness?

- A) Nitrogen.
- B) Oxygen.
- C) Carbon Dioxide.
- D) Carbon Monoxide.



201- Which body system is responsible for distributing oxygen around the body?

- A) The nervous system.
- B) The circulatory system.
- C) The respiratory system.
- D) The oxidation system.

202- The blood carries..... around the body and removes from the body with the exchange occurring in the

- A) Carbon dioxide / Oxygen / Veins.
- B) Oxygen / Carbon dioxide / Heart.
- C) Carbon dioxide / Oxygen / Capillaries.
- D) Oxygen / Carbon dioxide / Capillaries.

203- Enter into the following statement the most correct pair of gases from the options below.

Hemoglobin in red blood cells is more readily attracted to.....than.....

- A) Nitrogen / Oxygen.
- B) Carbon monoxide / Oxygen.
- C) Oxygen / Nitrogen.
- D) Carbon dioxide / Nitrogen.

204- Which organ controls all bodily functions?

- A) The brain.
- B) The heart.
- C) The lungs.
- D) The spinal cord.

205- Above what altitude do pilots need to breathe supplementary oxygen?

- A) 2000 ft.
- B) 8000 ft.
- C) 10000 ft.
- D) 20000 ft.

206- What is the component of the eye responsible for peripheral vision and sensitive to low light levels?

- A) The rods.
- B) The cones.
- C) The fovea.
- D) The retina.



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207- Where is the blind spot?

- A) On the iris.
- B) Where the optic nerve enters the retina.
- C) On the fovea.
- D) On the edge of the lens.

208- When flying solo, a pilot who suspects he is suffering from spatial disorientation should:

- A) Blink rapidly several times.
- B) Swallow hard, pinch the nostrils and blow down the nose to clear the Eustachian tube.
- C) Believe the indications of instruments.
- D) Believe his somatosensory senses.

209- What is the most important sense for spatial orientation?

- A) Hearing and balance.
- B) Seat of the pants.
- C) Vision.
- D) All senses play their part in situational awareness at same amount.

210- You fly VFR from your home base (runway width 45 m) to a small airfield (runway width 25m), on reaching your destination there is a risk of performing a:

- A) Low approach with undershoot.
- B) High approach with overshoot.
- C) High approach with undershoot.
- D) Low approach with overshoot.

211- Illusions can often be experienced during flight. One such illusion is created by strong forward linear acceleration. This phenomenon is called:

- A) Autokinesis.
- B) Somatogravic or oculogravic.
- C) Coriolis.
- D) Oculogyral or leans.

212- The Eustachian tube connects:

- A) The semicircular canals.
- B) The auditory duct and the inner ear.
- C) The middle ear and the pharynx.
- D) The middle ear and the inner ear.



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213- The following statements are true except:

- A) Cones are responsible for night vision and are most densely in the fovea centralize.
- B) Rods are responsible for night vision and have a poor ability to discriminate.
- C) Cones are most densely located in the fovea centralize and have a one-to-one connection to the brain.
- D) Rod are responsible for ambient vision and are in groups connected to the brain.

214- What effect does haze have on the abilities to see traffic or terrain features during flight?

- A) Haze creates the illusion of being at a greater distance than actual from the runway.
- B) Haze makes darker objects look closer and brighter objects look like they are further away.
- C) Haze causes the eyes to focus at infinity making terrain features harder to see.
- D) The eyes tend to overwork in haze and do not detect relative movement easily.

215- You are carrying out a visual approach to a runway which slopes upwards away from the touchdown end. What is the main risk in this case?

- A) Landing heavy due to an apparent increase in runway width.
- B) Landing short due to over correcting for an apparent height increase.
- C) Landing long due to over correcting for an apparent height decreases.
- D) Landing heavy due to an apparent in runway width.

216- What is the role of the Eustachian tube in your ear?

- A) To transfer mechanical energy from the ear drum to the ossicles.
- B) To equalize air pressure on both sides of the ear drum.
- C) To transform mechanical energy from sound waves to electrical signals.
- D) To convert acceleration and gravity forces to electrical signals, which in turn are sent to your brain for interpretation.

217- A sloping cloud formation, an obscured horizon and a dark scene spread with ground lights and stars can create an illusion known as:

- A) False horizon.
- B) Coriolis illusion.
- C) Autokinesis.
- D) Elevator illusion.

218- One of the substances present in the smoke of cigarettes can make it significantly more difficult for the red blood cells to transport oxygen and as a consequence contributes to hypoxia. Which substance are we referring to?

- A) Carbon monoxide
- B) Carbonic anhydride
- C) Tar
- D) Carbon dioxide



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219- On ascent the gases in the digestive tract will:

- A) Expand.
- B) Be absorbed by tissues and blood.
- C) Stay the same.
- D) Shrink.

220- Which of the following applies when alcohol has been consumed?

- A) Small amounts of alcohol increase visual performance.
- B) Drinking coffee at the same time will increase the elimination rate of alcohol.
- C) Even after the consumption of small amounts of alcohol, normal cautionary attitudes may be lost.
- D) Acute effects of alcohol cease immediately.

221- The Eustachian tube serves for the pressure equalization between:

- A) Nose and pharyngeal cavity and external atmosphere
- B) Frontal, nose and maxillary sinuses.
- C) Middle ear and external atmosphere.
- D) Sinuses of the nose and external atmosphere.

222- Barotrauma of the middle ear will most likely occur:

- A) When climbing.
- B) In sudden steep turns.
- C) When descending rapidly.
- D) During a long high altitude flight.

223- Alcohol, even when taken in minor quantities:

- A) Can make the brain cells to be more susceptible to hypoxia.
- B) Will stimulate the brain, making the pilot resistant to hypoxia.
- C) Will have no effect at all.
- D) May improve the mental functions, so that the symptoms of hypoxia are much better to be identified.

224- Which statement is correct regarding alcohol in the human body?

- A) Judgment and decision making can be affected even by a small amount of alcohol.
- B) A small amount of alcohol increases visual acuity.
- C) An increase of altitude decreases the adverse effect of alcohol.
- D) When drinking coffee, the human body metabolizes alcohol at a faster rate than normal.



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225- It is inadvisable to fly when suffering from a cold. The reason for this is:

- A) Swollen tissue in the inner ear will prevent the air from ventilating through the tympanic membrane.
- B) Swollen tissue in the eustachian tube will cause permanent hearing loss.
- C) Pain and damage to the ear drum can result, particularly during fast descents.
- D) Gentle descents at high altitude can result in damage to the ear drum.

226- A fatigued pilot:

- A) Considerably increases the ability to concentrate.
- B) Will show signs of increased irritability.
- C) Is acting similar as when encountering a state of depression.
- D) Will get precordial pain.

227- Trapped gas disorders of the ears can be caused by:

- A) Flying when you have a cold.
- B) Flying after deep scuba diving with decompression.
- C) Flying at too high altitude without supplemental oxygen.
- D) Too hard equalization of the pressure in your outer ear.

228- By what action could the pressure gradient between the middle and the outer ear be balanced?

- A) By breathing in.
- B) By swallowing.
- C) By breathing out.
- D) By coughing.

229- Even at normal cabin altitudes (e.g. around 8000 ft) you can get severe abdominal pain and flatulence after eating gas forming foods or fizzy drinks. The correct countermeasure is:

- A) Climb to a higher altitude.
- B) Descend to a lower altitude.
- C) Perform "Valsalva maneuver".
- D) Use supplemental oxygen.

230- Having a cold or an infection of the upper respiratory tract you:

- A) Should not fly because the congestion of the frontal sinuses may cause great pain which can seriously affect your ability to control yourself and the aircraft.
- B) May accept to fly an ambulance flight because "Sinus squeeze" is rare and represents a minor danger to aviation.
- C) Must be careful when flying because the infection may cause hyperglycemia.
- D) Should not fly because the infection may cause hypoxia due to congestion in the nose.



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231- Smoking 3 cigarettes in 1 hour at sea level will:

- A) Not affect night vision when flying at sea level.
- B) Cause a lower degree of hypoxic tolerance.
- C) Increase your G tolerance considerably by increasing blood pressure.
- D) Prevent serious hyperventilation due to sedation effect of nicotine.

232- The organ which metabolizes alcohol from the body is the:

- A) Liver
- B) Spleen
- C) Pancreas
- D) Kidneys

233- Concerning flying and blood alcohol content the following statement is correct:

- A) No flying under the influence of alcohol.
- B) Flying with up to 0.05% blood alcohol.
- C) Flying with up to 0.15% blood alcohol.
- D) Flying with up to 0.08% blood alcohol is safe.

234- The following statements about alcohol is true?

- A) A blood alcohol content of 0.05% leads to unconsciousness.
- B) A unit of alcohol is equal to 50 ml of pure alcohol.
- C) A few drinks can make a person sleep better.
- D) Alcohol will lower the tolerance for hypoxia.

235- The decision making in emergency situations requires firstly:

- A) The whole crew to focus on the problem.
- B) Speed of reaction.
- C) Informing ATC thoroughly about the situation.
- D) Distribution of tasks and crew coordination.

236- Define situational awareness:

- A) The ability to rank tasks according to importance and to solve problems.
- B) The right to have and express your own feelings and ideas.
- C) The perception of the elements in the environment within a volume of space and time, the comprehension of their meaning and the projection of their status in the near future.
- D) The perception of the elements in the environment within a volume of space.

237- CRM (Crew Resource Management) training is:

- A) Intended to develop effectiveness of crew performance by improving attitudes towards flight safety and human relationship management.
- B) Not intended to change the individual's attitude at all.
- C) Intended solely to alter an individual's personality.
- D) Is mainly of relevance to pilots with personality disorders or inappropriate attitudes.



238- Define effective communication:

- A) Effective communication is a transmission of a message from one brain to another.
- B) Effective communication is a transmission of a message from one brain to another with a minimum of change.
- C) Effective communication occurs when one person talks to another person.
- D) Effective communication occurs when one person

239- Which factors can influence effective communications?

- A) Noise and voice.
- B) Workload, noise and voice.
- C) Voice.
- D) Workload and voice.

240- What is meant by the term CRM today?

- A) Cockpit resource management.
- B) Crew resource management.
- C) Company resource management.
- D) Crew reliability measurement.

241- "It will not happen to me" can be used as an example to illustrate which attitude?

- A) Resignation
- B) Anti-authority
- C) Macho
- D) Invulnerability

242- Which of the following is not a hazardous attitude?

- A) Domination
- B) Macho
- C) Anti-authority
- D) Impulsivity

243- A stress reaction:

- A) The specific response of the body to every demand placed on a person.
- B) The non-specific response of the body to every demand placed on a person.
- C) The non-specific stimuli causing a human body to respond.
- D) The specific stimuli causing a human body to respond.

244- Stress may be defined as:

- A) A normal phenomenon which enables an individual to adapt to encountered situations.
- B) A poorly controlled emotion which leads to a reduction in capabilities.
- C) A psychological phenomenon which only affects fragile personalities.
- D) A human reaction which one must manage to eliminate.



245- What is a stressor?

- A) A psychological problem developed in a situation of danger.
- B) The adaptation response of the individual to his environment.
- C) An external or internal stimulus which is interpreted by an individual as being stressful.
- D) All external stimulation are stressors since they modify.

246- Fatigue and stress:

- A) Lower the tolerance to hypoxia.
- B) Increase the tolerance to hypoxia.
- C) Do not affect hypoxia at all.
- D) Will increase the tolerance to hypoxia when flying below 15000 feet.

247- In order to limit stress when flying, a pilot should:

- A) Drop activities outside work so as to focus on his work better.
- B) Forget about bad past experiences.
- C) Avoid anticipating events during a flight to manage his workload.
- D) Maintain his competence by practicing his professional skills and learning from past experiences.

248- Signs of stress include:

- A) Perspiration, dry mouth, dilated pupils, fast breathing.
- B) Lowering of the blood pressure.
- C) Faster, deep inhalation, stabbing pain around the heart.
- D) Rising of the blood pressure, pupils narrowing, stabbing pain around the heart.

249- The two types of fatigue are:

- A) Chronic and acute.
- B) Short term and oppressive.
- C) Oppressive and negative.
- D) Heavy and light.

250- Which gas is absorbed by the body during normal breathing, plays an important role in decompression sickness?

- A) Oxygen.
- B) Carbon dioxide.
- C) Nitrogen.
- D) Carbon monoxide.

251- Blood pressure may be too high due to:

- A) Age.
- B) Stress.
- C) Smoking.
- D) All answers are correct.



252- Which of the following gases regulate the rate and depth of breathing, depending on the levels at which the gas is present in the blood?

- A) Oxygen.
- B) Carbon Dioxide.
- C) Nitrogen.
- D) Carbon Monoxide.

253- When a person is experiencing stress or fear, adrenaline is released into the blood stream causing immediate:

- A) Fatigue.
- B) Loss of consciousness.
- C) Increase in the pulse-rate.
- D) Decrease in the pulse-rate.

254- Which organ controls all bodily functions?

- A) The heart.
- B) The brain.
- C) The lungs.
- D) The spinal cord.

255- Compared to a non-smoker, someone who smokes is likely to experience the effects of hypoxia at:

- A) A higher altitude.
- B) The same altitude.
- C) A lower altitude.
- D) Any altitude.

256- The effects of hypoxia can be increased by:

- A) Increased altitude.
- B) Increased temperature.
- C) Alcohol.
- D) All answers are correct.

257- What is the component of the eye responsible for peripheral vision and sensitive to low light levels?

- A) The cones.
- B) The rods.
- C) The fovea.
- D) The retina.



258- Empty field myopia is a condition where the eyes naturally focus at a distance of approximately:

- A) Infinity.
- B) 20 - 500 meters.
- C) At the horizon.
- D) 1 - 2 meters.

259- Where is the blind spot?

- A) On the iris.
- B) On the fovea.
- C) On the edge of the lens.
- D) Where the optic nerve enters the retina.

260- What are the vessels called that are very fine and found inside tissues?

- A) Arteries
- B) Veins
- C) Capillaries
- D) Aorta

261- You should not dispense blood without prior information from your flight surgeon. The most important reason for this advice is:

- A) You are more susceptible to hypoxia after a blood donation.
- B) The chance you get the bends is higher after blood donation.
- C) Your blood-pressure is too low after blood donation.
- D) Your heart frequency is too low after blood donation.

262- Which lenses are used to correct presbyopia?

- A) Concave.
- B) Convex.
- C) Various depending on the eye itself.
- D) It cannot be correct.

263- The cabin pressure in airline operation is:

- A) Always equivalent to sea level.
- B) Normally not exceeding 6000 to 8000 feet.
- C) Normally not exceeding 2000 to 3000 feet.
- D) Normally not exceeding 4000 to 5000 feet.



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264- What is decompression sickness?

- A) A frequent disorder in commercial aviation due to the pressurization curve of modern aircraft.
- B) A disorder which is solely encountered below 18000 ft.
- C) The formation of air bubbles in bodily tissues, with no consequences for people's capabilities.
- D) A sickness resulting from the formation of nitrogen bubbles in bodily tissues and fluids after a cabin pressure loss at high altitude.

265- During final approach under bad weather conditions you are getting uneasy, feel dizzy and get tingling sensations in your hands. When hyperventilating you should:

- A) Descend.
- B) Apply the Valsalva method.
- C) Use the oxygen mask.
- D) Control your rate and depth of breathing.

266- In the event of rapid decompression, the first action for the flight deck crew is:

- A) Descent to the higher of 10000 ft or MSA.
- B) Transmit mayday call.
- C) Carry out check for structural damage.
- D) Don oxygen masks and ensure oxygen flow.

267- Flying Immediately after scuba diving involves the risk of getting:

- A) Decompression sickness without having a decompression.
- B) Hyperventilation.
- C) Hypoxia.
- D) Stress.

268- How much of the air is occupied by oxygen?

- A) 78.0%
- B) 78.08%
- C) 17.0%
- D) 20.94%

269- How much of the air is occupied by nitrogen?

- A) 75.08%
- B) 29.04%
- C) 78.08%
- D) 20.94%



270- What is the medical condition where the airways to the lungs are narrowed due to inflammation?

- A) Asthma
- B) Barotrauma
- C) Pleurisy
- D) Angina

271- What is the purpose of respiration?

- A) Intake of N_2 , which the living cells need for the metabolic process.
- B) Intake of O_2 , which the living cells need for the metabolic process.
- C) Intake of CO_2 , which the living cells need for the metabolic process.
- D) Intake of NO_2 , which the living cells need for the metabolic process.

272- What is hypertension?

- A) A blockage of the coronary artery.
- B) A blockage of the blood supply to part of the brain.
- C) A symptom of reduced oxygen supply to the heart muscle.
- D) A physiological condition involving increased pressure on the arterial walls.

273- Why is hypoxia particularly dangerous during flights with one pilot?

- A) Symptoms of hypoxia maybe difficult to recognize before the pilots' reactions are affected.
- B) Night vision may be so important, that the pilot cannot see other aircraft.
- C) The pilot may not be able to control the aircraft even if using oxygen.
- D) During multi-crew operation, one pilot can fly while the other puts on his/her oxygen mask.

274- Which statement defines hypoxia?

- A) An abnormal increase in the volume of air breathed.
- B) A state of oxygen deficiency in the body.
- C) A condition of gas bubble formation around the joints or muscles.
- D) A condition of too low CO_2 level in the blood.

275- Night vision is greatest:

- A) When looking directly at an object.
- B) Just after an exposure of bright light.
- C) When looking slightly off center of an object.
- D) When flying above 5000 ft.



276- A person should be able to overcome the symptoms of hyperventilation by:

- A) Increasing the breathing rate, in order to increase ventilation.
- B) Slowing the breathing rate and increasing the amount of carbon dioxide in the body.
- C) Refraining from the use of alcohol and over the counter drugs such as antihistamines and tranquilizers.
- D) Increasing the breathing rate, in order to increase ventilation and refraining from the use of alcohol and over the counter drugs such as antihistamines and tranquilizers.

277- A pilot should not fly immediately after donating blood because:

- A) His heart rate is too low after blood donation.
- B) The chance he gets the bends is higher after blood donation.
- C) His blood-pressure is too low after blood donation.
- D) He has an increased susceptibility to fainting.

278- Carbon monoxide (CO) poisoning leads to hypoxia because:

- A) CO is far less easily attached (200 times) to hemoglobin than oxygen.
- B) CO in blood displaces oxygen from the blood corpuscles impairing oxygen transport.
- C) Accumulation of CO in blood leads to hyperventilation and thus to hypoxia.
- D) The increasing amounts of CO in the lung alveoli gradually reverses oxygen diffusion.

279- Flying a non-pressurized light aircraft at 9000 feet your passenger develops blue lips:

- A) You will attempt to calm him/her and occupying the passenger with suitable tasks.
- B) You supply him with extra oxygen, but do not reduce altitude as the partial pressure of oxygen never results in symptoms below 10000 feet.
- C) Assuming he is hyperventilating you order him to stop breathing while you supply additional oxygen.
- D) Assuming he is suffering from hypoxia you reduce altitude and supply him/her with oxygen.

280- High blood pressure is also known as:

- A) Hypertension
- B) Hypotension
- C) Angina
- D) Hypoglycemia

281- Preventing hypoxia at altitude is achieved by:

- A) Hyperventilating to increase the intake of oxygen, trading oxygen for carbon dioxide.
- B) Reducing the contents of carbon dioxide by filtering the cabin air.
- C) Pressurizing the air inside the aircraft to maintain oxygen saturation in blood of 30%.
- D) Pressurizing the air inside the aircraft to achieve oxygen saturation in blood of more than 90%.



282- The dry atmosphere of the flight deck may cause dehydration, which may lead to a reduction in the ability to pay attention. To prevent this, it is appropriate to:

- A) Drink tea.
- B) Drink plenty of coffee.
- C) Drink cool cola drinks.
- D) Drink sufficient non-carbonated liquids.

283- Valsalva technique is used:

- A) During ascent to reduce the higher air pressure in the middle ear.
- B) In case of hyperventilation to reduce anxiety.
- C) During descent to increase the lower pressure in the middle ear.
- D) During descent to decrease the higher pressure in the sinuses.

284- If a passenger has had scuba diving for 3 hours during the last 2 days, the minimum time before flying is:

- A) 12 hours
- B) 24 hours
- C) 36 hours
- D) 48 hours

285- Which of the following gases is fundamentally responsible for decompression sickness?

- A) Oxygen
- B) Nitrogen
- C) Carbon dioxide
- D) Sodium

286- The following group of drugs generally are not classified as stimulants or suppressants:

- A) Caffeine
- B) Alcohol
- C) Antibiotics
- D) Antihistamines

287- Airsick passengers can safely take motion sickness medication.

- A) True
- B) False

288- The atmospheric pressure:

- A) Increases about exponentially with increasing altitude.
- B) Is constant up to about 100 km.
- C) Decreases about exponentially with increasing altitude.
- D) Decreases linearly from sea level up to the tropopause.



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289- The following medication is not prohibited before flying:

- A) Cold and allergy pills
- B) Alcohol
- C) Tranquilizers
- D) Nicotine

290- Alcohol has stimulating effect on:

- A) Central nervous system
- B) Heart rate
- C) Respiratory rate
- D) Both B and C are correct

291- Signs or symptom of hyperventilation are:

- A) Increased rate and depth of respiration.
- B) Muscle twitching and tightness.
- C) Breathlessness, feelings of suffocation.
- D) All answers are correct.

292- All of the following are true regarding the effects of altitude on alcohol consumption except:

- A) Reduced absorption of oxygen in the bloodstream.
- B) Increased physiologic altitude.
- C) Decreased rate of alcohol metabolism.
- D) Increased rate of CO₂ production.

293- The following actions may be used to treat a hyperventilation, except:

- A) Slowing the breathing rate.
- B) Increasing rate and depth of breathing.
- C) Talking aloud.
- D) Back breathing into a paper bag.

294- A pilot who has been scuba diving should avoid flying:

- A) Within 12 hours, or 24 hours if a depth of 30 ft has been exceeded.
- B) Within 24 hours, or 48 hours if a depth of 30 ft has been exceeded.
- C) Within 36 hours of the last dive.
- D) Without medical advice if a depth of 30 ft has been exceeded.

295- A person experiencing light headaches, dizziness, tingling at the fingertips and breathing rapidly may be suffering from:

- A) Hypoxia or hyperventilation.
- B) Hyperventilation only.
- C) Hypoxia only.
- D) Carbon monoxide poisoning.



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296- Angular accelerations are picked up in the inner ear by:

- A) The semicircular canals.
- B) The tympanum.
- C) The saccule and the utricle.
- D) The cochlea.

297- What should a pilot do if he has no information about the dimensions of the runway and the condition of the terrain underneath the approach? He should:

- A) Make an instrument approach and be aware of the illusory effects that can be induced.
- B) Be aware that approaches over down-sloping terrain will make him believe that he is higher than actual.
- C) Make a visual approach and call the tower for assistance.
- D) Be aware that approaches over water always make illusion.

298- A pilot, accelerating or decelerating in level flight may get:

- A) The illusion of turn.
- B) The feeling of rotation.
- C) The illusion of climbing or descending.
- D) The impression of stationary objects moving to the right or left.

299- The vestibular organ:

- A) Reacts to linear/angular acceleration and gravity.
- B) Gives the impression of hearing.
- C) Reacts to pressure changes in the middle ear.
- D) Reacts to vibrations of the cochlea.

300- What could cause hyperventilation?

- A) Alcohol
- B) Nicotine
- C) Fear
- D) Fatigue



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	B	26	C	51	D	76	C
2	B	27	D	52	A	77	A
3	D	28	C	53	B	78	B
4	B	29	C	54	D	79	C
5	D	30	B	55	C	80	B
6	C	31	C	56	C	81	C
7	B	32	D	57	B	82	C
8	A	33	A	58	B	83	D
9	B	34	D	59	D	84	B
10	C	35	B	60	D	85	A
11	A	36	C	61	D	86	D
12	D	37	C	62	D	87	A
13	C	38	B	63	B	88	A
14	D	39	A	64	B	89	D
15	B	40	D	65	D	90	B
16	D	41	C	66	D	91	D
17	C	42	B	67	C	92	B
18	C	43	D	68	D	93	D
19	A	44	D	69	B	94	A
20	C	45	B	70	D	95	A
21	B	46	B	71	A	96	C
22	B	47	B	72	A	97	B
23	A	48	D	73	B	98	B
24	D	49	B	74	C	99	B
25	A	50	B	75	D	100	B

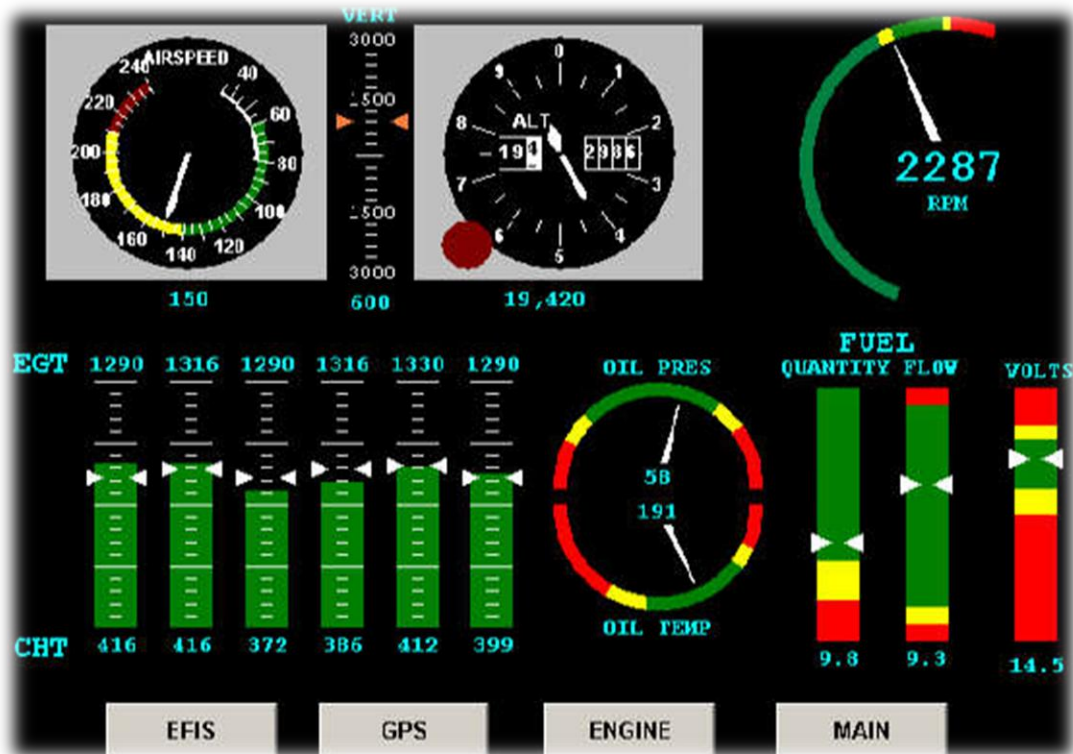


QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	B	126	C	151	C	176	C
102	B	127	B	152	D	177	D
103	B	128	A	153	C	178	C
104	A	129	C	154	C	179	A
105	B	130	A	155	B	180	B
106	C	131	A	156	A	181	C
107	A	132	C	157	C	182	B
108	C	133	C	158	C	183	C
109	A	134	C	159	B	184	B
110	A	135	B	160	A	185	D
111	D	136	A	161	B	186	B
112	D	137	A	162	A	187	D
113	A	138	C	163	D	188	C
114	D	139	A	164	A	189	B
115	D	140	C	165	B	190	A
116	B	141	D	166	B	191	B
117	A	142	B	167	D	192	D
118	C	143	D	168	C	193	C
119	A	144	C	169	D	194	D
120	D	145	A	170	B	195	B
121	C	146	A	171	A	196	D
122	B	147	C	172	C	197	A
123	D	148	D	173	C	198	C
124	D	149	B	174	B	199	B
125	C	150	A	175	D	200	A



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	B	226	B	251	D	276	B
202	D	227	A	252	B	277	D
203	B	228	B	253	C	278	B
204	A	229	B	254	B	279	D
205	C	230	A	255	C	280	A
206	A	231	B	256	D	281	D
207	B	232	A	257	B	282	D
208	C	233	A	258	D	283	C
209	C	234	D	259	D	284	B
210	A	235	D	260	C	285	B
211	B	236	C	261	A	286	B
212	C	237	A	262	B	287	A
213	A	238	B	263	B	288	C
214	A	239	B	264	D	289	D
215	B	240	B	265	D	290	D
216	B	241	D	266	D	291	A
217	A	242	A	267	A	292	D
218	A	243	B	268	D	293	B
219	A	244	A	269	C	294	A
220	C	245	C	270	A	295	A
221	C	246	A	271	B	296	A
222	C	247	D	272	D	297	A
223	A	248	A	273	A	298	C
224	A	249	A	274	B	299	A
225	C	250	C	275	C	300	C

INSTRUMENTATION





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1- An Air Data Computer (ADC) obtains altitude from:

- A) Outside air temperature
- B) Barometric data from static source
- C) Time elapsed for signal to travel to and return from the earth
- D) Difference between absolute and dynamic pressure

2- The input data of an ADC are:

- 1) OAT
- 2) TAT
- 3) Static pressure
- 4) Total pressure

The combination regrouping all the correct statements is:

- A) 1, 2, 3, 4
- B) 2, 3, 4
- C) 1, 3, 4
- D) 1, 2, 4

3- What are the inputs to the ADC?

- 1) OAT
- 2) Dynamic pressure
- 3) TAT
- 4) Static pressure
- 5) Electric power
- 6) Pitot pressure
- 7) AOA

- A) 1, 2, 5, 6
- B) 3, 4, 6
- C) 3, 4, 5, 6, 7
- D) All items are correct

4- From where does the air data computer (ADC) obtain aircraft altitude?

- A) OAT probe
- B) Dynamic – absolute ambient pressure
- C) Absolute barometric sensor on aircraft fuselage
- D) IRS



5- The advantages of an ADC over a traditional pitot – static system are:

- 1) Position and compressibility correction**
- 2) Reduced lag**
- 3) Ability to supply many instruments**
- 4) Ability to act as an altimeter following failure**

- A) 1, 2, 3
- B) 1, 2, 4
- C) 2, 3, 4
- D) 1, 3, 4

6- Inertial Reference System sensors include:

- A) One east-west and one north-south gyro; one east-west and one north-south accelerometer.
- B) Accelerometers mounted in the direction of the aircraft axis.
- C) Laser gyros mounted in the direction of the aircraft axis.
- D) Accelerometers, and laser gyros, mounted in the direction of the aircraft axis.

7- Why must Latitude and Longitude be inserted into an IRS?

- A) To determine the aircraft position relative to the earth
- B) To check the IRS position with the Flight Management System
- C) To enable the levelling procedure to commence
- D) To determine the accuracy of the alignment

8- What does the sensor of an INS/IRS measure?

- A) Velocity
- B) Precession
- C) Horizontal Earth Rate
- D) Acceleration

9- Some inertial reference and navigation systems are known as strap down, this means that:

- A) Only the gyros and not the accelerometers, become part of the unit's fixture to the aircraft structure.
- B) Gyros, and accelerometers are mounted on a stabilized platform in the aircraft.
- C) Gyros and accelerometers need satellite information input to obtain a vertical reference.
- D) The gyroscopes and accelerometers become part of the unit's fixture to the aircraft structure.

10- Some inertial reference systems are known as strap down. This means:

- A) The system is mounted on a stabilized platform.
- B) The system is mounted and fixed to the aircraft structure.
- C) The accelerometers are fixed but the gyros are stabilized.
- D) The gyros are fixed but the accelerometers are stabilized.



11- One of the errors inherent in a ring laser gyroscope occurs at low input rotation rates tending towards zero when a phenomenon known as lock in is experienced, what is the name of the technique, effected by means of a piezo- electric motor that is used to correct this error?

- A) Dither
- B) Cavity rotation
- C) Zero drop
- D) Beam lock

12- In a ring laser gyro, the purpose of the dither motor is to:

- A) Enhance the accuracy of the gyro at all rotational rates
- B) Overcome laser lock
- C) Compensate for transport wander
- D) Stabilize the laser frequencies

13- A laser reference system (IRS), as compared to a gyro reference system (INS):

- A) Is not strapped down and is adversely affected by G force
- B) Is strapped down and is not adversely affected by G force
- C) The platform is strapped down but the accelerometers are not
- D) The accelerometers are strapped down but the platform is not

14- IRS differs from INS in that it:

- A) Has a longer spin-up time and is not affected by vertical accelerations due to gravity
- B) Has a shorter spin-up time and suffers from laser lock
- C) Does not need to correct for Coriolis and central acceleration
- D) Does not experience Schuler errors as accelerometers are strapped down and are not rotated by a V/R feedback loop

15- When and where are IRS positions updated?

- A) During all phases of flight
- B) Only on the ground during the alignment procedure
- C) When the FMS is in IRS ONLY NAV operation
- D) When the VHF Nav Radios are selected to AUTO

16- After alignment, is it possible to update IRS positions?

- A) Yes, by operation of the TO/GA switch, the runway threshold co- ordinates are inserted into the IRS.
- B) No.
- C) Yes, the pilots can insert updates.
- D) Yes, the process is automatic in flight from the DMEs.



17- The alignment time, at mid-latitudes, for an Inertial Reference System using laser ring gyros is approximately:

- A) 5 min
- B) 20 min
- C) 8 min
- D) 10 min

18- The data that needs to be inserted into an Inertial Reference System in order to enable the system to make a successful alignment for navigation is:

- A) Airport ICAO identifier
- B) Aircraft heading
- C) The position of an in-range DME
- D) Aircraft position in latitude and longitude

19- The data supplied by a radio altimeter:

- A) Concerns only the decision height.
- B) Indicates the distance between the ground and the aircraft.
- C) Is used only by the radio altimeter indicator.
- D) Is used by the automatic pilot in the altitude hold mode.

20- A radio altimeter can be defined as a:

- A) Self-contained on board aid used to measure the true height of the aircraft.
- B) Ground radio aid used to measure the true altitude of the aircraft.
- C) Ground radio aid used to measure the true height of the aircraft.
- D) Self-contained on board aid used to measure the true altitude of the aircraft.

21- A radio altimeter is:

- A) Ground based and measures true altitude.
- B) Ground based and measures true height.
- C) Aircraft based and measures true altitude.
- D) Aircraft based and measures true height.

22- Total air temperature(TAT) is:

- A) Higher or equal to static air temperature (SAT), depending on altitude and SAT.
- B) Lower than static air temperature (SAT), depending on altitude and SAT
- C) Higher or equal to static air temperature (SAT), depending on Mach number and SAT.
- D) Lower than static air temperature (SAT), depending on Mach number and SAT.



23- The airplane outside air temperature probe measures the:

- A) Total air temperature minus kinetic heating effects in order to obtain the static temperature.
- B) Total air temperature minus compressibility effects in order to obtain the static temperature.
- C) Static air temperature minus kinetic heating effects in order to obtain the total temperature.
- D) Static air temperature minus compressibility effects in order to obtain the total temperature.

24- Total air temperature is always ----- than static air temperature and the difference varies with ----- .

- A) Warmer, altitude
- B) Colder, altitude
- C) Warmer, CAS
- D) Colder, CAS

25- The measurement of SAT (static air temperature) by direct means is not possible on some (fast) aircrafts because of:

- A) The boundary layer around the aircraft gets very turbulent.
- B) Most temperature sensors have a low recovery factor.
- C) The airflow causes too much cooling of the sensing probe.
- D) The effects from adiabatic compression and friction.

**26- The local speed of sound is equal to:
(K = Constant)**

- A) $K \sqrt{\text{temperature } (^{\circ}\text{F})}$
- B) $K \sqrt{\text{temperature } (^{\circ}\text{K})}$
- C) $K \sqrt{\text{temperature } (^{\circ}\text{C})}$
- D) $K \sqrt{\text{temperature } (^{\circ}\text{R})}$

27- The errors to which the Mach meter is subject are:

- A) Instrument error, position error, compressibility error and maneuver induced error.
- B) Instrument error, position error and maneuver induced error.
- C) Instrument error, position error, barometric error, temperature error and maneuver induced error.
- D) Instrument error, position error, density error and maneuver induced error.

28- The Mach number is the:

- A) Equivalent airspeed (EAS) divided by the local speed of sound.
- B) Corrected airspeed (CAS) divided by the local speed of sound.
- C) Indicated airspeed (IAS) divided by the local speed of sound.
- D) True airspeed (TAS) divided by the local speed of sound.



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29- The Mach number is:

- A) The ratio of the aircraft conventional airspeed to the sonic velocity at the altitude considered.
- B) A direct function of temperature; it varies in proportion to the square root of the absolute temperature.
- C) The ratio of the indicated airspeed to the sonic velocity at the altitude considered.
- D) The ratio of the aircraft true airspeed to the sonic velocity at the altitude considered.

30- At FL350 with a ISA deviation of -12°C , the true airspeed when flying at M 0.78 is:

- A) 460 kts
- B) 447 kts
- C) 490 kts
- D) 436 kts

31- Cruising at FL390, M 0.84 is found to give a TAS of 499 kts, The ISA deviation at this level will be:

- A) -17°C
- B) $+17^{\circ}\text{C}$
- C) $+19^{\circ}\text{C}$
- D) -19°C

32- An aircraft is flying at FL350 with a ISA deviation of $+8$. The Mach number is 0.83 and the TAS 485. If the aircraft descends to FL300 and maintains the same Mach number and TAS, the ISA deviation will now be:

- A) +8
- B) +2
- C) -2
- D) -18

33- Assuming the flight level and Mach number remain constant, when the OAT decreases:

- A) TAS decreases.
- B) IAS increases and TAS decreases.
- C) IAS decreases and TAS increases.
- D) TAS increases.

34- Assuming the flight level and Mach number remain constant, when the OAT increases:

- A) TAS decreases.
- B) TAS increases.
- C) IAS increases and TAS decreases.
- D) IAS decreases and TAS increases.



35- Mach number is defined as:

- A) The ratio of pitot pressure to dynamic pressure.
- B) The ratio of static pressure to dynamic pressure.
- C) The ratio of dynamic pressure to static pressure.
- D) The ratio of static pressure to pitot pressure.

36- A Mach meter measures the ratio of:

- A) Pitot pressure to static pressure.
- B) Pitot pressure minus static pressure to static pressure.
- C) Pitot pressure times static pressure.
- D) Pitot pressure to (static pressure times pitot pressure).

37- The Mach meter is subject to:

- A) Position/instrument error.
- B) Density error.
- C) Density and temperature error.
- D) Temperature error.

38- At 40000 feet the OAT is -50 °C, what is the local speed of sound?

- A) 582 kts
- B) 601 kts
- C) 574 kts
- D) 661 kts

39- The speed at which sound is transported through the air is dependent on:

- A) humidity.
- B) Pressure.
- C) Density and temperature.
- D) Temperature.

40- At a constant calibrated airspeed (CAS), the Mach number:

- A) Increases when the altitude increases.
- B) Decreases when the altitude increases.
- C) Increases when the outside temperature increases.
- D) Increases when the outside temperature decreases.

41- When climbing at a constant Mach number below the tropopause, in ISA conditions, the calibrated airspeed (CAS) will:

- A) Remain constant.
- B) Increase at a linear rate.
- C) Decrease.
- D) Increase at an exponential rate.



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42- During a straight and uniform climb, the pilot maintains a constant calibrated airspeed (CAS):

- A) The Mach number is constant and the true airspeed (TAS) decreases.
- B) The Mach number increases and the true airspeed (TAS) is constant.
- C) The Mach number is constant and the true airspeed (TAS) is constant.
- D) The Mach number increases and the true airspeed (TAS) increases.

43- At a constant Mach number, the calibrated airspeed (CAS):

- A) Remains unchanged when the outside temperature increases.
- B) Increases when the altitude increases.
- C) Decreases when the altitude increases.
- D) Remains unchanged when the outside temperature decreases.

44- Sound propagates through the air at a speed which only depends on:

- A) Temperature and the pressure.
- B) Temperature.
- C) Pressure.
- D) Density.

45- The auto-throttle is set to climb at a constant Mach number. If the temperature does not change, what happens to the CAS?

- A) Increases.
- B) Decreases.
- C) Increases, but only if the outside air temperature decreases.
- D) Stays the same.

46- An aeroplane is in steady climb. The auto-throttle maintains a constant calibrated airspeed. If the total temperature remains constant, the Mach number:

- A) Increases.
- B) Decreases.
- C) Remains constant.
- D) Decreases if the static temperature is lower than the standard temperature.

47- An airplane is in steady descent. The auto-throttle maintains a constant Mach number. If the total temperature remains constant, the calibrated airspeed:

- A) Increases.
- B) Decreases.
- C) Remains constant.
- D) Decreases if the static temperature is lower than the standard temperature, increases if above.



- 48- An aeroplane is in steady cruise at FL270. The auto-throttle maintains a constant calibrated airspeed. If the total temperature increases, the Mach number:**
- A) Decreases.
 - B) Increases.
 - C) Remains constant.
 - D) Decreases if the outside temperature is higher than the standard temperature, increases if lower.
- 49- An airplane is in steady cruise at FL290. The auto-throttle maintains a constant Mach number. If the total temperature increases, the calibrated airspeed:**
- A) Increases.
 - B) Remains constant.
 - C) Decreases.
 - D) Increases if the static temperature is higher than the standard temperature, decreases if lower.
- 50- An aeroplane is in steady descent. The auto-throttle maintains a constant calibrated airspeed. If the total temperature remains constant, the Mach number:**
- A) Increases.
 - B) Decreases.
 - C) Remains constant.
 - D) Increases if the static temperature is lower than the standard temperature, decreases if higher.
- 51- At flight level and Mach number constant, if the total temperature decreases, the CAS:**
- A) Decreases if OAT is lower than standard temperature, increases in the opposite case.
 - B) Increases.
 - C) Decreases.
 - D) Remains constant.
- 52- Below the tropopause in standard conditions, when climbing at a constant Mach number:**
- A) TAS decreases.
 - B) TAS increases.
 - C) TAS remains constant.
 - D) The difference between surrounding conditions and ISA must be known to deduce the TAS variation.
- 53- Below the tropopause in standard conditions, when descending at a constant CAS:**
- A) Mach number and the velocity of sound decrease.
 - B) Mach number increases and the velocity of sound decreases.
 - C) Mach number and the velocity of sound increase.
 - D) Mach number decreases and the velocity of sound increases.



54- Below the tropopause in standard conditions, when descending at a constant Mach number:

- A) TAS remains constant.
- B) TAS decreases.
- C) TAS increases.
- D) The difference between surrounding conditions and ISA must be known to deduce the TAS variation.

55- During a climb at a constant calibrated airspeed (CAS) below the tropopause in ISA conditions:

- A) The Mach number decreases and the speed of sound increases.
- B) The Mach number increases and the speed of sound decreases.
- C) The Mach number and the speed of sound increase.
- D) The Mach number and the speed of sound decrease.

56- During a climb at a constant IAS below the tropopause in ISA conditions:

- A) The Mach number increases and the true airspeed decreases.
- B) The Mach number and the true airspeed decrease.
- C) The Mach number and the true airspeed increase.
- D) The Mach number decreases and the true airspeed increases.

57- You are flying at a constant FL290 and constant Mach number. The total temperature increases by 5°C. The CAS will:

- A) Remain approximately constant.
- B) Increase by 10 kts.
- C) Decrease by 10 kts.
- D) Increase or decrease depending on whether you are above or below ISA.

58- During a descent at a constant Mach number, there is an increase of total temperature. What effect does this have on CAS?

- A) Remains almost constant.
- B) Increases if SAT is more than standard and decreases if SAT is less than standard.
- C) Increases.
- D) Decreases.

59- The Primary Flying Display (PFD) displays information dedicated to:

- A) Engine data and alarms
- B) Flight path
- C) Weather radar
- D) Aircraft systems



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60- (Refer to figure I-24) The ball flag No.2 refers to:

- A) Approach capability column
- B) Thrust mode column
- C) Vertical mode column
- D) Lateral mode column

61- (Refer to figure I-24) The ball flag No.4 refers to:

- A) Approach capability column
- B) Thrust mode column
- C) Vertical mode column
- D) Lateral mode column

62- (Refer to figure I-24) Which one of the ball flags refers to pressure altimeter tape?

- A) 5
- B) 6
- C) 8
- D) 9

63- (Refer to figure I-24) The ball flag No.6 refers to:

- A) Pressure altimeter indication
- B) Indicated airspeed
- C) Pressure altimeter tape
- D) Vertical speed indicator

64- (Refer to figure I-24) The ball flag No.20 refers to:

- A) Bank angle limit
- B) Pitch of aircraft
- C) Over bank protection
- D) Roll scale

65- (Refer to figure I-24) The ball flag No.7 refers to:

- A) Pressure altimeter indication
- B) Barometric reference
- C) Pressure altitude
- D) Pressure altimeter tape

66- (Refer to figure I-24) Which one of the ball flags refers to auto flight modes?

- A) 1
- B) 2
- C) 3
- D) 4



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67- (Refer to figure I-24) The ball flag No.9 refers to:

- A) Radio altimeter
- B) Pressure altimeter
- C) Aircraft altitude
- D) VSI

68- (Refer to figure I-24) The ball flag No.11 refers to:

- A) Pressure altimeter tape
- B) Heading bug
- C) Heading tape
- D) Aircraft speed

69- (Refer to figure I-24) Which one of the ball flags refers to NAV AID?

- A) 3
- B) 4
- C) 7
- D) 12

70- (Refer to figure I-24) The ball flag No.13 refers to:

- A) Airspeed trend
- B) V stick shaker
- C) V min
- D) V max

71- (Refer to figure I-24) The ball flag No.17 refers to:

- A) Airspeed trend
- B) V stick shaker
- C) IAS
- D) Airspeed bug

72- (Refer to figure I-24) The ball flag No.14 refers to:

- A) Airspeed trend
- B) V stick shaker
- C) V min
- D) V max

73- (Refer to figure I-24) Which one of the ball flags refers to pressure altimeter?

- A) 5
- B) 6
- C) 15
- D) 11



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74- (Refer to figure I-24) The ball flag No.15 refers to:

- A) IAS
- B) V stick shaker
- C) V min
- D) V max

75- (Refer to figure I-24) The ball flag No.3 refers to:

- A) Approach capability column
- B) Thrust mode column
- C) Vertical mode column
- D) Lateral mode column

76- (Refer to figure I-24) The ball flag No.16 refers to:

- A) Airspeed trend
- B) V stick shaker
- C) V max
- D) Airspeed bug

77- (Refer to figure I-24) The ball flag No.18 refers to:

- A) IAS
- B) V stick shaker
- C) V min
- D) V max

78- (Refer to figure I-24) Which one of the ball flags refers to bank angle limit?

- A) 10
- B) 11
- C) 19
- D) 20

79- (Refer to figure I-25) The ball flag No.16 refers to:

- A) Estimated time at destination
- B) Estimated time to next waypoint
- C) Estimated time to destination
- D) Estimated time at next waypoint

80- (Refer to figure I-25) The ball flag No.12 refers to:

- A) Aircraft speed
- B) Heading to FF23R
- C) Track to FF23R
- D) Final course



81- (Refer to figure I-25) Which one of the ball flags refers to aircraft heading?

- A) 12
- B) 14
- C) 11 (wind direction)
- D) 15

82- (Refer to figure I-25) The ball flag No.13 refers to:

- A) GS
- B) TAS
- C) Wind velocity
- D) Track

83- (Refer to figure I-25) The ball flag No.15 refers to:

- A) GS
- B) TAS
- C) Wind velocity
- D) Track

84- If an aircraft is equipped with one altimeter which is compensated for position error and another altimeter which is not, and all other factors being equal:

- A) There will be no difference between them if air the data computer is functioning normally.
- B) At high speed, the non-compensated altimeter will indicate a higher altitude.
- C) At high speed, the non-compensated altimeter will indicate a lower altitude.
- D) ATC will get an erroneous altitude report SSR.

85- In a non-pressurized aircraft, if one or several static pressure ports are damaged, there is an ultimate emergency means for restoring a practically correct static pressure intake:

- A) Calculating the ambient static pressure, allowing for the altitude and QNH and adjusting the instruments.
- B) Descending as much as possible in order to fly at a pressure as close to 1013.25 hPa as possible.
- C) Slightly opening a window to restore the ambient pressure in the cabin.
- D) Breaking the rate-of-climb indicator glass window.

86- If during a descent:

- 1) The pneumatic altimeter reading is constant**
- 2) The VSI shows zero**
- 3) The IAS is increasing**

The most likely explanation is that:

- A) The static intakes are completely clogged up by ice.
- B) The total pressure intake is completely clogged up by ice.
- C) There is a leakage in the static pressure line.
- D) The antenna of the radio altimeter is completely clogged up by ice.



87- The position error of the static vent on which the altimeter is connected varies substantially with the:

- A) Flight time at high altitude.
- B) Speed of the aircraft.
- C) Altitude of the aircraft.
- D) Outside air temperature.

88- The total pressure probe (pitot tube) comprises a mast which moves its port to a distance from the aircraft skin in order:

- A) To locate it outside the boundary layer.
- B) Not to disturb the aerodynamic flow around the aircraft.
- C) It is protected from icing.
- D) It is easily accessible during maintenance checks.

89- Which of the following instruments are connected to the pitot-static system?

- 1) Altimeter
- 2) Air-operated directional gyro
- 3) Vertical speed indicator
- 4) Airspeed indicator

The combination regrouping all the correct statements is:

- A) 1,3
- B) 1,3,4
- C) 1,2,3,4
- D) 1,2,4

90- A dynamic pressure measurement circuit is constituted of the following pressure probes:

- A) Total pressure and static pressure.
- B) Static pressure only.
- C) Total pressure only.
- D) Total pressure and standard pressure.

91- Given:

P_T = total pressure

P_S = static pressure

P_{SO} = static pressure at sea level

Dynamic pressure is:

- A) $(P_T - P_S) / P_S$
- B) $P_T - P_{SO}$
- C) $(P_T - P_{SO}) / P_{SO}$
- D) $P_T - P_S$



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92- If the pitot tube ices up during a flight, the affected equipment(s) is (are):

- 1) The altimeter
- 2) The variometer
- 3) The airspeed indicator

The combination regrouping all the correct statements is:

- A) 1,2
- B) 1,2,3
- C) 1,3
- D) 3

93- Assume that the static port of your airplane became clogged (pitot tube remains open) at 3500 feet and you climbed. How does this affect the readings on your airspeed indicator at higher altitudes?

- A) It has no effect on the airspeed indicator's readings.
- B) Airspeed indicator will read lower than actual.
- C) Airspeed indicator will read higher than actual.
- D) Airspeed indicator continue to show an airspeed that blockage occur

94- Which instrument does not connect to the static system?

- A) Altimeter.
- B) Vacuum gauge.
- C) Airspeed indicator.
- D) Vertical speed indicator.

95- The standard temperature for all our aerodynamic computations is:

- A) 0° C or 32° F.
- B) 15° C or 59° F.
- C) 273° K or 492° R.
- D) 0° F or 460° R.

96- The QNH is by definition the value of the:

- A) Altimeter setting so that the needles of the altimeter indicate the altitude of the location for which it is given.
- B) Atmospheric pressure at the sea level of the location for which it is given.
- C) Altimeter setting so that the needles indicate zero when the aircraft is on ground at the location for which it is provided.
- D) Atmospheric pressure at the level of the ground overflown by the aircraft.



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97- If the static source of an altimeter becomes blocked during a descent the instrument will:

- A) Continue to display the reading at which the blockage occurred.
- B) Gradually indicate zero.
- C) Under-read.
- D) Indicate a height equivalent to the setting on the millibar subscale.

98- The density altitude is:

- A) The pressure altitude corrected for the density of air at this point.
- B) The temperature altitude corrected for the difference between the real temperature and the standard temperature.
- C) The pressure altitude corrected for the relative density prevailing at this point.
- D) The pressure altitude corrected for non-standard temperature.

99- If the static source to an altimeter becomes blocked during a climb, the instrument will:

- A) Under-read by an amount equivalent to the reading at the time that the instrument became blocked.
- B) Continue to indicate the reading at which the blockage occurred.
- C) Over-read.
- D) Gradually return to zero.

100- On board an aircraft the altitude is measured from the:

- A) Density altitude.
- B) Pressure altitude.
- C) Temperature altitude.
- D) Standard altitude.

101- When flying from a sector of warm air into one of colder air. the altimeter will:

- A) Be just as correct as before.
- B) Under-read.
- C) Over-read.
- D) Show the actual height above ground.

102- You are cruising at 6500 feet indicated altitude from point A where air temperature is much lower than standard to point B where air temperature is much warmer than standard.

- A) Over point B your true altitude will be lower than point A.
- B) Over point B your true altitude will be higher than point A.
- C) Your true altitude will not change in this case.
- D) Over point B your indicated altitude shows higher than actual.



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103- The atmospheric pressure at FL070 in a standard atmosphere is:

- A) 942.85 hPa
- B) 781.85 hPa
- C) 1013.25 hPa
- D) 644.41 hPa

104- The altitude indicated on board an aircraft flying in an atmosphere where all the atmosphere layers below the aircraft are cold is:

- A) Equal to the standard altitude.
- B) The same as the real altitude.
- C) Lower than the real altitude.
- D) Higher than the real altitude.

105- An aircraft is flying at an indicated altitude of 16000 ft, the outside air temperature is -30°C . What is the true altitude of the aircraft?

- A) 16800 ft
- B) 15200 ft
- C) 18600 ft
- D) 16000 ft

106- An aircraft is flying straight and level, over a warm air mass. The altimeter reading will be:

- A) Correct.
- B) Greater than the real height.
- C) Less than the real height.
- D) Oscillating around the correct height.

107- An altimeter contains one or more aneroid capsules. Inside these capsules is:

- A) Dynamic pressure and outside is static pressure.
- B) Static pressure and outside is dynamic pressure.
- C) A very low residual pressure and outside is static pressure.
- D) Static pressure and outside a very low residual pressure.

108- Due to its conception, the altimeter measures a:

- A) Temperature altitude.
- B) Density altitude.
- C) Indicated altitude.
- D) True altitude.



109- The altimeter of your aircraft indicates 11000 ft with a subscale-setting of 1013.25 mb, the QNH is 1023 hPa, OAT is +3°C, the pressure altitude of the aircraft is:

- A) 10260 ft
- B) 11740 ft
- C) 11000 ft
- D) 670 hPa

110- Approximately how many percent the true altitude will be lower than your indicated altitude, if the temperature is 10°C colder than standard?

- A) 8%
- B) 10%
- C) 4%
- D) 12%

111- If you change the altimeter setting from 30.45 to 29.85 in.Hg, what would be the change in the indicated altitude?

- A) Indicated altitude would increase 600 feet.
- B) Indicated altitude would decrease 600 feet.
- C) Indicated altitude would decrease 60 feet.
- D) Indicated altitude would increase 60 feet.

112- The altimeter is based upon the same principle as:

- A) The aneroid barometer.
- B) The hygrometer.
- C) The mercury barometer.
- D) The Bourdon tube manometer.

113- An aircraft is maintaining a level flight at FL100 over a mountain range, which extends up to 2400 meters AMSL. If the regional QNH is 998 hPa (use 30 ft/hPa), what is the approximate terrain clearance?

- A) 2681 feet
- B) 1680 feet
- C) 7869 feet
- D) 450 feet

114- You are departing an aerodrome (600 ft AMSL, QNH 1012 hPa) and proceed to another airfield (150 ft AMSL) with the same QNH. After landing, which barometric setting on the altimeter makes it again indicate 600 ft?

- A) 1027
- B) 997
- C) 1032
- D) 992



115- The operating principle of the vertical speed indicator (VSI) is based on the measurement of the rate of change of:

- A) Kinetic pressure.
- B) Dynamic pressure.
- C) Total pressure.
- D) Static pressure.

116- The response time of a vertical speed detector may be improved by adding a:

- A) Return spring.
- B) Bimetallic strip.
- C) Correction based on an accelerometer sensor.
- D) Second calibrated port.

117- A vertical speed indicator measures the difference between:

- A) The dynamic pressure and the static pressure.
- B) The total pressure and the static pressure.
- C) The total instantaneous pressure and the total pressure at a previous moment.
- D) The instantaneous static pressure and the static pressure at a previous moment.

118- If the static intakes are completely clogged up by ice during a climb, the VSI shows:

- A) A descent if the outside static pressure is less than the pressure in the VSI-gauge.
- B) Zero.
- C) A constant rate of climb, even if the aircraft is levelling out.
- D) An increasing rate of climb if the ambient static pressure decreases.

119- If the static source of a vertical speed indicator (VSI) becomes blocked during a climb, the instrument will:

- A) Indicate a height equivalent to the setting on the millibar subscale.
- B) Gradually indicate zero.
- C) Under-read,
- D) Continue to display the reading at which the blockage occurred.

120- The vertical speed indicator (VSI) gives:

- A) Immediate trend information and immediate climb or descent information.
- B) Immediate trend information and stable climb or descent information after 6 to 12 seconds (depending on type).
- C) No trend information, but stable climb or descent information after 6 to 12 seconds (depending on type).
- D) Immediate stable climb or descent information, but unreliable trend information.



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121- Within a temperature range of +50°C and -20°C the VSI is accurate to within limits of:

- A) ± 200 ft/min
- B) 0 ft/min
- C) ± 75 ft/min
- D) ± 300 ft/min

122- A pilot changes the altimeter setting from 29.72 to 30.17 in.Hg, what would be the change in the indicated altitude?

- A) Indicated altitude would increase 450 feet.
- B) Indicated altitude would increase 45 feet.
- C) Indicated altitude would decrease 450 feet.
- D) Indicated altitude would decrease 45 feet.

123- The altimeter of your aircraft indicates 17000 ft with a subscale setting of 1013.25 mb. QNH is 1031 hPa. The pressure altitude of the aircraft is:

- A) 17540 ft
- B) 17000 ft
- C) 16460 ft
- D) 527 hPa

124- The QFE is by definition the value of the:

- A) Atmospheric pressure at the location for which it is given, corrected for non-standard temperature.
- B) Altimeter setting so that the altimeter, on the apron of the aerodrome for which it is given, reads the elevation.
- C) Altimeter setting so that the altimeter, on the, apron of the aerodrome for which it is given, reads zero.
- D) Atmospheric pressure at the level of the ground over-flown by the aircraft.

125- When flying in cold air (colder than standard atmosphere), indicated altitude is:

- A) Lower than the true altitude.
- B) The same as the true altitude.
- C) Higher than the true altitude.
- D) Equal to the standard altitude.

126- When flying in warm air (warmer than standard atmosphere), the altimeter will:

- A) Show the actual height above the sea level.
- B) Underestimate.
- C) Overestimate.
- D) Show the actual height above ground.



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127- An altimeter is set to 29.84" Hg and the correct altimeter setting is 30.00" Hg. If under these conditions a landing is made at an airport where the field elevation is 772 ft the altimeter would indicate approximately:

- A) 932 ft
- B) 160 ft
- C) 612 ft
- D) 772 ft

128- Enroute at FL250 the altimeter is set correctly. On descent a pilot fails to reset it to a local altimeter setting of 30.57". If the field elevation is 650 ft and the altimeter is functioning properly what will it indicate after landing?

- A) Sea level
- B) 585 ft
- C) 715 ft
- D) 1300ft

129- A pitot blockage of both the ram air input and the drain hole with the static port open causes the airspeed indicator to:

- A) React like an altimeter.
- B) Read a little high.
- C) Read a little low.
- D) Freeze at zero.

130- In a standard atmosphere and at the sea level, the calibrated airspeed (CAS) is:

- A) Higher than the true airspeed (TAS).
- B) Independent of the true airspeed (TAS).
- C) Equal to the true airspeed (TAS).
- D) Lower than the true airspeed (TAS).

131- During a climb, the total pressure probe of the airspeed indicator becomes blocked; if the pilot tries to maintain a constant indicated airspeed, the true airspeed:

- A) Increases until reaching V_{MO} .
- B) Decreases until reaching the stall speed.
- C) Decreases by 1% per 600 ft.
- D) Increases by 1% per 600 ft.

132- When climbing at a constant CAS in a standard atmosphere:

- A) TAS decreases.
- B) TAS increases.
- C) TAS remains constant.
- D) TAS first decreases, then remains constant above the tropopause.



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133- When climbing at a constant CAS:

- A) EAS decreases.
- B) EAS increases.
- C) EAS remains constant.
- D) EAS does not depend on altitude.

134- When descending at a constant CAS:

- A) EAS increases.
- B) EAS decreases.
- C) EAS remains constant.
- D) EAS does not depend on altitude.

135- With EAS and density altitude, we can deduce:

- A) CAS and TAS
- B) CAS
- C) TAS
- D) IAS

136- With EAS and pressure altitude, we can deduce:

- A) TAS
- B) CAS
- C) CAS and TAS
- D) IAS

137- The input connections to an airspeed indicator are from:

- A) A static source only.
- B) A pitot source only.
- C) Both pitot and static sources.
- D) Pitot and static sources and outside air temperature sensor.

138- If the static pressure port iced over while descending from altitude, the airspeed indicator would read:

- A) Zero
- B) High
- C) Low
- D) Correctly

139- The position error of an ASI results from:

- A) Mechanical differences in individual instruments.
- B) The difference in air density from sea level ISA density.
- C) The effects of the airflow around the static vent and pitot head.
- D) The fact that air becomes more compressible at high speeds.



140- At constant weight, regardless of altitude, an aircraft always lifts off at a constant:

- A) EAS
- B) TAS
- C) Ground speed
- D) CAS

141- An ASI circuit consists of pressure sensors. The pitot probe measures:

- A) Total pressure and static pressure.
- B) Dynamic pressure.
- C) Static pressure.
- D) Total pressure.

142- In the building principle of a gyroscope, the best efficiency is obtained through the concentration of the mass:

- A) On the periphery and with a high rotation speed.
- B) Close to the axis and with a high rotation speed.
- C) On the periphery and with a low rotation speed.
- D) Close to the axis and with a low rotation speed.

143- The rigidity of a gyro is improved by:

- A) Increasing RPM and concentrating the mass on the periphery of the rotor.
- B) Increasing RPM and concentrating the mass at the hub of the rotor.
- C) Decreasing RPM and concentrating the mass on the periphery of the rotor.
- D) Decreasing RPM and concentrating the mass at the hub of the rotor.

144- Using a classic (air driven) artificial horizon, the aircraft performs a right 270° turn at a constant angle of bank and rate of turn. The indication is:

- A) Nose up, too much bank.
- B) Nose up, not enough bank.
- C) Nose up, wings level.
- D) Bank and pitch correct.

145- When executing a turn by 90° at constant attitude and bank, a classic artificial horizon (air driven) indicates:

- A) Nose up and correct angle of bank.
- B) Attitude and bank angle are correct.
- C) Nose up and bank angle too low.
- D) Nose up and bank angle too high.



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146- The basic properties of a gyroscope are:

- 1) The gyros weight.
- 2) The rigidity in space.
- 3) The inertia.
- 4) The high RPM.
- 5) The precession.

The combination of correct statements is:

- A) 3,4
- B) 2,5
- C) 2,3,5
- D) 1,3,5

147- The inertia of a gyroscope is greater when:

- A) Its rotation speed is lower and the mass of the spinning wheel is located further from the axis of rotation.
- B) Its rotation speed is higher and the mass of the spinning wheel is closer to the axis of rotation.
- C) Its rotation speed is higher and the mass of the spinning wheel is located further from the axis of rotation.
- D) Its rotation speed is lower and the mass of the spinning wheel is closer to the axis of rotation.

148- The properties of a gyroscope are:

- 1) Rigidity in space
- 2) Rigidity on Earth
- 3) Precession
- 4) Schuler oscillations

The combination regrouping all the correct statements is:

- A) 1,4
- B) 2,3
- C) 1,3
- D) 2,4

149- The main advantage of electric gyros is:

- A) Light weight, high RPM, constant speed, inexpensive.
- B) High RPM, only require low voltage DC, constant speed, sealed casing.
- C) High RPM, high moment of inertia, rapid build-up of speed, constant RPM.
- D) Sealed casing, constant speed, high precession rate, low cost.

150- Rigidity in a gyroscope is:

- A) A way to express the stability of the inner and out gimbal rings.
- B) To what extremes the flight attitudes might be before the gyro topples.
- C) The reaction 90° in the direction of rotation when applying force to the spinning wheel.
- D) The tendency it has to remain in its plane of rotation and resist attempts to alter its position.



151- Precession in a gyroscope is:

- A) The tendency it has to remain in its plane of rotation.
- B) A caging device.
- C) The angular limits to which the gimbals may travel before the gyro topples and the indication becomes useless.
- D) The reaction at 90° in direction of rotation caused by an applied force to the spinning wheel.

152- How is vacuum provided for the air driven gyro instruments?

- A) By the static tube.
- B) By an engine-driven pump.
- C) By the static vent.
- D) All answers are correct.

153- Air driven gyro rotors are prevented from spinning too fast by the:

- A) Air filter.
- B) Vacuum relief valve.
- C) Suction gauge.
- D) Bearing friction.

154- What is the main cause of precession?

- A) Magnetic variation.
- B) Magnetic declination.
- C) Bearing friction.
- D) The Earth's rotation.

155- A turn indicator is an instrument which indicates rate of turn. Rate of turn depends upon:

- 1) Bank angle
- 2) Aeroplane speed
- 3) Aeroplane weight

The combination regrouping the correct statements is:

- A) 2,3
- B) 1,2,3
- C) 1,2
- D) 1,3

156- An aircraft is flying at a 120 kts TAS. In order to achieve a standard rate turn, the pilot will have to bank the aircraft at an angle of:

- A) 30°
- B) 12°
- C) 36°
- D) 19°



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157- If the needle and the ball of a turn and slip indicator both show right, what does it indicate:

- A) Turn to left and too much bank.
- B) Turn to right and too much bank.
- C) Turn to left and too little bank.
- D) Turn to right and too little bank

158- In a right turn while taxiing, the correct indications on turn and slip indicator are:

- A) Needle left, ball right.
- B) Needle left, ball left.
- C) Needle right, ball right.
- D) Needle right, ball left.

159- On the ground, during a left turn, the turn indicator indicates:

- A) Needle in the middle, ball to the left.
- B) Needle to the left, ball to the left.
- C) Needle in the middle, ball to the right.
- D) Needle to the left, ball to the right.

160- When in flight, the needle and ball of a needle-and-ball indicator are on the left, the aircraft is:

- A) Turning left with not enough bank.
- B) Turning left with too much bank.
- C) Turning right with too much bank.
- D) Turning right with not enough bank.

161- The rate of turn is the:

- A) Yaw rate in a turn.
- B) Change-of-heading rate of the aircraft.
- C) Aircraft speed in a turn.
- D) Pitch rate in a turn.

162- On a turn and slip indicator, needle to the left and ball to the right indicates:

- A) Turn to the right, not enough bank.
- B) Turn to the left, too much bank.
- C) Turn to the left, not enough bank.
- D) Turn to the right, too much bank.

163- In a turn at constant angle of bank, the rate of turn is:

- A) Independent of weight and proportional a to TAS.
- B) Dependent on weight and inversely proportional to TAS.
- C) Independent of weight and inversely proportional a to TAS.
- D) Dependent on weight and proportional to TAS.



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164- A rate gyro is used in a:

- 1) Directional gyro indicator
- 2) Turn coordinator
- 3) Artificial horizon

The combination regrouping all the correct statements is:

- A) 2
- B) 1,2,3
- C) 1
- D) 1,2

165- The rate of turn given by the rate of turn indicator is valid:

- A) For all airspeeds.
- B) For the airspeed range defined during the calibration of the instrument.
- C) With flaps retracted only.
- D) For the cruising speed.

166- The factors which will affect a Turn Indicator are:

- 1) Angle of bank
- 2) Aircraft speed
- 3) Aircraft weight

- A) 1,2
- B) 1,3
- C) 2,3
- D) All answers are correct

167- What angle of bank should you adopt on the attitude indicator for a standard rate turn while flying at an IAS of 80 kts?

- A) 8°
- B) 12°
- C) 15°
- D) 20°

168- The higher the airspeed is:

- A) The higher the bank angle must be to turn at the standard rate.
- B) The lower the bank angle must be to turn at the standard rate.
- C) There is no relation between the speed and the rate of turn.
- D) The higher the left or right rudder input must be to turn in a coordinated manner.



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169- A direction gyro is corrected for accurate directional information using:

- A) Air data computer.
- B) Direct reading magnetic compass.
- C) Flight director.
- D) Flux valve.

170- During an acceleration phase at constant attitude, the resetting principle of the artificial horizon results in the horizon bar indicating a:

- A) Constant attitude.
- B) Nose-down attitude.
- C) Nose-up attitude.
- D) Nose-down followed by a nose-up attitude.

171- You have just taken off in a fast aircraft fitted with a vacuum operated attitude indicator.

While climbing straight ahead still accelerating, the instrument may for a short while indicate:

- A) A high nose-up attitude.
- B) A flatter attitude than actual.
- C) A climbing turn to the left.
- D) A climbing turn to the right.

172- Following 180° stabilized turn with a constant attitude and bank, the artificial horizon (air driven) indicates:

- A) Too high pitch-up and too low banking.
- B) Too high pitch-up and correct banking.
- C) Attitude and banking correct.
- D) Too high pitch-up and too high banking.

173- During a deceleration phase at constant attitude, the control system of an air driven artificial horizon results in the horizon bar indicating a:

- A) Nose up attitude.
- B) Nose down attitude.
- C) Constant attitude.
- D) Nose up followed by a nose down attitude.

174- The magnetic heading can be derived from the true heading by means of a:

- A) Map showing the isoclinic lines.
- B) Map showing the isogonal lines.
- C) Deviation correction curve.
- D) Compass swinging curve.



175- In the vicinity of the Magnetic North Pole the magnetic compass is useless because:

- A) The magnetic field is too strong.
- B) The magnetic pole is moving.
- C) The horizontal component of the magnetic field is too weak.
- D) The variation is too large.

176- Variation is defined as the angle between:

- A) MN and CN.
- B) TN and CN.
- C) TN and MN.
- D) CN and the longitudinal axis of the aircraft.

177- The purpose of a compass swing is to attempt to coincide the indications of:

- A) Compass north and True North.
- B) Compass north and Magnetic North.
- C) True North and Magnetic North.
- D) Compass north and the lubber line.

178- The purpose of compass swinging is to determine the deviation of a magnetic compass:

- A) On a given heading.
- B) On any heading.
- C) At any latitude.
- D) At a given latitude.

179- The compass heading can be derived from the magnetic heading by reference to a:

- A) Map showing the isogonic lines.
- B) Map showing the isoclinic lines.
- C) Deviation correction curve.
- D) Variation.

180- Magnetic compass swinging is carried out to reduce as much as possible:

- A) Variation.
- B) Deviation.
- C) Regulation.
- D) Acceleration.



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181- The fields affecting a magnetic compass originate from:

- 1) Magnetic masses
- 2) Ferrous metal masses
- 3) Nonferrous metal masses
- 4) Electrical currents

The combination of correct statements is:

- A) 1,2,3
- B) 1,2,4
- C) 1,2,3,4
- D) 1,3,4

182- The magnetic heading can be derived from the compass heading by reference to a:

- A) Magnetic variation correction card.
- B) Map showing the magnetic variation lines.
- C) Compass deviation card.
- D) Map showing the isogonic lines.

183- Concerning magnetic compasses, deviation is:

- A) The angular difference between Magnetic North and True North.
- B) The angular difference between Magnetic North and Compass North.
- C) Compass North.
- D) A card in the cockpit showing compass heading errors.

184- During deceleration following a landing in a southerly direction, a magnetic compass made for the northern hemisphere indicates:

- A) An apparent turn to the west.
- B) No apparent turn only on northern latitudes.
- C) No apparent turn.
- D) An apparent turn to the east.

185- A pilot wishes to turn left on to a southerly heading with 20° bank at a latitude of 20° North.

Using a direct reading compass, in order to achieve this, he must stop the turn on an approximate heading of:

- A) 190°
- B) 200°
- C) 170°
- D) 160°



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186- In the northern hemisphere, during deceleration following a landing in an easterly direction, the magnetic compass will indicate:

- A) An apparent turn to the south.
- B) An apparent turn to the north.
- C) A constant heading.
- D) A heading fluctuating about 090° .

187- In the northern hemisphere, during deceleration following a landing in a westerly direction, the magnetic compass will indicate:

- A) A heading fluctuating about 270° .
- B) An apparent turn to the north.
- C) No apparent turn.
- D) An apparent turn to the south.

188- A pilot wishes to turn right on to a northerly heading with 20° bank at a latitude of 40° North. Using a direct reading compass, in order to achieve this, he must stop the turn on to an approximate heading of:

- A) 030°
- B) 350°
- C) 330°
- D) 010°

189- If an aircraft fitted with a Direct Reading Magnetic Compass (DRMC), takes off on a westerly heading, in the northern hemisphere, the DRMC will indicate:

- A) A turn to the north.
- B) Oscillates about west.
- C) No turn.
- D) A turn to south.

190- During deceleration following a landing in a northerly direction, a magnetic compass made for the southern hemisphere indicates:

- A) No apparent turn.
- B) An apparent turn to the east.
- C) An apparent turn to the west.
- D) A heading fluctuating about 360° .

191- An aircraft is taking off on a runway heading 045° , in still air, with a compass having 0° deviation. The runway is on an agonic line. What will the compass read if you are in the northern hemisphere?

- A) Compass moves to less than 045° .
- B) Compass moves to more than 045° .
- C) Compass stays on 045° if wings are kept level.
- D) Compass remains on 045° .



192- In the southern hemisphere, during deceleration following a landing in an easterly direction, the magnetic compass will indicate:

- A) A heading fluctuating about 090° .
- B) An apparent turn to the south.
- C) No apparent turn.
- D) An apparent turn to the north.

193- A pilot wishes to turn left on to a northerly heading with 10° bank at a latitude of 50° North. Using a direct reading compass, in order to achieve this, he must stop the turn on an approximate heading of:

- A) 355°
- B) 030°
- C) 330°
- D) 015°

194- An aircraft is fitted with a direct reading magnetic compass. Upon landing in a northerly direction the compass will indicate:

- A) No change.
- B) An oscillation to its north alignment.
- C) A turn towards east.
- D) A turn towards west.

195- A pilot wishes to turn right on to a southerly heading with 20° bank at a latitude of 20° North. Using a direct reading compass, in order to achieve this, he must stop the turn on an approximate heading of:

- A) 170°
- B) 150°
- C) 200°
- D) 190°

196- Which of the following will effect a direct reading compass?

- 1) Ferrous metals
- 2) Nonferrous metals
- 3) Electrical equipment

- A) 1
- B) 1,3
- C) 1,2
- D) 1,2,3



197- About a magnetic compass:

- A) Errors of parallax are due to the oscillation of the compass rose.
- B) Acceleration errors are due to the compass deviation.
- C) Acceleration errors are due to Schuler oscillations.
- D) Turning error is due to the vertical component of the earth's magnetic field.

198- Concerning the direct reading magnetic compass, the turning error:

- A) Does not depend on the magnetic latitude.
- B) Decreases with the magnetic latitude.
- C) Increases with the magnetic latitude.
- D) Decreases with the magnetic longitude.

199- The direct reading magnetic compass is no more reliable when approaching:

- 1) The magnetic poles
- 2) The magnetic equator with an east or west heading
- 3) The magnetic equator with a north or south heading

The combination regrouping all the correct statements is:

- A) 1,2
- B) 1,2,3
- C) 1
- D) 1,3

200- The turning errors of a direct reading magnetic compass are:

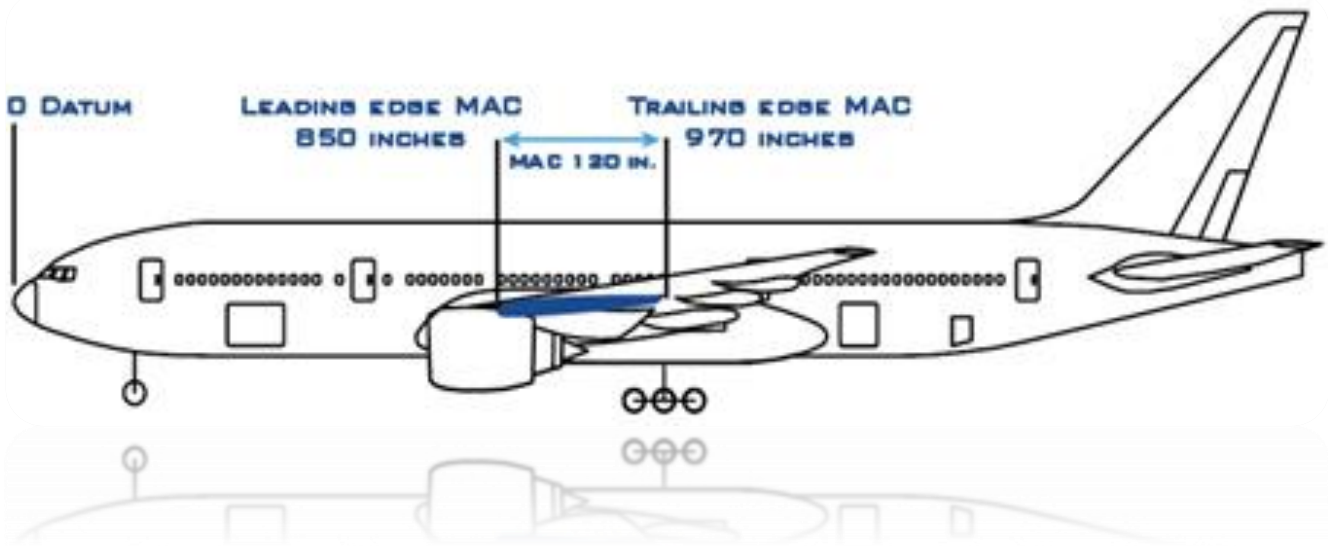
- A) Maximum at the magnetic equator.
- B) Maximum at the magnetic poles.
- C) Minimum at a latitude of 45°.
- D) Minimum at the magnetic poles.

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	B	26	B	51	D	76	D
2	B	27	B	52	A	77	D
3	C	28	D	53	D	78	C
4	C	29	D	54	C	79	D
5	A	30	D	55	B	80	C
6	D	31	B	56	C	81	B
7	A	32	C	57	A	82	B
8	D	33	A	58	C	83	A
9	D	34	B	59	B	84	B
10	B	35	C	60	B	85	D
11	A	36	B	61	D	86	A
12	B	37	A	62	C	87	B
13	B	38	A	63	D	88	A
14	B	39	D	64	D	89	B
15	B	40	A	65	B	90	A
16	B	41	C	66	A	91	D
17	D	42	D	67	A	92	D
18	D	43	C	68	C	93	B
19	B	44	B	69	D	94	B
20	A	45	B	70	B	95	B
21	D	46	A	71	A	96	A
22	C	47	A	72	C	97	A
23	A	48	C	73	A	98	D
24	C	49	B	74	A	99	B
25	D	50	B	75	C	100	B



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	C	126	B	151	D	176	C
102	B	127	C	152	B	177	B
103	B	128	A	153	B	178	B
104	D	129	A	154	C	179	C
105	B	130	C	155	C	180	B
106	C	131	B	156	D	181	B
107	C	132	B	157	B	182	C
108	C	133	A	158	D	183	B
109	C	134	A	159	D	184	C
110	C	135	C	160	B	185	D
111	B	136	B	161	B	186	A
112	A	137	C	162	C	187	D
113	B	138	B	163	C	188	C
114	A	139	C	164	A	189	A
115	D	140	D	165	B	190	A
116	C	141	D	166	A	191	A
117	D	142	A	167	B	192	D
118	B	143	A	168	A	193	B
119	B	144	A	169	B	194	A
120	B	145	C	170	C	195	C
121	A	146	B	171	D	196	B
122	A	147	C	172	B	197	D
123	B	148	C	173	B	198	C
124	C	149	A	174	B	199	C
125	C	150	D	175	C	200	B

MASS AND BALANCE





IRANBOOKLET



1- The higher the Takeoff Mass:

- 1) Maneuverability is reduced.
- 2) Range will decrease but endurance will increase.
- 3) Gliding range will reduce.
- 4) Stalling speed will increase.

- A) 1,2,3,4
- B) 3
- C) 1,4
- D) 4

2- A flight benefits from a strong tailwind which was not forecast. On arrival at destination a straight in approach and immediate landing clearance is given. The Landing Mass will be higher than planned and:

- A) The approach path will be steeper.
- B) The landing distance will be unaffected.
- C) The landing distance required will be longer.
- D) The approach path will be steeper and threshold speed higher.

3- When considering the effects of increased mass on an airplane, which of the following is true?

- A) Flight endurance will be increased.
- B) Stalling speeds will be lower.
- C) Climb gradient for a given power setting will be higher.
- D) Stalling speeds will be higher.

4- If an airplane is at a higher mass than anticipated, for a given airspeed the angle of attack will:

- A) Remain constant, drag will decrease and endurance will decrease.
- B) Be decreased, drag will decrease and endurance will increase.
- C) Be greater, drag will increase and endurance will decrease.
- D) Remain constant, drag will increase and endurance will increase

5- An additional baggage container is loaded into the aft cargo compartment but is not entered into the load and trim sheet. The airplane will be heavier than expected and calculated takeoff safety speeds:

- A) Are unaffected but V_1 , will be increased.
- B) Will not be achieved.
- C) Will be greater than required.
- D) Will give reduced safety margins.



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6- If an extra load is loaded into an aircraft, the stall speed is likely to:

- A) Stay the same
- B) Decrease
- C) Increase
- D) Change depending on whether the load was placed forward or aft of the CG

7- Overloading has the following effects performance:

- A) Increased takeoff and landing distance, reduced rate of climb and on increased fuel consumption.
- B) Increased takeoff and landing distance, increased rate of climb and increased fuel consumption.
- C) Reduced takeoff and landing distance, increased V_{NE} and increased fuel consumption.
- D) Reduced takeoff and landing distance, increased V_{NE} and reduced rate of climb.

8- Over loading would result in:

- A) A decrease in stalling speed
- B) A decrease in fuel consumption
- C) An increase in range
- D) A reduction of aircraft performance

9- For a conventional, nose wheel aircraft configuration, the higher the Takeoff Mass:

- 1) Range will decrease but endurance will increase.
- 2) Gliding range will reduce.
- 3) Stalling speed will increase.
- 4) Stick forces at rotation will increase.

Select the combination of correct statements:

- A) 1,3
- B) 1,3,4
- C) 2,4
- D) 3,4

10- Which of the following statements is correct?

- A) The station (STA) is always the location of the center of gravity in relation to a reference point, normally the leading edge of the wing.
- B) A tail heavy aeroplane is less stable and stalls at a lower speed than a nose heavy aeroplane.
- C) The center of gravity is given in inch aft of datum calculated from the leading edge of the wing.
- D) The actual center of gravity is located behind the wing trailing edge.



11- During takeoff you notice that, for a given elevator input, the airplane rotates much more rapidly than expected. This is an indication that:

- A) The airplane is overloaded.
- B) The center of gravity may be towards the aft limit.
- C) The center of gravity is too far forward.
- D) The center of pressure is aft of the center of gravity.

12- If the airplane is neutrally stable, this would suggest that:

- A) The CG is forward.
- B) The CG is in mid-range.
- C) The CG is on the rear limit.
- D) The CG is behind the rear limit.

13- An aeroplane is loaded with its center of gravity towards the rear limit. This will result in:

- A) An increased risk of stalling due to a decrease in tail-plane moment.
- B) A reduced fuel consumption as a result of reduced drag.
- C) A reduction in power required for a given speed.
- D) All answers are correct.

14- If the center of gravity of an aeroplane moves forward during flight the elevator control will:

- A) Become heavier making the airplane more difficult to maneuver in pitch.
- B) Become lighter making the airplane more difficult to maneuver in pitch.
- C) Become heavier making the airplane easier to maneuver in pitch.
- D) Become lighter making the airplane easier to maneuver in pitch.

15- An aeroplane is said to be neutrally stable. This is likely to:

- A) Be caused by a center of gravity, which is towards the forward limit.
- B) Be caused by a center of gravity, which is towards the rearward limit.
- C) Be totally unrelated to the position of the center of gravity.
- D) Cause the center of gravity to move forwards.

16- The mass displacement caused by landing gear extension:

- A) Does not create a longitudinal moment.
- B) Creates a pitch-up longitudinal moment.
- C) Creates a longitudinal moment in the direction (pitch-up or pitch-down) determined by the type of landing gear.
- D) Creates a pitch-down longitudinal moment.



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17- What determines the longitudinal stability of an airplane?

- A) The dihedral, angle of sweepback and the keel effect
- B) The effectiveness of the horizontal stabilizer, rudder and rudder trim tab.
- C) The relationship of thrust and lift to weight and drag.
- D) The location of the center of gravity with respect to the neutral point.

18- The stalling speed of an aeroplane will be highest when it is loaded with a:

- A) High gross mass and aft center of gravity.
- B) Low gross mass and forward center of gravity.
- C) Low gross mass and aft center of gravity.
- D) High gross mass and forward center of gravity.

19- If the center of gravity is near the forward limit, the airplane will:

- A) Benefit from reduced drag due to the decrease in angle of attack.
- B) Require elevator trim, which will result in an increase in fuel consumption.
- C) Require less power for a given airspeed.
- D) Tend to over rotate during takeoff.

20- Which of the following statements is correct?

- A) If the actual center of gravity is close to the forward limit of the center of gravity the aero plane may be unstable, making it necessary to increase elevator If the actual center of gravity is located behind the aft.
- B) If the actual center of gravity is located behind the aft limit of center of gravity it is possible that the aeroplane will be unstable making it necessary to increase elevator forces.
- C) A tail heavy aeroplane is less stable and stalls at a lower speed than a nose heavy aeroplane.
- D) The lowest stalling speed is obtained if the actual center of gravity is located in the middle between the aft and forward limit of center of gravity.

21- Which of the following is most likely to affect the range of center of gravity positions on an aeroplane?

- A) The need to minimize drag forces and so improve efficiency.
- B) Location of the undercarriage.
- C) The need to maintain a low value of stalling speed.
- D) Elevator and tail plane (horizontal stabilizer) effectiveness in all flight conditions.

22- When the center of gravity is at the forward limit an airplane will be:

- A) Extremely stable and will require excessive elevator control to change pitch.
- B) Extremely stable and require small elevator control to change pitch.
- C) Extremely unstable and require excessive elevator control to change pitch.
- D) Extremely unstable and require small elevator control to change pitch.



23- Assuming gross mass, altitude and airspeed remain unchanged, movement of the center of gravity from the forward to the aft limit will cause:

- A) Increased cruise range.
- B) Higher stall speed.
- C) Increase stick force.
- D) Reduced maximum cruise range.

24- With the center of gravity on the forward limit which of the following is to be expected?

- A) A decrease of the stalling speed.
- B) A decrease in the landing speed.
- C) A decrease in range.
- D) A tendency to yaw to the right on takeoff.

25- If nose wheel moves aft during gear retraction, how will this movement affect the location of the center of gravity (CG) on the aircraft?

- A) It will not affect the CG location.
- B) It will cause the CG to move aft.
- C) It will cause the CG to move forward.
- D) The CG location will change, but the direction cannot be told from the information given.

26- In cruise flight, an aft center of gravity location will:

- A) Decrease longitudinal static stability.
- B) Increase longitudinal static stability.
- C) Does not influence longitudinal static stability.
- D) Not change the static curve of stability into longitudinal.

27- A forward CG would result in:

- A) A reduced rate of climb.
- B) A decrease in cruise range.
- C) A decrease in both rate of climb and cruise range.
- D) An increase in both rate of climb and cruise range.

28- Who establishes the limits of CG?

- A) The ICAO.
- B) The state.
- C) The manufacturer.
- D) The insurers.



29- What effect does the CG on the aft limit have on the fuel consumption of an aeroplane?

- A) Increase
- B) Decrease
- C) No effect
- D) Marginal increase

30- Which, combination of weight and CG position will produce the higher stalling speed?

- A) Heavy weight and aft CG.
- B) Heavy weight and forward CG.
- C) Low weight and aft CG.
- D) Low weight and forward CG.

31- If the CG is aft of the neutral point it results in:

- A) Increased stability with increased elevator trim.
- B) Decreased stability with decreased elevator trim.
- C) Neutral stability.
- D) Longitudinal instability.

32- The undercarriage of an aircraft moves rearward when it is being retracted. Does this affect the CG?

- A) No, the position of the CG would remain the same.
- B) Yes, but the CG movement could not be calculated.
- C) Yes, the CG would move aft.
- D) Yes, the CG would move forward.

33- The effect of operating an aeroplane with a CG too far forward is to experience:

- A) Inability or difficulty in trimming when flaps are retracted.
- B) Lower stick forces per G loading.
- C) Inability or difficulty in flaring on touchdown, resulting in nose-wheel landing first.
- D) Lower stalling speed.

34- The handling and performance problems encountered with a CG too far aft include:

- A) Improvement in nose wheel steering.
- B) Higher stick forces per G loading with no risk of overstressing the airframe in maneuvers.
- C) Difficulty or inability to recover from a spin.
- D) No likelihood of a nose up overbalance (on a tricycle gear aircraft) on the ground resulting in tail damage.



35- For a large aircraft where the main and nose landing gears retract forward, the effect on the CG on lowering the gear is:

- A) To move aft.
- B) To move forward.
- C) To remain static.
- D) To move forward then aft.

36- Select the correct statement for the CG safe range:

- A) The safe range falls between the front and rear CG limits but does not include them.
- B) The safe range falls between the front and rear CG limits but only includes the fwd limit.
- C) The safe range falls between the front and rear CG limits but only includes the aft limit.
- D) The safe range falls between the front and rear CG limits and includes both limits.

37- An aircraft is loaded 110 pounds over maximum certificated gross weight, if fuel (gasoline) is drained to bring the aircraft weight within limits, how much fuel should be drained?

- A) 15.7 gallons
- B) 16.2 gallons
- C) 17.1 gallons
- D) 18.4 gallons

38- For a given configuration, the stall speed of an aeroplane will be highest when loaded:

- A) A low Total Mass with the most forward CG.
- B) To a low Total Mass with the most aft CG.
- C) To the maximum allowable mass with the most aft CG.
- D) To the maximum allowable mass with the most forward CG.

39- What effect has a center of gravity close to the most forward limit?

- A) A reduction in the specific fuel consumption.
- B) A decreased induced drag.
- C) A better rate of climb capability.
- D) A reduced rate of climb capability.

40- When must the center of gravity be computed?

- A) After every 400 hrs inspection.
- B) Prior to every flight.
- C) At least every four years.
- D) During every yearly inspection.



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41- The effect of an aircraft being tail heavy would be a:

- A) Decrease in range.
- B) Tendency to pitch down during final stage of landing.
- C) Decreased stalling speed.
- D) Tendency to roll right during takeoff.

42- One effect on an aircraft that is nose-heavy is:

- A) A tendency for the nose to pitch-up.
- B) An increase in range.
- C) A decrease in stability.
- D) An increase in drag, due to excessive elevator trim.

43- With the center of gravity outside the forward limit:

- A) Longitudinal stability would be reduced and stick forces in pitch increased.
- B) Longitudinal stability would be reduced and stick forces in pitch reduced.
- C) Longitudinal stability would be increased and stick forces in pitch reduced.
- D) Longitudinal stability would be increased and stick forces in pitch increased.

44- Fuel consumption brings the CG forward in flight, the effect of this, is to:

- A) Increase stability which means greater control forces in pitch.
- B) Decrease stability which means greater control forces in pitch.
- C) Increase stability which means lower control forces in pitch.
- D) Decrease stability which means lower control forces in pitch.

45- What is the effect of moving the center of gravity from the forward limit to the aft limit?

- A) Increased stability.
- B) Increased fuel consumption.
- C) Increased range.
- D) Increased stalling speed.

46- If during flight a considerable amount of fuel was transferred from the fuselage forward fuel tank to the fuselage rear tank, what effect would this have on the aircraft?

- A) Increase in range and stall speed.
- B) Increase in range and decrease in stall speed.
- C) Increase in stability and decrease in trim drag.
- D) Increase in stability and trim drag

47- It is intended to fly a certified aircraft with both full pay load and full fuel load.

- A) The CG limits will be in limits all of the flight.
- B) The CG might not be in limits any of the time during the flight.
- C) The CG will not be in limits during the flight
- D) The CG might be in limits all of the flight.



48- The handling and performance problems encountered with a CG too far aft include

- A) Improvement in nose-wheel steering.
- B) Degradation or loss of nose-wheel steering.
- C) Higher stick forces per G loading with no risk of overstressing the airframe in manoeuvres.
- D) No likelihood of a nose-up overbalance (on a tricycle gear aircraft) on the ground resulting in tail damage.

49- Define the Useful Load:

- A) Pay Load plus basic empty weight.
- B) Pay Load plus Usable fuel.
- C) Basic empty weight plus Usable Fuel Load.
- D) That part of the pay Load which generates revenue.

50- The "Useful Load" is:

- A) TOW - fuel mass.
- B) BEW plus fuel load.
- C) Payload plus Usable Fuel Load.
- D) TOW minus the Operating Mass.

51- The maximum mass to which an aeroplane may be loaded, prior to engine start, is:

- A) Maximum Certificated Taxi (Ramp) Mass.
- B) Maximum Regulated Taxi (Ramp) Mass.
- C) Maximum Certificated Takeoff Mass.
- D) Maximum Regulated Takeoff Mass.

52- What is the Zero Fuel Weight?

- A) MTOW minus fuel to destination minus fuel to alternative airfield.
- B) Maximum allowable mass of the aircraft with no usable fuel on board.
- C) Operating weight minus the fuel load.
- D) Actual loaded mass of the aircraft with no usable fuel on board.

53- By adding to the Basic operating weight the payload, we get:

- A) Ramp weight.
- B) Takeoff weight.
- C) Zero fuel weight.
- D) Landing weight.

54- Basic operating weight is the mass of the airplane except:

- A) Usable fuel and Payload.
- B) Usable fuel.
- C) Payload, portable water and lavatory chemicals.
- D) Unusable fuel, portable water and lavatory chemicals.



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55- The Zero Fuel weight of an airplane is always:

- A) The Takeoff Mass minus the fuselage fuel mass.
- B) The Takeoff Mass minus the wing fuel mass.
- C) The Takeoff Mass minus the Takeoff Fuel Mass.
- D) The Maximum Takeoff Mass minus the Takeoff Fuel Mass.

56- The actual Zero Fuel weight is equal to the:

- A) Basic Empty weight plus the fuel loaded.
- B) Operating Mass plus all the payload.
- C) Basic operating weight plus the payload.
- D) Actual Landing weight plus Trip Fuel.

57- For the purpose of completing the weight and balance documentation, the basic empty weight is defined as:

- A) Weight of standard airplane, optional equipment, unusable fuel.
- B) The Total Mass of airplane excluding all usable fuel.
- C) The Total Mass of the airplane excluding all payload.
- D) The Total Mass of the airplane excluding crew and crew baggage.

58- At the flight preparation stage, the following parameters in particular are available for determining the mass of the aircraft:

1- Basic empty weight

2- Payload

Which statement is correct?

- A) The basic empty weight includes fixed equipment needed to carry out a flight.
- B) The payload is the mass of the aircraft without takeoff fuel.
- C) The basic empty weight includes takeoff fuel.
- D) The basic empty weight includes the payload.

59- Basic empty weight of an aeroplane includes:

- A) Fuel and passenger's baggage and cargo.
- B) Unusable fuel and reserve fuel.
- C) Weight of standard airplane, optional equipment, unusable fuel.
- D) Passenger's baggage and cargo.

60- The Total Mass of an aircraft including crew, crew baggage, plus usable fuel and payload, is referred to as:

- A) Maximum Zero Fuel Mass.
- B) Zero Fuel Mass.
- C) Landing Mass.
- D) Ramp Mass.



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61- Payload is the difference between:

- A) Ramp weight and Basic empty weight.
- B) Allowed Takeoff weight and Basic Mass plus Trip Fuel.
- C) Allowed Takeoff weight and Basic empty weight.
- D) Allowed zero fuel weight and Basic operating weight.

62- The Zero fuel weight & Basic operating weight:

- A) Differ by the sum of the weight of usable fuel plus payload.
- B) Are the same value.
- C) Differ by the value of the payload.
- D) Differ by the weight of usable fuel.

63- The term "Useful Load" as applied to an airplane includes:

- A) Payload only.
- B) Payload plus usable fuel.
- C) The revenue-earning portion of payload only.
- D) The revenue-earning portion of payload plus usable fuel.

64- For the purpose of completing the Mass and Balance documentation, the Ramp weight is considered to be zero fuel weight plus:

- A) Payload.
- B) Unusable fuel & engine oil.
- C) Trip Fuel Mass.
- D) Usable fuel.

65- Determine the Takeoff Mass for the following single engine airplane. Given:

Standard Empty Mass:	1764 lbs
Optional Equipment:	35 lbs
Pilot + Front seat passenger:	300 lbs
Cargo Mass:	350 lbs
Ramp Fuel = Takeoff Fuel:	60 Gal
Trip Fuel:	35 Gal
Fuel density:	6 lbs/Gal

- A) 2764 lbs
- B) 2809 lbs
- C) 2659 lbs
- D) 2799 lbs



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66- How would you convert kilograms (kg) to pounds (lbs)?

- A) $\text{Kg} \times 0.45359237 = \text{lbs}$.
- B) $\text{Kg} \times 2.20462262 = \text{lbs}$.
- C) $\text{lbs} \times 2.20462262 = \text{Kg}$.
- D) None of the above.

67- How would you convert US gallons to liters (l)?

- A) US Gal $\times 1.205$
- B) US Gal $\times 4.546$
- C) US Gal $\times 0.264$
- D) US Gal $\times 3.785$

68- A box has a mass of 122 lbs, what is the mass in kg?

- A) 33.55 kg
- B) 55.33 kg
- C) 55.45 kg
- D) 57.54 kg

69- Choose the correct statement as related to infants travel in aircraft:

- A) An infant is a person between the ages of 0 years to 2 years.
- B) An infant is a person between the ages of 0 years to 3 years.
- C) An infant seated on an adult's lap increases the PAX mass by 35 kg.
- D) An infant must always be seated in its own seat and accounted for as 35 kg.

70- Given:

Basic operating Mass: 5500 kg

Zero Fuel Mass: 5980 kg

Takeoff Mass: 7980 kg

What is the Useful Load?

- A) 2680 kg
- B) 2480 kg
- C) 2000 kg
- D) 480 kg



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71- Given:

The Takeoff Mass of an aircraft is 8470 kg.

Total fuel on board is 1600 kg including 450 kg reserve fuel and 29 kg of unusable fuel.

The payload is 770 kg.

What is the Zero Fuel Mass?

- A) 6420 kg
- B) 6129 kg
- C) 6899 kg
- D) 6870 kg

72- Given:

Basic operating weight: 5320kg

Zero Fuel: 6790kg

Trip Fuel: 770 kg

Take off Fuel: 1310kg

The Payload is:

- A) 1470kg
- B) 3080kg
- C) 1610kg
- D) 2940kg

73- Given:

Basic operating weight: 4920kg

Zero Fuel: 5740kg

Trip Fuel: 670 kg

Take off Fuel: 1050kg

The payload is:

- A) 2160kg
- B) 1340kg
- C) 2480kg
- D) 820kg



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74- Given:

Zero Fuel Weight: 4770kg
Trip Fuel: 1040kg
Block Fuel: 1960 kg
Taxi Fuel: 20kg

The actual Take off Mass is equal to:

- A) 5890kg
- B) 4970kg
- C) 6710kg
- D) 6730kg

75- Given:

Zero Fuel weight: 4920kg
Trip Fuel: 880kg
Block Fuel: 1330 kg
Taxi Fuel: 25kg

The actual Take off Mass is equal to:

- A) 6250kg
- B) 6810kg
- C) 6360kg
- D) 6225kg

76- Given:

Zero Fuel weight: 6660kg
Trip Fuel: 990kg
Block Fuel: 1540 kg
Taxi Fuel: 25kg

The actual Take off Mass is equal to:

- A) 8175kg
- B) 8200kg
- C) 7210kg
- D) 8110kg



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77- The Basic operating weight is 5050 kg and the Zero Fuel Mass is 6210 kg, If the Takeoff Mass is 8010 kg the Useful Load is:

- A) 2960kg
- B) 1800kg
- C) 1160kg
- D) 3210kg

78- The Basic operating weight 5220 kg and the Zero Fuel Mass is 6040 kg, If the Takeoff Mass is 7630 kg the Useful Load is:

- A) 2670kg
- B) 2410kg
- C) 1590kg
- D) 820kg

79- Maximum quantity of fuel that can be loaded into a helicopter's tanks is given as 800 US gallons. If the fuel density (specific gravity) is given as 0.79 the mass of fuel which may be loaded is: (kg/Liter)

- A) 2392 kg
- B) 3833 kg
- C) 2873 kg
- D) 4604 kg

80- What mass has to be entered in the loading chart for aviation fuel if 170 liters may be refueled? (Fuel density = 0.78 kg/l)

- A) 133 kg
- B) 133 N
- C) 170 kg
- D) 218 kg

81- An aircraft is loaded with 27960 liters of JET A which has a specific gravity of 0.81 (kg/Liter). If the basic operating mass is 165000 lbs the operating mass will be:

- A) 214825 lbs
- B) 226512 lbs
- C) 240941 lbs
- D) 187648 lbs



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82- Using the following, calculate the payload:

Ramp Mass:	68000 kg
Basic operating Mass:	43500 kg
Landing Mass:	60500 kg
Trip Fuel:	7000 kg

- A) 19260 kg
- B) 17000 kg
- C) 17460 kg
- D) 28500 kg

83- The center of gravity of a body is that point:

- A) Which is always used as datum when computing moments.
- B) Where the sum of the moments from the external forces acting on the body is equal to zero.
- C) Where the sum of the external forces is equal to zero.
- D) Through which the sum of the forces of all masses of the body is considered to act.

84- The center of gravity location of the airplane is normally computed along the:

- A) Vertical axis
- B) Lateral axis
- C) Longitudinal axis
- D) Horizontal axis

85- The datum for determining the CG has to be along the longitudinal axis:

- A) Between the nose and the tail.
- B) Between the leading and trailing edge of the wing.
- C) But does not have to be between the nose and the tail.
- D) At the firewall.

86- A location in the aircraft which is identified by a number designating its distance from the datum is known as:

- A) Station
- B) Moment
- C) Mean Aerodynamic Chord
- D) Index

87- The CG position is:

- A) Set by the pilot.
- B) Set by the manufacturer
- C) Able to exist within a range.
- D) Fixed.



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88- The center of gravity of an aircraft:

- A) Is in a fixed position and is unaffected by aircraft loading.
- B) Must be maintained in a fixed position by careful distribution of the load.
- C) Can be allowed to move between defined limits.
- D) May only be moved if permitted by the regulating authority and endorsed in the aircraft's.

89- In mass and balance terms, what is an index?

- A) A cut down version of a force.
- B) A moment divided by a constant.
- C) A moment divided by a mass.
- D) A mass divided by a moment.

90- The distance from the datum to the CG is:

- A) The index
- B) The moment
- C) The Balance Arm
- D) The station

91- The center of gravity of an aircraft is that point through which the Total Mass of the aircraft is said to act. The weight acts in a direction:

- A) Always parallel to the aero plane's vertical axis.
- B) Parallel to the gravity vector.
- C) At right angles to the flight path.
- D) Governed by the distribution of the mass within the airplane.

92- The weight of an aircraft, which is in level non accelerated flight, is said to act:

- A) Always along the vertical axis of the airplane.
- B) Vertically through the center of pressure.
- C) Vertically through the datum point.
- D) Vertically through the center of gravity.

93- The datum of an airplane is situated:

- A) Not always between the nose and the tail.
- B) Always between the nose and the tail.
- C) Between the leading edge and the trailing edge of the MAC.
- D) Between the leading edge and the trailing edge of the wing.

94- In mass and balance calculations the "index" is:

- A) A location in the aeroplane identified by a number.
- B) The moment divided by a constant.
- C) An imaginary vertical plane or line from which all measurements are taken.
- D) The range of moments the center of gravity (CG) can have without making the aero plane unsafe to fly.



95- In calculations with respect to the position of the center of gravity a reference is made to a datum. The datum is:

- A) Calculated from the data derived from the weighing procedure carried out on the airplane after any major modification.
- B) Calculated from the loading manifest.
- C) An arbitrary reference chosen by the pilot which can be located anywhere on the airplane.
- D) A reference plane which is chosen by the airplane manufacturer.

96- The datum used for balance calculations is:

- A) Chosen on the longitudinal axis of the airplane, and necessarily situated between the nose and the tail of the aircraft.
- B) Chosen on the longitudinal axis of the airplane, but not necessarily between the nose and the tail of the aircraft.
- C) Chosen on the longitudinal axis of the aircraft and necessarily situated between the leading edge and trailing edge of the Wing.
- D) Chosen on the longitudinal axis of the aircraft, and always at the firewall level.

97- In mass and balance calculations which of the following describes the datum?

- A) It is the most aft position of the center of gravity.
- B) It is the most forward position of the center of gravity.
- C) It is the point on the airplane designated by the manufacturers from which all center of gravity measurements and calculations are made.
- D) It is the distance from the center of gravity to the point through which the weight of the component acts.

98- The datum is a reference from which all moment (balance) arms are measured. Its precise position is given in the control and Loading Manual and it is located:

- A) At or near the focal point of the aeroplane axis system.
- B) At or near the forward limit of the center of gravity.
- C) At a convenient point which may not physically be on the aeroplane.
- D) At or near the neutral balance point of the empty aeroplane.

99- With reference to weight and balance calculations (on an airplane) a datum point is used. This datum point is:

- A) A point near the center of the airplane. It moves longitudinally as masses are added forward and aft of its location.
- B) The point through which the sum of the weight values (of the airplane and its contents) is assumed to act vertically.
- C) A fixed point from which all Balance Arms are measured. It may be located anywhere on the airplane's longitudinal axis or on the extensions to that axis.
- D) A point from which all Balance Arms are measured.



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100- Arms are measured from a specific point to the body station at which the mass is located.

That point is known as:

- A) The center of gravity of the airplane.
- B) The focal point.
- C) The axis.
- D) The datum.

101- Which one of the following is correct?

- A) $\text{Arm} = \text{Force} \div \text{Moment}$
- B) $\text{Arm} = \text{Moment} \div \text{Force}$
- C) $\text{Moment} = \text{Force} \div \text{Arm}$
- D) $\text{Arm} = \text{Force} \times \text{Moment}$

102- The distance from the datum to the Centre of Gravity of a mass is known as:

- A) The index.
- B) The lever.
- C) The moment.
- D) The Moment Arm or Balance Arm.

103- Balance Arm (BA) is:

- A) The distance from the center of pressure to the center of a mass.
- B) The point on which a lever is supported, balanced, or about which it turns.
- C) The distance from the datum to the center of gravity of a mass.
- D) The distance from the center of gravity to the center of a mass.

104- If all the moments are positive when calculating mass (weight) and balance, the position of the datum would be at the:

- A) Trailing edge of the wing.
- B) Main wheels centerline.
- C) Nose, or forward of the aircraft.
- D) Center line of the nose or tail wheel depending on the aircraft type.

105- The aircraft datum is a (i) reference point that is defined on or relative to the aircraft about which the (ii) of any load locations are known.

- A) (i) Movable; (ii) moments
- B) (i) Variable; (ii) moments
- C) (i) Fixed; (ii) arms
- D) (i) Forward; (ii) arms



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106- The arm is the (i) distance of a load as measured from the aircraft (ii).

- A) (i) Vertical; (ii) aft limit
- B) (i) Horizontal; (ii) datum
- C) (i) Lateral; (ii) datum
- D) (i) Horizontal; (ii) forward limit

107- A load placed aft of the datum:

- A) Has a positive arm and therefore generates a positive moment but negative mass.
- B) Has a negative arm and therefore generates a negative moment but a positive mass.
- C) Has a negative arm and therefore generates a negative moment and mass.
- D) Has a positive arm and therefore generates a positive moment.

108- Load placed forward of the datum:

- A) Has a negative arm and therefore generates a negative moment.
- B) Has a negative arm and therefore generates a negative mass and moment.
- C) Has a positive arm and therefore generates a positive mass and moment.
- D) Has a positive arm and therefore generates a positive moment.

109- In mass and balance calculations the "index" is:

- A) An imaginary vertical plane or line from which all measurements are taken.
- B) The range of moments the center of gravity (CG) can have without making the aeroplane unsafe to fly.
- C) Is a figure without unit of measurement which represents a moment.
- D) A location in the aeroplane identified by a number.

110- The mass of an item multiplied by its distance from the datum is it's:

- A) Moment
- B) Center of gravity.
- C) Moment Arm.
- D) Force.

111- The moment for an item is:

- A) The mass of the item multiplied by its distance from the datum.
- B) The mass of the item divided by its distance from the datum.
- C) The distance the item is from the datum divided by its mass.
- D) The square of the distance the item is from the datum divided by its mass.

112- The reference about which center of gravity moments are taken is the:

- A) Chord line.
- B) Center of mass.
- C) Center of pressure.
- D) Datum.



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113- The true definition of the datum point is:

- A) The center of gravity related to the nose of the aircraft.
- B) A reference point for calculating the center of pressure.
- C) A point in the fuselage which all the axes pass through.
- D) A reference point from where all measurements are taken for center of gravity calculation.

114- What center of gravity movement may be expected on gear retraction (sideway)?

- A) CG moves forward.
- B) CG moves rearward.
- C) No significant change to CG position.
- D) CG moves far rearward.

115- The position of the center of gravity can always be determined by:

- A) Subtracting the Total Mass from the total moment
- B) Subtracting the total moment from the Total Mass.
- C) Dividing the Total Mass by the total moment.
- D) Dividing the total moment by the Total Mass.

116- (Refer to figure I-36) For the following see-saw to be in balance:

- A) $F_b = A \times F_a \div B$
- B) $F_b = A + F_a \div B$
- C) $F_b = A \times B \div F_a$
- D) $F_b = B \times F_a \div A$

117- (Refer to figure I-35) For the following see-saw to be in balance:

- A) $F_c = 3 \times F_a$
- B) $F_c = F_a \div 3A$
- C) $F_c = F_a \div 3$
- D) $F_c = 3 \div F_a$

118- (Refer to figure I-38) For the following boom to be in balance:

- A) $B = F_a \times A \div F_b$
- B) $B = F_b \times A \div F_a$
- C) $B = - (F_a \times A \div F_b)$
- D) $B = F_b + A \div F_a$

119- (Refer to figure I-37) For the following boom to be in balance:

- A) $A = B + F_b \div F_a$
- B) $A = B \times F_a \div F_b$
- C) $A = B (F_a + F_b)$
- D) $A = B \times F_b \div F_a$



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120- In calculating the position of the center of gravity. The correct formula is:

- A) Moment = mass ÷ arm
- B) Moment = arm ÷ mass
- C) Mass = arm ÷ moment
- D) Mass = moment ÷ arm

121- At a given mass the CG position is at 15% MAC. If the leading edge of MAC is at a position 625.6 inches aft of the datum and the MAC is given as 134.5 inches determine the position of the CG in relation to the datum:

- A) 645.78 inches aft of datum.
- B) 20.18 inches aft of datum.
- C) 605.43 inches aft of datum.
- D) 228.34 inches aft of datum.

122- The center of gravity of an airplane is at 25% of the Mean Aerodynamic Chord. This means that the center of gravity of the airplane is situated at 25% of the length of:

- A) The Mean Aerodynamic Chord in relation to the datum
- B) The Mean Aerodynamic Chord in relation to the trailing edge
- C) The Mean Aerodynamic Chord in relation to the leading edge
- D) The airplane in relation to the leading edge

123- The determination of the center of gravity in relation to the Mean Aerodynamic Chord:

- A) Consists of defining the center of gravity longitudinally in relation to the length of the Mean Aerodynamic Chord and the trailing edge.
- B) Consists of defining the center of gravity longitudinally in relation to the length of the Mean Aerodynamic Chord and the leading edge.
- C) Consists of defining the center of gravity longitudinally in relation to the position of the aerodynamic convergence point.
- D) Consists of defining the center of gravity longitudinally in relation to the position of the aerodynamic center of pressure.

124- Determine the position of the CG as a percentage of the MAC given that the Balance Arm of the CG is 724 inches and the MAC extends from a Balance Arm of 517 in to 1706 in:

- A) 14.2%
- B) 15.3%
- C) 16.3%
- D) 17.4%

125- Longitudinal CG location is normally expressed:

- A) As a percentage of the MAC from its leading edge.
- B) As a percentage of the MAC from its trailing edge.
- C) With respect to the neutral point.
- D) With respect to the center of pressure.



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126- The loaded center of gravity of an aircraft is 23.65 feet aft of Datum. If the length of the MAC is 8 feet, and the distance of the leading edge of the MAC is 20 feet aft of the Datum, the position of the center of gravity as a % MAC is:

- A) 8%
- B) 23.65%
- C) 20%
- D) 45.62%

127- An aircraft has a Standard Mean Chord length of 82 inches, and the leading edge of the chord is 103 inches aft of the datum. If the center of gravity position is 14.7% MAC, what is the center of gravity distance from the datum?

- A) 15.66 in
- B) 118.14 in
- C) 65.6 in
- D) 115.05 in

128- Where is the percentage MAC measured from?

- A) The datum.
- B) The wing leading edge.
- C) The wing trailing edge.
- D) The nose of the aircraft.

129- Given:

Total Mass: 7500 kg

Centre of gravity (CG) location station: 80.5

Aft CG limit station: 79.5

How much cargo must be shifted from the aft cargo compartment at station 150 to the forward cargo compartment at station 30 in order to move the CG location to the aft limit?

- A) 65.8 kg
- B) 62.5 kg
- C) 68.9 kg
- D) 73.5 kg

130- A mass of 500 kg is loaded at a station which is located 10 meters behind the present center of gravity and 16 meters behind the datum. The moment for that mass used in the loading manifest is (Assume: $g=10 \text{ m/s}^2$):

- A) 30000 NM
- B) 50000 NM
- C) 80000 NM
- D) 130000 NM



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131- Given:

Aeroplane mass = 36000 kg

Centre of gravity (CG) is located at station 17 m

What is the effect on CG location if you move 20 passengers (Total Mass = 1600 kg) from station 16 to station 23?

- A) It moves aft by 3.22 m.
- B) It moves forward by 0.157 m.
- C) It moves aft by 0.31 m.
- D) It moves aft by 0.157 m.

132- Assume:

Aeroplane gross mass: 4750 kg

Centre of gravity at station: 115.8

What will be the new position of the center of gravity if 100 kg is moved from the station 30 to station 120?

- A) Station 118.25
- B) Station 118.33
- C) Station 120.22
- D) Station 117.69

133- Given:

Total Mass: 2900 kg

Centre of gravity (CG) station: 115.0

Aft CG limit station: 116.0

The maximum mass that can be added at station 130.0 is,

- A) 140 kg
- B) 317 kg
- C) 207 kg
- D) 14 kg

134- The mass of an aeroplane is 1950 kg. If 450 kg is added to a cargo hold 1.75 meters from the loaded center of gravity (CG). The loaded CG will move:

- A) 40 cm
- B) 33 cm
- C) 30 cm
- D) 34 cm



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135- The Total Mass of an airplane is 9000 kg, the center of gravity (CG) position is at 2.0 m from the datum line, the aft limit for CG is at 2.1 m from the datum line, what mass of cargo must be shifted from the front hold (at 0.8 m from the datum) to the aft hold (at 3.8 m), to move the CG to the aft limit?

- A) 30.0 kg
- B) 900 kg
- C) 300 kg
- D) 196 kg

136- Given that the Total Mass of an airplane is 112000 kg with a center of gravity position at 22.62 m aft of the datum. The center of gravity limits are between 18 m and 22 m. How much mass must be removed from the rear hold (30 m aft of the datum) to move the center of gravity to the middle of the limits:

- A) 43120 kg
- B) 16529 kg
- C) 8680 kg
- D) 29344 kg

137- Given:

Gross mass: 116500 lbs
Present CG station: 435.0
Compartment A station: 285.5
Compartment B station: 792.5

If 390 lbs of cargo are moved from compartment B (aft) to compartment A (forward), what is the station number of the new center of gravity (CG)?

- A) 463.7
- B) 506.3
- C) 436.7
- D) 433.3

138- Given:

CG is located at STN 15

Aero plane mass is 3650 lbs

What is the effect on the CG if you move baggage (total mass 64 lbs) from STN 14 to STN 20?

- A) It moves FWD by 0.13 units.
- B) It moves aft by 0.1 units.
- C) It moves aft by 0.3 units.
- D) It moves aft by 0.31 units.



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139- A loaded aircraft weighs 4200 lbs with a CG at 9 inches aft of the datum. An extra 200 lbs is loaded into the aircraft 40 inches FWD of the datum. The new CG position is:

- A) 6.8 inches FWD.
- B) 3.0 inches aft.
- C) 6.8 inches aft.
- D) 3.0 inches FWD.

140- The CG of an aircraft is 980 inches aft of datum at an all up mass of 170500 lbs. If 800 lbs of baggage is moved from station 1130 to station 430 the new CG will be:

- A) 975.99 in
- B) 976.72 in
- C) 979.75 in
- D) 977.62 in

141- An aircraft's mass is 22000 kg and the center of gravity is 1.5 m aft of datum. What would be the new center of gravity if 1500 kg were transferred from the rear hold 15 m aft of datum to the forward hold 12 m forward of datum?

- A) 0.34 m FWD of datum.
- B) 0.14 m FWD of datum.
- C) 1.84 m aft of datum.
- D) 1.84 m FWD of datum.

142- An aircraft has a taxi mass of 30000 kg and its center of gravity is 21.69 m aft of datum. What would be the new center of gravity if 1000 kg were moved 30 m forward from hold 2 to hold 1?

- A) 20.69 m
- B) 22.69 m
- C) 19.78 m
- D) 21.78 m

143- The loaded mass of an aircraft is 33000 lbs, and the center of gravity is 3 feet aft of the datum. How many lbs of freight can be added to the freight hold 1 foot forward of datum to bring the center of gravity towards the forward limit of 2 feet aft of datum for takeoff if the maximum Takeoff Mass is 40000 lbs:

- A) 11000 lbs
- B) 33000 lbs
- C) 4000 lbs
- D) 7000 lbs



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- 144- If the loaded mass is 27220 kg, how much load should be transferred 9.16 m forward from no. 2 hold to the no. 1 hold in order to move the center of gravity of an aircraft from the out of limits value of 13 meters aft to the forward limits value of 11.6 meters aft?**
- A) 590 kg
 - B) 1790 kg
 - C) 2980 kg
 - D) 4160 kg
- 145- An aircraft is loaded to a mass of 25000 lbs. A passenger weighing 150 lbs moves back 10 seat rows, a distance of 330 inches. The center of gravity will move;**
- A) 0.5 in rearward.
 - B) 2.00 in rearward.
 - C) 5.00 in rearward.
 - D) 2.00 in forward.
- 146- Assuming that an aircraft CG has to remain within limits, what is the maximum weight which could be added to a cargo hold located at station 125, if the CG is at station 85 and the aft limit is positioned at station 100. The aircraft loaded weight is 5000 lbs.**
- A) 3000 lbs
 - B) 1687.5 lbs
 - C) 1800.7 lbs
 - D) 1945 lbs
- 147- An aeroplane has 2 cargo holds, cargo hold 1 is located 6 m forward of the datum, hold 2 is located 7 m aft of the datum. The Takeoff Mass of the aircraft is 60000 kg and the CG is located at 2 m aft of datum. Just prior to takeoff, cargo weighing 1250 kg is removed from cargo hold 1, what will be the new CG for takeoff?**
- A) 1.92 m aft of the datum.
 - B) 2.17 m aft of the datum.
 - C) 2.08 m aft of the datum.
 - D) 1.84 m aft of the datum.
- 148- The CG of an aircraft is at 25% MAC and MAC is 1 m. The aircraft has 2 holds, hold 1 is 7 m aft of the datum and hold 2 is 22 m aft of the datum. If the aircraft mass is 38000 kg, what load must be transferred from hold 1 to hold 2 to move the CG to 40% MAC?**
- A) 1520 kg
 - B) 259 kg
 - C) 480 kg
 - D) 380 kg



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149- Loads must be adequately secured in order to:

- A) Allow steep turns.
- B) Avoid any center of gravity (CG) movement during flight.
- C) Prevent excessive g-Loading during the landing flare.
- D) Avoid unplanned center of gravity (CG) movement and aircraft damage.

150- If a load moves in flight:

- A) A change of the moment of the load would cause the aircraft CG to change
- B) A change of the moment of the load would be unlikely to cause the aircraft CG to change
- C) The aircraft would become nose heavy
- D) The aircraft would become tail heavy



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	C	26	A	51	A	76	A
2	C	27	C	52	D	77	A
3	D	28	C	53	C	78	B
4	C	29	B	54	A	79	A
5	D	30	B	55	C	80	A
6	C	31	D	56	C	81	A
7	A	32	C	57	A	82	B
8	D	33	C	58	A	83	D
9	D	34	C	59	C	84	C
10	B	35	A	60	D	85	C
11	B	36	D	61	D	86	A
12	D	37	D	62	C	87	C
13	D	38	D	63	B	88	C
14	A	39	D	64	D	89	B
15	B	40	B	65	B	90	C
16	C	41	C	66	B	91	B
17	D	42	D	67	D	92	D
18	D	43	D	68	B	93	A
19	B	44	A	69	A	94	B
20	C	45	C	70	B	95	D
21	D	46	B	71	C	96	B
22	A	47	A	72	A	97	C
23	A	48	B	73	D	98	C
24	C	49	B	74	C	99	C
25	B	50	C	75	D	100	D

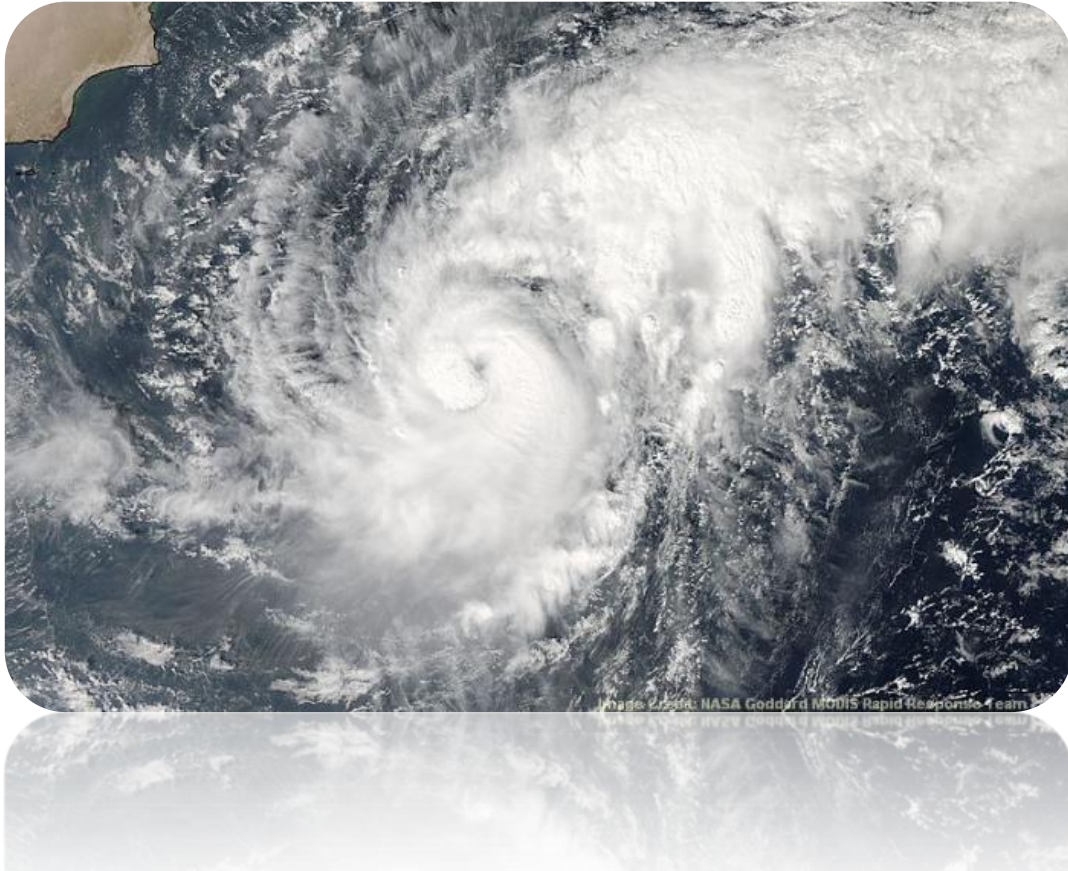


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QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	B	114	C	127	D	140	B
102	D	115	D	128	B	141	A
103	C	116	A	129	B	142	A
104	C	117	C	130	C	143	D
105	C	118	A	131	C	144	D
106	B	119	D	132	D	145	B
107	D	120	D	133	C	146	A
108	A	121	A	134	B	147	B
109	C	122	C	135	C	148	D
110	A	123	B	136	D	149	D
111	A	124	D	137	D	150	A
112	D	125	A	138	B		
113	D	126	D	139	C		

METEOROLOGY





1- How does the height of the tropopause normally vary with latitude in the northern hemisphere?

- A) It remains constant throughout the year.
- B) It remains constant from north to south.
- C) It increases from south to north.
- D) It decreases from south to north.

2- Why are indications about the height of the tropopause not essential for flight documentation in the tropics?

- A) The tropopause is generally well above the flight level actually flown.
- B) The meteorological services are unable to such a chart.
- C) The temperatures of the tropical tropopause are always very cold and therefore not important.
- D) Tropopause information are of no value.

3- Which force in the northern hemisphere act at a right angle to the wind and deflect it to the right until parallel to the isobars?

- A) Centrifugal.
- B) Pressure gradient.
- C) Coriolis.
- D) Net force.

4- Turbulence that is encountered above 15000 ft AGL not associated with cumuliform cloudiness, including thunderstorm should be reported as:

- A) Convective turbulence.
- B) Severe turbulence.
- C) Orographic turbulence.
- D) Clear air turbulence.

5- A situation most conducive to the formation of advection fog is:

- A) An air mass moving inland from the coastline during the winter.
- B) A warm, moist air mass settling over a cool surface under no wind conditions.
- C) A warm, moist air mass on the windward side of a mountain.
- D) A light breeze moving colder air over a water surface.

6- Which procedure should be used when penetrating turbulent air?

- A) Set power for maneuvering speed and maintain constant air speed with pitch control.
- B) Set power for maneuvering speed and maintain a level flight attitude.
- C) Reduce air speed to maneuvering speed and maintain altitude with power control and airspeed with pitch control.
- D) Reduce air speed to maneuvering speed and maintain airspeed with power control and altitude with pitch control.



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7- Which type of approach and landing is recommended during gusty wind conditions?

- A) A power off approach and power off landing.
- B) A power on approach and power on landing.
- C) A power off approach and power on landing.
- D) A power on approach and power off landing.

8- The location of radiation fog would most likely occur are:

- A) Water surfaces.
- B) Mountain valleys.
- C) Level inland areas.
- D) Mountain Slopes.

9- The most hazardous wind shear near the ground often is produced by:

- A) Thunderstorm.
- B) Surface winds exceeding 25 knots.
- C) Rugged terrains.
- D) Occluded fronts.

10- Which type clouds can be expected, when an unstable air mass is to ascend a mountain slope?

- A) Stratified clouds with intermittent showers.
- B) Layered clouds with little vertical development.
- C) Stratified clouds with considerable associated turbulence.
- D) Clouds with extensive vertical development.

11- Dynamic hydroplaning (airplane skimming on a wet runway) occurs at:

- A) High speeds when there is standing water on the runway.
- B) Only at low speed when there is standing water on the runway.
- C) High speed with only a thin film of water on the runway.
- D) Low speed with only a thin film of water on the runway.

12- What term is used to describe hydroplaning, which occurs when an airplane tire is effectively held off a smooth runway surface by steam created by friction?

- A) Viscous hydroplaning.
- B) Frictional hydroplaning.
- C) Reverted rubber hydroplaning.
- D) Dynamic hydroplaning.

13- Which statement is true concerning the tropopause from the equator to the poles?

- A) The tropopause decreases, the tropopause temperature increases.
- B) The tropopause decreases, the tropopause temperature decreases.
- C) The tropopause increases, the tropopause temperature increases.
- D) The tropopause increases, the tropopause temperature decreases.



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14- What can be said about the temperature in the lower stratosphere?

- A) The temperature is constant.
- B) The temperature is increasing.
- C) The temperature is decreasing.
- D) The temperature is first increasing and then decreasing.

15- The percentage concentration of gases in the atmosphere is constant from the surface of the Earth to a certain altitude with the exception of:

- A) Oxygen
- B) Nitrogen
- C) Hydrogen
- D) Water vapour

16- Several physical processes contribute to atmospheric warming. Which of the following contribute the most?

- A) Absorption and evaporation.
- B) Solar radiation and conduction.
- C) Absorption and vaporization.
- D) Convection and condensation.

17- A significant inversion at low height is a characteristic of:

- A) The passage of cold front.
- B) Nocturnal radiation.
- C) Advection fog.
- D) Cumulus clouds.

18- The radiation of the Sun heats:

- A) The air in the troposphere only directly if no clouds are present.
- B) The air in the troposphere directly.
- C) The water vapour in the air of the troposphere.
- D) The surface of the Earth, which heats the air in the troposphere.

19- The diurnal variation in temperature is largest when the sky is:

- A) Clear and winds are strong.
- B) Clear and winds are weak.
- C) Overcast and winds are weak.
- D) Overcast and winds are strong.



20- On a clear sky, continental ground surface, wind calm, the minimum temperature is reached approximately:

- A) At the moment the sun rises.
- B) Half an hour before sunrise.
- C) Half an hour after sunrise.
- D) One hour before sunrise.

21- Which of the following is a common cause of ground or surface temperature inversion?

- A) Terrestrial radiation on a clear night with no or very light winds.
- B) Warm air being lifted rapidly aloft, in the vicinity of mountainous terrain.
- C) The movement of colder air under warm air, or the movement of warm air over cold air.
- D) Heating of the air by subsidence.

22- The amount of water vapor which air can largely depends on:

- A) The dew point.
- B) Air temperature.
- C) Stability of air.
- D) Relative humidity.

23- How are haze layers cleared or dispersed?

- A) By convective mixing in cool night air.
- B) Wind or movement of air.
- C) Heating during the day.
- D) B and C are correct.

24- What are some characteristics of unstable air?

- A) Poor visibility, steady rain, and clear icing.
- B) Good visibility, steady rain, and rime icing.
- C) Poor visibility, showers, and clear icing.
- D) Good visibility, showers and cumuliform clouds.

25- A temperature inversion forms:

- A) Only in summer.
- B) Only in winter.
- C) An unstable layer of air.
- D) A stable layer of air.

26- The most frequent type of ground or surface based temperature inversion is that produced by:

- A) Terrestrial radiation on a clear, relatively still night.
- B) Warm air being lifted rapidly aloft in the vicinity of mountainous terrain.
- C) The movement of colder air under warm air, or the movement of warm air over cold air.
- D) Widespread sinking of air within a thick layer aloft resulting in heating by compression.



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27- In which situation is advection fog most likely to form?

- A) A warm, moist air mass on the windward side of mountains.
- B) An air mass moving inland from the coast in winter.
- C) A light breeze blowing colder air out to sea.
- D) Warm, moist air settling over a warmer surface under no-wind conditions.

28- In which environment is aircraft structural ice most likely to have the highest accumulation rate?

- A) Cumulus clouds.
- B) Cirrus clouds.
- C) Stratus clouds.
- D) Freezing rain.

29- What visible indicates extreme turbulence in thunderstorms?

- A) Cumulonimbus clouds, very frequent lightning, and roll clouds.
- B) Base of the clouds close to the surface heavy rain and hail.
- C) Low ceiling and visibility hail and precipitation static.
- D) Lightning, roll clouds, low ceilings and visibility and precipitation static.

30- Which thunderstorms generally produce the most severe conditions, such as heavy hail and destructive winds?

- A) Warm front thunderstorms.
- B) Squall line thunderstorms.
- C) Nocturnal air mass thunderstorms.
- D) Daytime air mass thunderstorms.

31- Standard sea level pressure is:

- A) 29.92 inches of mercury.
- B) 14.7 PSI.
- C) 1013.25 mb.
- D) All answers are correct.

32- If the depth of the troposphere increases, the temperature at the tropopause must:

- A) Decrease.
- B) Stay the same.
- C) Increase.
- D) Impossible to say.



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33- The majority of troposphere heating is the result of:

- A) Radiation of the sun.
- B) Heating from the ground below.
- C) Re-radiation of the sun's rays from the surface of the Earth.
- D) Re-radiation from the clouds.

34- Why is a calm and clear-sky night cooler than a cloudy night?

- A) The clouds prevent radiation from the atmosphere.
- B) There is radiation from the clouds.
- C) The radiation from the Earth's surface slips into space.
- D) Due to contents of carbon dioxide.

35- The QNH at an airfield located 200 meters above sea level is 1009 hPa. The air temperature is 10°C lower than a standard atmosphere. What is the QFF?

- A) Less than 1009 hPa.
- B) 1009 hPa.
- C) More than 1009 hPa.
- D) It is not possible to give a definitive answer

36- The QNH at an airfield located 0 meters above sea level is 1022 hPa. The air temperature is not available. What is the QFF?

- A) It is not possible to give a definitive answer.
- B) Less than 1022 hPa.
- C) More than 1022 hPa.
- D) 1022 hPa.

37- In the troposphere the decrease of pressure per 100 m increases in height:

- A) Is greater at higher levels than at lower levels.
- B) Remains constant at all levels.
- C) Is smaller at higher levels than at lower levels.
- D) Is in the order of 27 hPa near MSL.

38- The QNH at an airfield in California located 69 meters below sea level is 1018 hPa. The air temperature is 10°C higher than a standard atmosphere. What is the QFF?

- A) More than 1018 hPa.
- B) Less than 1018 hPa.
- C) 1018 hPa.
- D) It is not possible to give a definitive answer.



39- Which of the following statements is true?

- A) High contour values are equivalent to high pressure.
- B) Low contour values are equivalent to high pressures.
- C) High contour values are equivalent to low pressure.
- D) There is not direct relationship between contour values and pressure.

40- State the definition for QFF:

- A) QFE reduced to MSL, using standard temperature gradient.
- B) QNH reduced to MSL, using standard temperature gradient.
- C) QFE reduced to MSL, using actual temperature gradient.
- D) QNE reduced to MSL, using standard temperature gradient.

41- At a certain position, the temperature on the 300 hPa chart is -48°C ; according to the tropopause chart, the tropopause is at FL330. What is the most likely temperature at FL350?

- A) -56.5°C
- B) -50°C
- C) -54°C
- D) -58°C

42- If you are flying at FL300 in an air mass that is 15°C warmer than a standard atmosphere, what is the outside temperature likely to be?

- A) -30°C
- B) -45°C
- C) -60°C
- D) -15°C

43- An aircraft is flying at FL080. The local QNH is 1000 hPa. After the second altimeter has been adjusted to the local QNH the reading will be approximately:

- A) 7650 ft
- B) 8600 ft
- C) 8350 ft
- D) 8000 ft

44- An aircraft lands at an airport (airport elevation 1240 ft, QNH 1008 hPa). The altimeter is set to 1013 hPa. The altimeter will indicate:

- A) 1200 ft
- B) 1375 ft
- C) 1105 ft
- D) 1280 ft



45- An aircraft is flying at FL180 on the northern hemisphere with a crosswind from the left. Which of the following is correct concerning its true altitude?

- A) It remains constant.
- B) It increases.
- C) It decreases.
- D) Without knowing temperatures at FL180 this question cannot be answered.

46- You are flying at FL200. Outside air temperature is -40°C , and the pressure at sea level is 1033 hPa. What is the true altitude? (Note: assume 1 hPa = 27 ft)

- A) 20660 feet.
- B) 19340 feet.
- C) 21740 feet.
- D) 18260 feet.

47- At night when wind flows down the mountain it is called a:

- A) Mountain wind.
- B) Valley wind.
- C) Westerly wind.
- D) Trade wind.

48- Which of the following definitions are correct?

- A) The movement of a cold front is usually slower and the slope of the cold front steep.
- B) The slope of the cold front have a gradual slope than warm front.
- C) The cold front produces a severe turbulence.
- D) The warm front moves faster than cold front.

49- Which statement is correct?

- A) Cloud are divided into four families according to height range.
- B) Steady precipitation in contrast to showers preceding a front is an indication of stratiform clouds with little or no turbulence.
- C) Temperature inversion produced by terrestrial radiation on calm & clear night.
- D) All answers are correct.

50- Select the best statement:

- A) Drop pressure always associated with the passage of frontal system.
- B) Change in wind direction is always associated with the passage of frontal system.
- C) Temperature change is always a good indication of frontal passage.
- D) All answers are correct.



51- Precipitation trailing beneath clouds that evaporate before reaching the ground are called?

- A) Frontal fog.
- B) Foehn wind.
- C) Virga.
- D) Fog.

52- Which statement is correct?

- A) An air mass is a body of air that covers an extensive area and has uniform temperature.
- B) An air mass is a body of air that has extensive turbulence and associated with uniform temperature and moisture.
- C) An air mass covers an extensive area and has uniform moisture.
- D) A and C are correct.

53- Which statement is correct?

- A) Every physical process of weather is accomplished by, or the result of a pressure difference.
- B) Every physical process of weather is accomplished by heat exchange.
- C) Every physical process of weather is accomplished by Coriolis force.
- D) None.

54- Which statement is correct?

- A) When cold air mass moving over warm surface stratiform clouds, turbulence and poor visibility will produce.
- B) When warm air mass moving over cold surface cumuliform clouds, turbulence and good visibility will expected.
- C) When cold air mass settle down it will be produced turbulence.
- D) None.

55- Which statement is correct?

- A) When temperature and temperature dew point spread increase relative humidity increase.
- B) When temperature and temperature dew point are equal we will have fog.
- C) When temperature and temperature dew point spread decrease relative humidity increase.
- D) B and C are correct.

56- Which statement is correct?

- A) A removal of water vapor and sinking decrease stability.
- B) Gray or dark massive cloud layer belongs high clouds.
- C) Terrestrial radiation on clear relatively still night may produce temperature inversion.
- D) B and C are correct.



57- Which statement is correct?

- A) Difference temperature creating different in pressure and cause wind.
- B) Water droplet and ice crystal continue to growth by condensation and sublimation.
- C) Wind shear can be expected at any level both horizontal and vertical direction.
- D) All answers are correct.

58- Which statement is correct?

- A) Water droplet increase in size with colliding and merging together.
- B) Water droplet increase in size with evaporation and sublimation.
- C) Water vapor increase with condensation and sublimation.
- D) All answers are correct.

59- Which of the following clouds indicate convective turbulence?

- A) Alto cumulus standing lenticular (ACSL).
- B) Towering cumulus (TCU).
- C) Nimbostratus (NS).
- D) Cirrus (CI).

60- What is the feature of the air in low pressure area?

- A) Area where descending air and then outward motion occurs.
- B) Area where inward and upward occurs.
- C) Is an area of rising air and then descending.
- D) None.

61- Which statement is true regarding squall lines?

- A) They are non-frontal and contains severe weather.
- B) They associated with fast moving cold front.
- C) They are associated with 15 kts winds at least for one minute.
- D) A and B are correct.

62- A barometric altimeter always indicates:

- A) Correct altitude to the terrain below.
- B) Altitude to the set altitude reference.
- C) Standard altitude.
- D) The dynamic pressure.

63- At the official measuring level for a specific airport, an aircraft altimeter, set at QNH for the airport, should read:

- A) The elevation of the airport, but only at standard ISA temperature.
- B) The elevation of the airport, regardless of temperature.
- C) Zero, regardless of temperature.
- D) Zero, only at standard ISA temperature.



64- Which of the following is true concerning an aircraft that is flying at FL180 in the northern hemisphere, where wind is geostrophic and the true altitude remains constant?

- A) There is a crosswind from the right.
- B) There is a crosswind from the left.
- C) There is no crosswind.
- D) Without knowing temperature at FL180 this question cannot be answered.

65- Under anticyclone conditions in the northern hemisphere, with curved isobars the speed of the gradient wind is:

- A) Less than the geostrophic wind.
- B) Greater than the geostrophic wind.
- C) The same as the thermal component.
- D) Proportional only to the Coriolis force.

66- At the approach of a warm front (northern hemisphere) the wind direction changes from the surface up to the tropopause. The effect of this change is that the wind:

- A) Veers in the friction layer and backs above the friction layer.
- B) Backs in the friction layer and veers above the friction layer.
- C) Veers in the friction layer and veers above the friction layer.
- D) Backs in the friction layer and backs above the friction layer.

67- Whilst flying at FL180 on the northern hemisphere an aircraft experiences right drift. What effect, if any, will this have on the aircraft's true altitude?

- A) Without knowing the pressure change this question cannot be answered.
- B) It increases.
- C) It remains constant.
- D) It decreases.

68- In the northern hemisphere the gradient wind of a cyclonic pressure distribution is $350^{\circ}/24$, over the sea the surface wind would approximate:

- A) $340^{\circ}/20$
- B) $030^{\circ}/20$
- C) $340^{\circ}/28$
- D) $030^{\circ}/28$

69- The difference between geostrophic wind and gradient wind is caused by:

- A) Curvature of isohypses.
- B) Friction.
- C) Horizontal temperature gradients.
- D) Slope of pressure surfaces.



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70- The geostrophic wind is less than the gradient wind around an anticyclone because the:

- A) Centrifugal force opposes the pressure gradient.
- B) Centrifugal force is added to the pressure gradient.
- C) Effect of Coriolis is added to friction.
- D) Coriolis Effect opposes the centrifugal force.

71- Which statement is true regarding mountain wave?

- A) They are always indicated by the presence of a lenticular clouds.
- B) They are generally stationary over the mountain.
- C) They are sometimes marked by stationary lens-shaped clouds.
- D) They are found on the wind ward side of mountain.

72- Suppose an airport has elevation of 4500 ft assuming a standard temperature dew point laps rate. If the temperature at this airport is 70°F and dew point is 52°F the base of the cloud by lifting process would located approximately?

- A) 8500 MSL.
- B) 4500 AGL.
- C) 4500 MSL.
- D) 8500 AGL.

73- For a given temperature and pressure if humidity increase the density will be:

- A) Remain unchanged.
- B) Increase.
- C) Decrease.
- D) First increase then decreases.

74- In the international standard atmosphere, the temperature at mean sea level is:

- A) 15° C
- B) 10° C
- C) 25° C
- D) 20° C

75- Water vapor is:

- A) Visible as cloud.
- B) Visible as cloud, fog and frost.
- C) An invisible gas.
- D) Invisible liquid.



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76- With increasing temperature, the capability of air to retain humidity will:

- A) Increases.
- B) Remains constant.
- C) Decreases.
- D) First increase then decreases.

77- With increasing temperature, the rate of saturation will be:

- A) Increases.
- B) Remains constant.
- C) Decreases.
- D) First increase then decreases.

78- Super cooled is the term applied to water drops which:

- A) Have formed below the dew point temperature.
- B) Are existing as liquid below 0°C.
- C) Have formed below the wet bulb temperature.
- D) Invisible gas with temperature below 10°C

79- The temperature to which air must be cooled at constant pressure to become saturated is:

- A) Cloud base temperature.
- B) Dew point temperature.
- C) Wet bulb temperature.
- D) Super cool temperature.

80- A temperature inversion indicates a state of the atmosphere, which is:

- A) Absolutely stable.
- B) Absolutely unstable.
- C) Conditionally unstable.
- D) Conditionally stable.

81- On clear night inland, the stability of the lowest layers of the atmosphere:

- A) Will decrease.
- B) Will not change.
- C) Will increase.
- D) First increase then decreases

82- The dry adiabatic lapse rate value is:

- A) 1.5°C/1000 ft.
- B) 1.98°C/1000 ft.
- C) 3°C /1000 ft.
- D) 2.5°C/1000 ft.



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83- Clouds names are classified by:

- A) Rain bearing.
- B) Type of stability.
- C) Composed only of water drops.
- D) Shape of cloud.

84- Which one of the following cloud has lowest cloud base?

- A) Altostratus.
- B) Nimbostratus.
- C) Stratus.
- D) Cirrus.

85- Where you are likely to find the strongest winds close the ground?

- A) At the center of a high-pressure system.
- B) At the center of a low-pressure system.
- C) In the transition zone between two air masses.
- D) Where there is little variation in pressure over a large area during the winter months.

86- The effect of curved isobars on gradient wind speed correction is:

- A) Greater at high latitudes.
- B) Low latitudes.
- C) Less at high latitudes.
- D) No effect.

87- The gradient wind is:

- A) Less than the geostrophic wind around a low.
- B) More than the geostrophic wind around a low.
- C) Less than the geostrophic wind around a high.
- D) None of the above.

88- In an anticyclone in the northern hemisphere, with curved isobars, the speed of the gradient wind:

- A) Is lower than the geostrophic wind.
- B) Equals the cyclostrophic wind.
- C) Depends on Coriolis force only.
- D) Is greater than the geostrophic wind.



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89- The wind speed at an isobaric surface in the northern hemisphere:

- A) Increases with increased inclination of the isobaric surface.
- B) Is greatest when the isobaric surface is horizontal.
- C) Is not influenced by inclination of the isobaric surface.
- D) Decreases with increased inclination of the isobaric surface.

90- How does the geostrophic wind speed change with latitude?

- A) Increase with increasing latitude to a certain latitude.
- B) Decrease with increasing latitude to a certain latitude.
- C) Increase with decreasing latitude.
- D) Latitude does not affect wind force.

91- When the inclination of isobar surfaces are equal, the geostrophic wind velocity depends upon:

- A) Air density.
- B) Latitude.
- C) Temperature.
- D) Centrifugal force.

92- Buys Ballot's law of winds states that in the northern hemisphere standing with your back to the wind, you have:

- A) A low pressure ahead at an angle to your left, and a high pressure behind you at an angle to the right.
- B) A low pressure ahead at an angle to your right, and a high pressure behind you at an angle to the left.
- C) A high pressure ahead at an angle to your right, and a low pressure behind you at an angle to the left.
- D) A high pressure ahead at an angle to your left, and a low pressure behind you at an angle to the right.

93- During periods of undisturbed radiation weather, overland, the:

- A) Wind tends to back from early morning until early afternoon.
- B) Surface wind speed tends to be highest at night.
- C) Angle between isobars and surface wind direction tends to be lowest in the mid afternoon.
- D) Surface wind speed tends to be highest during the mid-afternoon.

94- If altocumulus is seen ahead of the aircraft, this indicates:

- A) Increasing stability.
- B) Increasing instability.
- C) Improving weather to probably cloudless skies.
- D) Cold front is approaching



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95- Thunderstorms are caused by:

- A) Thunder and lightning.
- B) Anvil cumulonimbus.
- C) Instability, humidity, lifting action.
- D) Stable air lift by warm front

96- Frontal thunderstorms are mainly associated with:

- A) Warm front.
- B) Fast moving cold front.
- C) Ridges of high pressure.
- D) Area low pressure

97- If a cumulonimbus has developed a large anvil:

- A) It has reached the beginning of the most active (mature) stage.
- B) It is in the most active (mature) stage.
- C) It has reached the third or dissipating stage.
- D) It has reached the end of the most active (mature) stage.

98- When flying through a turbulent air, increasing speed:

- A) Will enable the storm to be penetrated safely in the shortest time.
- B) Will probably cause the aircraft to suffer a high speed stall.
- C) Will greatly increase the risk of structural failure.
- D) Will decrease stall speed.

99- To minimize the effect of lightning striking an aircraft in flight, the pilot should:

- A) Wear dark glasses and turn the cockpit lighting to maximum.
- B) Turn off all the radios and unnecessary electric.
- C) Engage the auto pilot and relax.
- D) Decent to lower altitude.

100- For radiation fog to form, the requirements are:

- A) Light wind up to 10 knots, high humidity and instability.
- B) Cloudless inland night, high humidity and wind 2 to 8 knots.
- C) Clear sky, calm to 2 knots wind and high humidity.
- D) Clear sky with turbulence.

101- Advection fog forms:

- A) Only over mountain.
- B) Only over sea.
- C) Over land.
- D) Only over valley.



102- When turbulence causes changes in altitude and/or attitude but aircraft control remains positive that should be reported it as:

- A) Light.
- B) Severe.
- C) Moderate.
- D) Heavy

103- Which type of jet stream can be expected to cause the greater turbulence?

- A) A straight jet stream associated with a low-pressure trough.
- B) A curving jet stream associated with a deep low-pressure trough.
- C) A jet stream occurring, during the summer at the lower altitude.
- D) Polar jet stream at mid latitude.

104- A significant wind shear can be associated with:

- A) A surface inversion with calm conditions.
- B) Low pressure area.
- C) Thunderstorms or squall line.
- D) Warm front.

105- The minimum vertical wind shear value critical for probable moderate or greater turbulence is:

- A) 5 knots per 1000 feet.
- B) 6 knots per 1000 feet.
- C) 8 knots per 1000 feet.
- D) 4 knots per 1000 feet.

106- The thickness of stratosphere is approximately:

- A) 20 miles.
- B) Above 18 miles.
- C) 19-22 miles.
- D) Bellow 22 miles.

107- Most of weather phenomena may occur at the:

- A) Troposphere.
- B) Tropopause.
- C) Stratosphere.
- D) All answers are correct.



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108- A thin layer of the atmosphere at the top of the troposphere is called?

- A) Ionosphere.
- B) Tropopause.
- C) Stratosphere.
- D) Haze layer.

109- An elongated area of low pressure is:

- A) Low.
- B) Ridge.
- C) Trough.
- D) Col.

110- When air is heated, its molecules -----, it becomes ----- and ----- than surrounding.

- A) Packed more - denser - heavier.
- B) Packed more - less dense - lighter.
- C) Spread apart - denser - heavier.
- D) Spread apart - less dense - lighter.

111- Connecting lines of equal pressure points is called:

- A) Isocline.
- B) Isobar.
- C) Isotach.
- D) Isotherm.

112- When isobars are ----- the pressure gradient is considered to be ----- and wind speed is ----

- A) Widely apart - weak - low.
- B) Widely apart - strong - low.
- C) Close together - weak - strong.
- D) Close together - strong - low.

113- A ----- gradient tends to produce ----- wind, while a ----- gradient result in ----- wind.

- A) Strong - strong - weak - lighter.
- B) Strong - lighter - weak - strong.
- C) Strong - light - weak - no.
- D) Weak - light - strong - no.

114- What are Trade Winds?

- A) The wind zones towards the Inter Tropical Convergence Zone.
- B) The westerly wind zones.
- C) The polar easterly winds.
- D) Foehn winds in alpine valleys.



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115- In the northern hemisphere with an anti-cyclone pressure system the geostrophic wind at 2000 ft over the sea is $060^\circ/15$. At the same position the surface wind is most likely to be:

- A) $075^\circ/12$
- B) $060^\circ/18$
- C) $060^\circ/12$
- D) $030^\circ/08$

116- Possible mountain wave turbulence should be anticipated in cases where wind speeds of:

- A) 20 kts or greater blow across a mountain ridge, and the air is unstable.
- B) 25 kts or greater blow across a mountain ridge, and the air is stable.
- C) 25 kts or greater blow down a mountain valley, and the air is unstable.
- D) 25 kts or greater blow parallel to a mountain peak, and the air is stable.

117- What jet streams are likely to be crossed during a flight from Stockholm to Rio de Janeiro (23°S) at FL350 in July?

- A) A polar front jet stream followed by a subtropical jet stream and later, a second polar front jet stream.
- B) A subtropical jet stream followed by a polar front jet stream.
- C) A polar front jet stream followed by one or two subtropical jet streams.
- D) One subtropical jet stream.

118- What is the minimum speed for a wind to be classified as a jet stream?

- A) 70 kts
- B) 50 kts
- C) 60 kts
- D) 100 kts

119- In which zone of a jet stream is the strongest CAT to be expected?

- A) About 12000 ft above the core.
- B) The warm air side of the core.
- C) Exactly in the center of the core.
- D) The cold air side of the core.

**120- When air moves from high pressure to low pressure, Coriolis force deflects this air to the ----
--- in the -----**

- A) Right - both hemisphere.
- B) Left - southern hemisphere.
- C) Right - both hemisphere.
- D) Right - northern hemisphere.



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121- Within about ----- of the ground, friction causes by the earth's surface ----- the moving air and -----:

- A) 2500 ft - slow - divert winds from its path along the isobars.
- B) 2000 ft - increase - below winds along the isobars.
- C) 2000 ft - slow - divert winds from its path along the isobars.
- D) 10000 ft - slow - below winds along the isobars.

122- The ----- air flow from the high pressure at 30°N to the ----- area deflect to the ----- and to the southern area deflect to the -----.

- A) Low level - northern - right - left
- B) High level - northern - left - right
- C) Low level - northern - right - right also
- D) High level - low pressure - left - left also

123- When cold dense air spills over mountain and flow down the slope, the descending wind is called:

- A) Katabatic wind.
- B) Fall wind.
- C) Foehn wind.
- D) Gravity wind.

124- When water vapor changes to liquid then ----- take place and its latent heat is -----

- A) Condensation - released.
- B) Sublimation - absorbed.
- C) Evaporation - absorbed.
- D) Condensation - absorbed.

125- If the temperature of a parcel of air ----- it can hold ----- water vapor than before and relative humidity will -----.

- A) Rise - less - decrease.
- B) Drop - more - increase.
- C) Drop - less - decrease.
- D) Rise - more - decrease.

126- Condensation and sublimation are the process that change ----- water vapor into states that are readily -----.

- A) Invisible - seen.
- B) Invisible - drop from clouds.
- C) Visible - drop from clouds.
- D) Visible - seen.



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127- One of the following temperature dew point spread is favorite condition, which fog forms?

- A) 2°F.
- B) 2°C.
- C) 4°F.
- D) B and C are correct.

128- Thunderstorm formation requires following essential condition:

- A) High moisture - Convective lifting - Cumuliform clouds.
- B) Unstable condition - Lifting force - High moisture.
- C) Unstable condition - Cumuliform clouds - High moisture.
- D) Lifting force- High moisture - CB clouds.

129- The lifting action may be provided by several factors such as:

- A) Orographic lifting - Frontal lifting - convective lifting.
- B) Orographic lifting - Radiation lifting - convective lifting.
- C) Orographic lifting - Rising terrain lifting - convective lifting.
- D) Rising terrain lifting - Frontal lifting - Daily heating lifting.

130- When in a thunderstorm the updraft continues to increase up to speed of 6000 ft/min and severe turbulence and most violent weather occurs the thunderstorm is in:

- A) The end of mature stage.
- B) Dissipating stage.
- C) Mature stage.
- D) Cold front thunderstorm.

131- The layer between two air mass is known as:

- A) Cold front.
- B) Front.
- C) Warm front.
- D) Stationary front.

132- A pilot may encounter hail in flight at ----- and even when no hail is reaching the surface.

- A) An especial altitude and within the storm.
- B) All altitude and within the storm.
- C) All altitude and within or outside the storm.
- D) An especial altitude and within or outside the storm.



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133- Some typical characteristic of cold type air mass is:

- A) Unstable condition - Turbulence - Cumuliform clouds and showers precipitation.
- B) Unstable condition - No Turbulence - Stratiform clouds and showers precipitation.
- C) Stable condition - Stratiform clouds - Good visibility.
- D) Rough air - Stratiform clouds - showery and fog weather condition.

134- What is approximate base of the cumulus clouds if the temperature at 2000 ft MSL is 70°F and dew point is 61°F?

- A) 3000 ft AGL.
- B) 4000 ft MSL.
- C) 2000 ft MSL.
- D) 8000 ft AGL.

135- Which weather condition is an example of a non-frontal instability band?

- A) Squall line.
- B) Advection fog.
- C) Front genesis.
- D) Frontal TS.

136- What is a feature of air movement in a high pressure area?

- A) Rapid change in stability.
- B) Ascending from the surface high to lower pressure at higher altitude.
- C) Moving outward from the high at high altitudes and into the high at the surface.
- D) Descending to the surface and then outward.

137- Which type of clouds are indicative of very strong turbulence?

- A) Nimbostratus.
- B) Cirrocumulus.
- C) Standing lenticular.
- D) Altocumulus.

138- Which statement is true concerning the in-flight hazard of hail?

- A) Large hailstone are entirely composed of clear ice.
- B) Tropical and subtropical thunderstorm contain more hail than thunderstorm in northern hemisphere.
- C) Hail may be thrown outward from a storm cloud for several miles.
- D) Hail is usually produced by altocumulus clouds.



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139- Hail is an in-flight hazard is most likely to be associated with:

- A) Cirrocumulus clouds.
- B) Cumulonimbus clouds.
- C) Stratocumulus clouds.
- D) Cumulus clouds.

140- The most severe weather conditions such as heavy hail, destructive winds and tornadoes are generally associated with:

- A) Fast moving warm front.
- B) Squall line and steady state thunderstorms.
- C) Slow moving cold front.
- D) Slow moving warm front.

141- Which of the following is considered to be the most hazardous condition associated with thunderstorm?

- A) Intense rain.
- B) Lighting.
- C) Icing.
- D) Wind shear and turbulence.

142- Which statement is true regarding squall lines?

- A) They are always associated with cold front.
- B) They are non-frontal and often contains sever steady state thunderstorm.
- C) They form slowly but move rapidly.
- D) They are associated with frontal systems only.

143- Air mass thunderstorm most often result from:

- A) Movement of a cold & moist air mass over warm ground with surface heating.
- B) Movement of a warm unstable air mass.
- C) Frontal lifting.
- D) Fast moving cold front.

144- An instability line, which is narrow non frontal line or band of convective activities with fully developed thunderstorm is:

- A) Cold front thunderstorm.
- B) Fast moving cold front thunderstorm.
- C) Squall.
- D) Air mass thunderstorm.



145- All thunderstorm hazards reach their greatest intensity during:

- A) Cumulus stage.
- B) Mature stage.
- C) Dissipating stage.
- D) Development stage.

146- Which of the following is correct?

- A) The atmosphere is composed of about %78 nitrogen, %20 oxygen, %1 ozone and %1 of other gases.
- B) The atmosphere is composed of about %78 nitrogen, %21 oxygen, and %1 of other gases.
- C) The atmosphere is composed of about %78 nitrogen, %20 oxygen, %0.1 water vapor and %9 of other gases.
- D) All answers are correct.

**147- The thickness of troposphere varies; it slopes upward from about ----- at the poles to -----
-- at the equator.**

- A) 20000 ft - 60000 ft
- B) 18000 ft - 54000 ft
- C) 20000 ft - 30000 ft
- D) 50000 ft - 60000 ft

148- While crossing a jet stream at right angles in Western Europe (3000 ft below its core) and OAT is decreasing, what would be the prevailing wind?

- A) A headwind.
- B) Crosswind from the right.
- C) Crosswind from the left.
- D) A tailwind.

149- Which of the following types of jet streams can be observed all year round?

- A) Equatorial jet stream / arctic jet stream.
- B) Equatorial jet stream / polar front jet stream.
- C) Arctic jet stream / subtropical jet stream.
- D) Subtropical jet stream / polar front jet stream.

150- Under which of the following conditions is the most severe CAT likely to be experienced?

- A) A jet stream, with great spacing between the isotherms.
- B) A curved jet stream near a deep trough.
- C) A westerly jet stream at low latitudes in the summer.
- D) A straight jet stream near a low pressure area.



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151- What is the average height of the jet core within a polar front jet stream?

- A) 50000 ft
- B) 20000 ft
- C) 40000 ft
- D) 30000 ft

152- Which area of a polar front jet stream in the northern hemisphere has the highest probability of turbulence?

- A) Looking downstream, the area to the left of the core.
- B) Looking downstream, the area to the right of the core.
- C) In the core of the jet stream.
- D) Above the core in the boundary between warm and cold air.

153- What is the most significant difference between an equatorial jet stream and all the other jet streams?

- A) Horizontal dimension.
- B) Vertical dimension.
- C) Wind direction.
- D) Wind speed.

154- What is the average height of the arctic jet stream core?

- A) 30000 ft
- B) 20000 ft
- C) 40000 ft
- D) 50000 ft

155- Which jet stream blows all year round, over the northern hemisphere?

- A) The arctic jet stream.
- B) The polar night jet stream.
- C) The equatorial jet stream.
- D) The subtropical jet stream.

156- Which jet stream is connected with a surface front system?

- A) The easterly jet stream.
- B) The polar front jet stream.
- C) The subtropical jet stream.
- D) The equatorial jet stream.



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157- An aircraft is flying through the polar front jet stream from south to north, beneath the core. How would the OAT change, in the northern hemisphere, during this portion of the flight?

- A) It first increases, then decreases.
- B) It increases.
- C) It decreases.
- D) It remains constant.

158- During the winter months in mid-latitudes in the northern hemisphere, the polar front jet stream moves toward the:

- A) South and speed decreases.
- B) North and speed decreases.
- C) South and speed increases.
- D) North and speed increases.

159- What is the approximate ratio between height and width for a jet stream cross section?

- A) 1/1
- B) 1/10
- C) 1/1000
- D) 1/100

160- Convection occurs when ----- rises and is replaced by -----.

- A) Warm air - cooler air
- B) Warm air - cool air
- C) Cool air - cooler air
- D) Cool air - warm air

161- Connected equal pressure points with lines drawn on weather charts called:

- A) Pressure.
- B) Isobars.
- C) Pressure gradient.
- D) A & B together are correct.

162- When isobars widely apart:

- A) The gradient is considered to be weak.
- B) The wind flow is strong.
- C) Air flow from the cool less dense air to warm less dense air in a slow speed.
- D) All of above are correct.



163- What is the approximate base of the cumulus clouds if the temperature at 2000 feet MSL is 10°C and the dew point is 1°C?

- A) 3000 feet MSL.
- B) 4000 feet MSL.
- C) 6000 feet MSL.
- D) 5000 feet MSL.

164- If clouds form as a result of very stable, moist air being forced to ascend a mountain slope, the clouds will be

- A) Cirrus type with no vertical development or turbulence.
- B) Cumulus type with considerable vertical development and turbulence.
- C) Stratus type with little vertical development and little or no turbulence.
- D) Stratus type with vertical development and no turbulence.

165- What determines the structure or type of clouds which will form as a result of air being forced to ascend?

- A) The method by which the air is lifted.
- B) The stability of the air before lifting occurs.
- C) The relative humidity of the air after lifting occurs.
- D) The type of pressure area which causes turbulence.

166- Which cloud types would indicate convective turbulence?

- A) Cirrus clouds.
- B) Nimbostratus clouds.
- C) Towering cumulus clouds.
- D) Altostratus

167- Advection fog has drifted over a coastal airport during the day. What may tend to dissipate or lift this fog into low stratus clouds?

- A) Nighttime cooling.
- B) Surface radiation.
- C) Wind 15 knots or stronger.
- D) Wind 5 knot or stronger.

168- A situation most conducive to the formation of advection fog is:

- A) A light breeze push colder air over a water surface.
- B) An air mass moving inland from the coastline during the winter.
- C) A warm, moist air mass settling over a cool surface under no-wind conditions.
- D) A warm, moist air mass settling over a cool surface under calm conditions.



169- In what ways do advection fog, radiation fog, and steam fog differ in their formation or location?

- A) Radiation fog is restricted to land areas; advection fog is most common along coastal areas; steam fog forms over a water surface.
- B) Advection fog deepens as wind speed increases up to 20 knots; steam fog requires calm or very light wind; radiation fog forms when the ground or water cools the air by radiation.
- C) Steam fog forms from moist air moving over a colder surface; advection fog requires cold air over a warmer surface; radiation fog is produced by radiation cooling of the ground.
- D) Advection fog deepens as wind speed decreases up to 5 knots; steam fog requires light wind; radiation fog forms when the ground or water cools the air by radiation.

170- Fog produced by frontal activity is a result of saturation due to :

- A) Nocturnal cooling.
- B) Adiabatic cooling.
- C) Evaporation of precipitation.
- D) Terrestrial lifting.

171- Which in-flight hazard is most commonly associated with warm fronts?

- A) Advection fog.
- B) Radiation fog.
- C) Precipitation-induced fog.
- D) Steam fog.

172- Which feature is associated with the tropopause?

- A) Constant height above the Earth.
- B) Abrupt change in temperature lapse rate.
- C) Absolute upper limit of cloud formation.
- D) Abrupt change in pressure lapse rate.

173- Moisture is added to air by:

- A) Sublimation and condensation.
- B) Evaporation and condensation.
- C) Evaporation and sublimation.
- D) Condensation and melting.

174- What is the reason of ice pellets if encountered at 8000 feet?

- A) Freezing rain at higher altitude.
- B) You are approaching an area of thunderstorms.
- C) You will encounter hail if you continue your flight.
- D) You are approaching an area of cold front.



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175- From which measurement of the atmosphere can stability be determined?

- A) Atmospheric pressure.
- B) The ambient lapse rate.
- C) The dry adiabatic lapse rate.
- D) The standard lapse rate.

176- Which is true regarding actual air temperature and dew point temperature spread? The temperature spread

- A) Decreases as the relative humidity decreases.
- B) Decreases as the relative humidity increases.
- C) Increases as the relative humidity increases.
- D) Increases as the relative humidity unchanged.

177- Which conditions are favorable for the formation of a surface based temperature inversion?

- A) Clear, cool nights with calm or light wind.
- B) Area of unstable air rapidly transferring heat from the surface.
- C) Broad areas of cumulus clouds with smooth, level bases at the same altitude.
- D) Clear, cool nights with strong wind.

178- What minimum distance should exist between intense radar echoes before any attempt is made to fly between these thunderstorms?

- A) 20 miles.
- B) 30 miles.
- C) 40 miles.
- D) 50 miles.

179- The jet stream and associated clear air turbulence can sometimes be visually identified in flight by:

- A) Dust or haze at flight level.
- B) Long streaks of cirrus clouds.
- C) A constant outside air temperature.
- D) Long streaks of CB clouds

180- The strength and location of the jet stream is normally:

- A) Weaker and farther north in the summer.
- B) Stronger and farther north in the winter.
- C) Stronger and farther north in the summer.
- D) Weaker and farther south in the summer



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181- In the Northern Hemisphere, the wind is deflected to the:

- A) Right by Coriolis force.
- B) Right by surface friction.
- C) Left by Coriolis force.
- D) Left by net force.

182- A high pressure area covers part of the Mediterranean Sea and coastal region during the summer. What surface wind direction is likely at an airport at the coast on a sunny afternoon?

- A) Land to sea.
- B) Sea to land.
- C) Variable.
- D) Parallel to the coastline.

183- What is the most frequent wind in valleys, caused by thermal effects?

- A) Mountain wind by day.
- B) Mountain wind by night.
- C) Valley wind by day.
- D) Valley wind by night.

184- At the top of standing waves, in mountainous regions, the cloud most likely to be encountered is:

- A) Altocumulus lenticulars.
- B) Cirrostratus.
- C) Cirrus.
- D) Cumulus.

185- Standing waves are likely when:

- A) Wind speeds are uniform with height.
- B) The atmosphere is uniformly stable.
- C) The wind direction is at 45° to the ridge of the hills.
- D) None of the above.

186- In addition to a stable layer of air over a substantial mountain range, the conditions most favorable to the development of standing waves are:

- A) Significant moisture loss due to precipitation, rapid lowering of the tropopause in the area of the mountain range.
- B) Steep dry adiabatic lapse rate, wind speed increasing and changing direction rapidly with increase in height.
- C) Conditional instability, wind speed constant from a direction parallel to the mountain range.
- D) Wind speed excess of 20 kts at the surface and increasing with height, wind direction perpendicular to the general direction of the range.



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187- Which cloud type may indicate the presence of severe turbulence?

- A) Altocumulus lenticulars.
- B) Stratocumulus.
- C) Cirrocumulus.
- D) Nimbostratus.

188- What degree of turbulence, if any, is likely to be encountered while flying through a cold front in the summer over Central Europe at FL100?

- A) Moderate turbulence in NS cloud.
- B) Severe turbulence in CB cloud.
- C) Light turbulence in CB cloud.
- D) Light turbulence in stratiform clouds.

189- On a clear summer day, turbulence caused by solar heating is most pronounced:

- A) Immediately after sunset.
- B) During the early afternoon.
- C) During early morning hours before sunrise.
- D) About midmorning.

190- A wind speed of 350 kts within a jet stream core should be worldwide regarded as:

- A) Possible but a very rare phenomenon.
- B) Not possible.
- C) A common occurrence.
- D) Not unusual in Polar Regions.

191- Which of the following statements concerning jet streams is correct?

- A) In the southern hemisphere only easterly jet streams occur.
- B) In the northern hemisphere both westerly and easterly jet streams occur.
- C) In the northern hemisphere only westerly jet streams occur.
- D) In the southern hemisphere no jet streams occur.

192- In January, a mean sub-tropical jet appears at:

- A) 30°S
- B) 30°N
- C) 60°S
- D) 50°N

193- A jet stream is:

- A) A band of strong winds only found near thunderstorms.
- B) A broad band of strong winds flattened and tubular in cross-section.
- C) A narrow band of strong winds only found near fronts.
- D) A narrow band of strong winds flattened and tubular in cross-section.



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194- The normal maximum speeds of the polar front jet are in the region of:

- A) 150 kts in January /135 kts in July.
- B) 150 kts in July /135 kts in January.
- C) 150 kts in July / 50 kts in January.
- D) 135 kts in July /135 kts in January.

195- At which height and at what time of the year can an aircraft be affected by the equatorial jet stream?

- A) FL500 from June to August.
- B) FL500 from November to February.
- C) FL400 during the winter in the northern hemisphere.
- D) FL400 during the winter in the southern hemisphere.

196- The easterly jet is a jet stream that occurs:

- A) Only in the winter of the northern hemisphere at approx. 30000 ft.
- B) Only in the summer of the northern hemisphere at approx. 45000 ft.
- C) During the whole year in the southern hemisphere.
- D) During the whole year in the northern hemisphere.

197- Where is the projection of the polar front jet stream on the surface most likely to be found in relation to the cold and warm fronts of a depression?

- A) 300 to 450 NM behind the cold front and 50 to 200 NM ahead of the warm front.
- B) Up to 100 NM either side of the cold front and up to 200 NM either side of the warm front.
- C) Up to 200 NM either side of the cold front and up to 200 NM either side of the warm front.
- D) 50 to 200 NM behind the cold front and 300 to 450 NM ahead of the warm front.

198- The equatorial easterly jet is a jet stream that occurs:

- A) Only in the summer of the northern hemisphere at approx. 45000 ft.
- B) Only in the winter of the northern hemisphere at approx. 30000 ft.
- C) During the whole year in the southern hemisphere.
- D) During the whole year in the northern hemisphere.

199- How would you describe a jet stream?

- A) A zone of wind in the upper troposphere or lower stratosphere with wind forces at 60 knots minimum.
- B) The outflow airstream from a turbine engine.
- C) Any wind force above 64 knots.
- D) A zone of winds in connection with a squall line".



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200- Which phenomenon is often associated with a jet stream?

- A) Icing.
- B) Clear Air Turbulence (CAT).
- C) Wind shear.
- D) Both icing and Clear Air Turbulence (CAT).

201- Severe turbulence is associated with a jet stream:

- A) At the low pressure side.
- B) At the high pressure side.
- C) In the core of the jet stream.
- D) Underneath the core of the jet stream.

202- The approximate position of the polar front jet stream is:

- A) Approx. 60°N.
- B) Approx. 30°N.
- C) Approx. 80°N.
- D) Over the north polar area.

203- Which jet stream is more or less found continuously around the Earth?

- A) The polar front jet stream.
- B) The arctic front jet stream.
- C) The subtropical jet stream.
- D) The equatorial jet stream.

204- A parcel of unsaturated air is lifted to just below the condensation level and then returned to its original level. What is the final temperature of the parcel of air?

- A) Lower than the starting temperature.
- B) Higher than the starting temperature.
- C) The same as the starting temperature.
- D) It depends upon the QFE.

205- Which of the following statements is true?

- A) Gale has an average speed of 33 kts or more.
- B) Gust is a squall which lasts for several minutes.
- C) The more stable the atmosphere, the more turbulence.
- D) The more stable the atmosphere, the less turbulence.



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206- Thermal turbulence is caused by:

- A) Wing-tip vortices.
- B) Vertical movements of air due to convection.
- C) Movement of air over mountainous terrain.
- D) Movement of air over smooth ground surface.

207- Fair weather cumulus often is an indication of:

- A) A high risk of thunderstorms.
- B) Poor visibility at surface.
- C) Smooth flying conditions below the cloud level.
- D) Turbulence at and below them.

208- The amount of water vapor which air can hold largely depends on:

- A) Relative humidity.
- B) Air temperature.
- C) Stability of air.
- D) Dew point.

209- The average slope of a warm front is approximately:

- A) 1:150
- B) 1:250
- C) 1:500
- D) 1:80

210- The dew point temperature:

- A) Cannot be equal to the air temperature.
- B) Is always lower than the air temperature.
- C) Is always higher than the air temperature.
- D) Can be equal to the air temperature.

211- Relative humidity:

- A) Is higher in cool air than in warm air.
- B) Is higher in warm air than in cool air.
- C) Increases if the air is cooled whilst maintaining the vapor pressure constant.
- D) Decreases if the air is cooled whilst maintaining the vapor pressure constant.

212- Relative humidity depends on:

- A) Temperature of the air only.
- B) Pressure of the air only.
- C) Moisture content of the air only.
- D) Moisture content and temperature of the air.



213- Which of the following statements is true of the dew point of an air mass?

- A) It can be used to estimate the air mass's relative humidity even if the air temperature is unknown.
- B) It can be higher than the temperature of the air mass.
- C) It can be used together with the air pressure to estimate the air mass's relative humidity.
- D) It can only be equal to, or lower, than the temperature of the air mass.

214- During the late afternoon an air temperature of +12°C and a dew point of +5°C were measured. What temperature change must occur during the night in order to induce saturation?

- A) It must decrease to +6 °C.
- B) It must decrease by 5°C.
- C) It must decrease to +5°C.
- D) It must decrease to +7°C.

215- Dew point is defined as:

- A) The temperature below which the change of state in a given volume of air will result in the absorption of latent heat.
- B) The lowest temperature at which evaporation will occur for a given pressure.
- C) The lowest temperature to which air must be cooled in order to reduce the relative humidity.
- D) The temperature to which moist air must be cooled to become saturated at a given pressure.

216- When a given mass of air descends, what effect will it have on relative humidity?

- A) It increases up to 100%, then remains stable.
- B) It increases.
- C) It remains constant.
- D) It decreases.

217- The difference between temperature and dew point is greater in:

- A) Air with low temperature.
- B) Moist air.
- C) Air with high temperature and high moisture.
- D) Dry air.

218- The difference between air temperature and dew point temperature is popularly called the "spread". As spread increases, relative humidity:

- A) Increases.
- B) Decreases.
- C) Stays the same.
- D) First decreases and then increases.



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219- As a parcel of air cools, its ability to hold water vapor:

- A) Decreases.
- B) Increases.
- C) Remains unaltered.
- D) Depends, whether the parcel is rising or no.

220- Moist air is:

- A) Denser than dry air.
- B) Warmer than dry air.
- C) Less dense than dry air.
- D) Colder than dry air.

221- Where is the usual location of a thermal low?

- A) Over the arctic region.
- B) Over the polar region.
- C) Over the surface of a dry, sunny region.
- D) Over the surface of a humid, cold region.

222- The temperature at which a parcel of air becomes saturated if it cools is called:

- A) Dew point temperature.
- B) Saturation temperature.
- C) Condensation temperature.
- D) Freezing temperature.

223- The process by which water vapor is transformed directly into ice is known as:

- A) Super cooling.
- B) Depositing.
- C) Super saturation.
- D) Radiation cooling.

224- In which of the following changes of state is latent heat released?

- A) Liquid to gas.
- B) Solid to liquid.
- C) Solid to gas.
- D) Gas to liquid.

225- When water evaporates into unsaturated air:

- A) Relative humidity is decreased.
- B) Heat is released.
- C) Relative humidity is not changed.
- D) Heat is absorbed.



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226- A super cooled droplet is:

- A) A water droplet that is mainly frozen.
- B) A droplet still in liquid state at a temperature below freezing.
- C) A small particle of water at a temperature below -50°C .
- D) A water droplet that has been frozen during its descent.

227- Super cooled droplets can be encountered:

- A) Only in winter at high altitude.
- B) In winter only in high clouds.
- C) Only in winter above 10000 ft.
- D) At any time of the year.

228- Clouds, fog or dew will always be formed when:

- A) Relative humidity reaches 98%.
- B) Water vapor is present.
- C) Water vapor condenses.
- D) Temperature and dew point are nearly equal.

229- How are high level condensation trails formed that are to be found occasionally behind jet aircraft?

- A) Only through unburnt fuel in the exhaust gases.
- B) Through a decrease in pressure, and the associated adiabatic drop in temperature at the wing tips while flying through relatively warm but humid air.
- C) Through water vapor released during fuel combustion.
- D) In conditions of low humidity, through the particles of soot contained in the exhaust gases.

230- Evaporation is the change of:

- A) Liquid water to water vapor.
- B) Water vapor to ice.
- C) Invisible water vapor to liquid water.
- D) Ice directly to water vapor.

231- When water vapor condenses into water droplets, there is a:

- A) Release of heat energy that increases density of the surrounding air.
- B) Sublimation.
- C) Release of heat energy that makes the surrounding air warmer.
- D) None.



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232- What is sublimation?

- A) The change of state from ice to water.
- B) The change of state from water to water vapor.
- C) The change of state from water vapor to water.
- D) The change of state from ice to water vapor.

233- What is freezing?

- A) The change of state from ice to water.
- B) The change of state from water to water vapor.
- C) The change of state from water vapor to water.
- D) The change of state from water to ice.

234- A layer can be:

- A) Unstable for unsaturated air and conditionally unstable.
- B) Stable for saturated air and unstable for unsaturated air.
- C) Unstable for unsaturated air and neutral for saturated air.
- D) Stable for unsaturated air and unstable for saturated air.

235- Absolute instability exists whenever the environmental lapse rate:

- A) Exceeds the saturated adiabatic lapse rate.
- B) Exceeds the dry adiabatic lapse rate.
- C) Is less than the saturated adiabatic lapse rate.
- D) Is between the dry and saturated adiabatic lapse rate.

236- An inversion is a layer of air which is:

- A) Absolutely unstable.
- B) Absolutely stable.
- C) Conditionally unstable.
- D) Conditionally stable.

237- What is the dry adiabatic lapse rate per 1000 ft?

- A) 1.5°C
- B) 2.0°C
- C) 3.0°C
- D) 3.5°C



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238- If the surface temperature is 15°C , then the temperature at 10000 ft in a current of ascending unsaturated air is:

- A) 5°C
- B) 0°C
- C) -15°C
- D) -5°C

239- A sample of moist but unsaturated air may become saturated by:

- A) Expanding it adiabatically.
- B) Raising the temperature.
- C) Lowering the pressure, keeping temperature constant.
- D) Compressing it adiabatically.

240- The decrease in temperature, per 100 meters in an unsaturated rising parcel of air is:

- A) 0.65°C
- B) 2°C
- C) 1°C
- D) 0.5°C

241- The rate of cooling of ascending saturated air is less than the rate of cooling of ascending unsaturated air because:

- A) Water vapor absorbs the incoming heat from the sun.
- B) Moist air is heavier than dry air.
- C) Water vapor does not cool as rapidly as dry air.
- D) Heat is released during the condensation process.

242- If a saturated air mass descends down slope its temperature increases at:

- A) The same rate as if the air mass were dry.
- B) A lower rate than in dry air, as evaporation absorbs heat.
- C) A lower rate than in dry air, as condensation gives out heat.
- D) A higher rate than in dry air, as it gives up latent evaporation heat.

243- Which of the following statements concerning the lifting of a parcel of air is correct?

- A) Unsaturated parcels cool less rapidly than saturated parcels.
- B) Unsaturated parcels cool more rapidly than saturated parcels.
- C) Unsaturated parcels cool at a rate of $0.65^{\circ}\text{C}/100\text{ m}$.
- D) Saturated parcels always cool at a rate of $0.65^{\circ}\text{C}/100\text{ m}$.



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244- Which one of the following precipitation types gives the most severe icing?

- A) Snowfall.
- B) Mixed rain and snow.
- C) Freezing rain.
- D) Ice pellets.

245- The environmental lapse rate in an actual atmosphere:

- A) Has a fixed value of $2\text{ }^{\circ}\text{C}/1000\text{ ft}$.
- B) Has a fixed value of $1\text{ }^{\circ}\text{C}/100\text{ m}$.
- C) Has a fixed value of $0.65\text{ }^{\circ}\text{C}/100\text{ m}$.
- D) Varies with time.

246- Which of the following is a common result of subsidence?

- A) Clear air turbulence at higher altitudes.
- B) CB clouds and thunderstorms over a large area.
- C) Wide spread NS and AS clouds and intense precipitation.
- D) An inversion over a large area with haze, mist.

247- An air mass is called stable when:

- A) The vertical motion of rising air tends to become weaker and disappears.
- B) The temperature in a given air mass decreases rapidly with height.
- C) The pressure in a given area is constant.
- D) The environmental lapse rate is high, with little vertical motion of air currents.

248- A layer in which the temperature increases with height is:

- A) Conditionally unstable.
- B) Absolutely unstable.
- C) Absolutely stable.
- D) Neutral.

249- The height of the lifting condensation level is determined by:

- A) Temperature and dew point at the surface.
- B) Temperature at surface and air pressure.
- C) Wind and dew point at the surface.
- D) Wet adiabatic lapse rate and dew point at the surface.

250- In still air the temperature decreases at an average of $1.2\text{ }^{\circ}\text{C}$ per 100 m with increase in altitude. This temperature change is called:

- A) Environmental lapse rate.
- B) Saturated adiabatic lapse rate.
- C) Dry adiabatic lapse rate.
- D) Normal lapse rate.



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251- An air mass is stable when:

- A) Lifted air returns to its original level.
- B) Temperature in a given area drops off very rapidly with increasing altitude.
- C) Pressure is constant.
- D) The lapse rate is 1 °C per 100 m.

252- For both saturated and unsaturated air instability will occur when the:

- A) Environmental lapse rate is greater than both dry adiabatic lapse rate and saturated adiabatic lapse rate.
- B) Environmental lapse rate is greater than saturated adiabatic lapse rate but less than dry adiabatic lapse rate.
- C) Environmental lapse rate is less than both dry adiabatic lapse rate and saturated adiabatic lapse rate.
- D) Dry adiabatic lapse rate is less than saturated adiabatic lapse rate but greater than environmental lapse rate. When the ELR is greater than 3 °C/1000 ft the air is absolute stable

253- In the lower levels of the atmosphere when the environmental lapse rate is greater than saturated adiabatic lapse rate but less than dry adiabatic lapse rate, the air mass is described as being:

- A) Conditionally unstable.
- B) Stable.
- C) Unstable.
- D) Absolutely unstable.

254- What process in an air mass leads to the creation of wide spread NS, AS and ST Cloud coverage?

- A) Convection process.
- B) Sinking.
- C) Lifting radiation.
- D) Radiation.

255- What type of cloud is being described? A generally grey cloud layer with fairly uniform base and uniform appearance, which may give drizzle or snow grains. When the sun is visible through the cloud, the outline is clearly discernible. Sometimes it appears in the form of ragged patches.

- A) Stratus
- B) Altostratus
- C) Nimbostratus
- D) Cirrostratus



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256- Strongly developed cumulus clouds are an indication of:

- A) The presence of a low level inversion.
- B) Instability in the atmosphere.
- C) The presence of warm air aloft.
- D) Poor surface visibility.

257- The presence of altocumulus lenticulars is an indication of the:

- A) Presence of valley winds.
- B) Risk of orographic thunderstorms.
- C) Development of thermal lows.
- D) Presence of mountain waves.

258- Altostratus (AS) and nimbostratus (NS) are easily condensed. How do you distinguish between them?

- A) The precipitation from AS, if any, is light and the cloud is thinner than for NS.
- B) Precipitation falls from AS but not from NS.
- C) Steady precipitation from AS.
- D) The sun can be seen through NS.

259- The presence of altocumulus lenticulars is a sign of:

- A) Severe instability.
- B) Anabatic winds.
- C) Katabatic winds.
- D) Lee waves.

260- A cumulus congestus is:

- A) A remnant of a CB.
- B) A cumulus that is of great vertical extent.
- C) A cumulus with little vertical development.
- D) A cumulus that only occurs in association with the ITCZ.

261- What weather condition would you expect at a squall line?

- A) Strong steady rain.
- B) Thunderstorms.
- C) Fog.
- D) Strong whirlwinds reaching up to higher levels.



262- In an air mass with no clouds the surface temperature is 15°C and the temperature at 1000 m AGL is 13°C. This layer of air is:

- A) Unstable.
- B) Stable.
- C) A layer of heavy turbulence.
- D) Conditionally unstable.

263- A moist but unsaturated parcel of air becomes saturated by:

- A) Lowering the parcel to a lower level.
- B) Lifting the parcel to a higher level.
- C) Moving the parcel to an area with lower pressure and equal temperature.
- D) Moving the parcel to an area with higher pressure and equal temperature.

264- During an adiabatic process heat is:

- A) Neither added nor lost.
- B) Added.
- C) Lost.
- D) Added but the result is an overall loss.

265- The dry adiabatic lapse rate:

- A) Has a constant fixed value.
- B) Is greater in summer than in winter.
- C) Is greater during the night than during the day.
- D) Has a variable value.

266- What is the final temperature of unsaturated surface air at 12°C, which rises to 6000 ft?

- A) +30 °C
- B) +18 °C
- C) -30 °C
- D) -6 °C

267- An ELR of 2.9°C per 1000 ft, is by definition:

- A) Stable.
- B) Conditionally stable.
- C) Unstable.
- D) Conditionally unstable.



268- A layer is conditionally unstable if the air:

- A) Becomes stable by lifting it.
- B) Is stable for saturated air and unstable for dry air.
- C) Is unstable for saturated air and stable for dry air.
- D) Is unstable for saturated air as well as for dry air.

269- Absolute instability in the atmosphere will occur when the environmental lapse rate is:

- A) Greater than both saturated adiabatic lapse rate and dry adiabatic lapse rate.
- B) Less than saturated adiabatic lapse rate.
- C) Less than both saturated adiabatic lapse rate and dry adiabatic lapse rate.
- D) Greater than saturated adiabatic lapse rate but less than dry adiabatic lapse rate.

270- An unstable air mass is forced to ascend a mountain slope. What type of clouds can be expected?

- A) Stratiform clouds with a temperature inversion.
- B) Stratiform clouds with considerable turbulence.
- C) Layer-like clouds with little vertical development.
- D) Clouds with considerable vertical development and associated turbulence.

271- In the lower levels of the atmosphere when the environmental lapse rate is greater than saturated adiabatic lapse rate but less than dry adiabatic lapse rate, the air mass is described as being:

- A) Conditionally unstable.
- B) Stable.
- C) Unstable.
- D) Absolutely unstable.

272- The stability in a layer increases by advection of:

- A) Cold air in the lower part.
- B) Warm air in the lower part.
- C) Dry air in the upper part.
- D) Moist air in the lower part.

273- Which statement is correct for an absolutely unstable atmosphere?

- A) Visibility is good between showers.
- B) The environmental lapse rate is less than $1\text{ }^{\circ}\text{C} / 1100\text{ m}$.
- C) Clouds are mainly of the Stratiform type.
- D) The dry adiabatic lapse rate is more than $1\text{ }^{\circ}\text{C} / 1100\text{ m}$.



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274- Unsaturated air moving downwards is heated at a rate of:

- A) Dry adiabatic.
- B) Environmental lapse rate.
- C) Saturated adiabatic.
- D) Ambient lapse rate.

275- The weather is clear and the temperature decreases uniformly and rapidly as you climb (approx. 3.2 °C per 1000 ft), you have an indication of:

- A) Stable air.
- B) Unstable air.
- C) Saturation.
- D) Sublimation.

276- Which term applies when the temperature of the air changes by compression or expansion with no heat added or removed?

- A) Katabatic
- B) Advection
- C) Adiabatic
- D) Atmospheric

277- From which of the following pieces of information can the stability of the atmosphere be derived?

- A) Dry adiabatic lapse rate.
- B) Pressure at the surface.
- C) Surface temperature.
- D) Environmental lapse rate.

278- Which thunderstorms are the more difficult to forecast and detect?

- A) Squall line thunderstorms.
- B) Air mass thunderstorms.
- C) Frontal thunderstorms.
- D) Cumulus thunderstorms because they are smaller.

279- Which statement is true for the lifting of an air parcel?

- A) Unsaturated parcels cool more rapidly than saturated.
- B) Saturated parcels cool more rapidly than unsaturated.
- C) An air parcel always cools at the dry adiabatic lapse rate.
- D) A stable air mass must be present.



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280- Which of the following is a cause of stratus forming over flat land?

- A) Radiation during the night from the Earth surface in moderate wind.
- B) Unstable air.
- C) Convection during the day.
- D) The release of latent heat.

281- What process in an air mass leads to the creation of wide spread NS, AS and ST Cloud coverage?

- A) Convection process.
- B) Sinking.
- C) Lifting.
- D) Radiation.

282- Which of the following clouds are classified as medium level clouds in temperate regions?

- A) CI, CC.
- B) SC, NS.
- C) AS, AC.
- D) CS, ST.

283- Which of the following types of clouds are evidence of unstable air conditions?

- A) ST, CS
- B) CU, CB.
- C) SC, NS.
- D) CI, SC.

284- A cumulonimbus cloud at mid-latitudes in summer contains:

- A) Only water droplets.
- B) Ice crystals, water droplets and super cooled water droplets.
- C) Only ice crystals.
- D) Ice crystals and water droplets but never super cooled water droplets.

285- Which of the following cloud types is found at high levels?

- A) SC
- B) CI
- C) AS
- D) CU



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286- Clouds, classified as being low level are considered to have bases from:

- A) 500 to 1000 ft.
- B) 1000 to 2000 ft.
- C) The surface to 6500 ft.
- D) 100 to 200 ft.

287- Which of the following types of cloud can extend over the low, medium and high cloud levels?

- A) CB
- B) AC
- C) ST
- D) CI

288- Which of the following clouds may extend into more than one layer?

- A) Stratus
- B) Nimbostratus
- C) Altocumulus
- D) Cirrus

289- A layer of stratus is most likely to be dispersed by:

- A) Adiabatic cooling due to subsidence.
- B) Absorption of long waved solar radiation in the stratus layer.
- C) The release of latent heat due to precipitation.
- D) Insolation resulting in the lifting of the condensation level.

290- About ten identical clouds are in the sky, well isolated from one another, dense, with well-defined contours developing vertically in a cauliflower shape. The side of these clouds lit by the sun is bright white. Their base, relatively dark, is essentially horizontal and at FL030, and their tops at FL150. These clouds are:

- A) Altocumulus Castellanus.
- B) Broken cumulus humilis.
- C) Towering cumulus.
- D) Stratocumulus.

291- After a clear night cumuliform clouds are formed in the morning. Why can the base of these clouds become higher during the day?

- A) Because the difference between the temperature and the dew point temperature at the initial condensation level becomes smaller.
- B) The wind speed is increasing, because the cold air mass changes into a warm air mass.
- C) Because the stability increases.
- D) Because the surface temperature increases.



292- Which of the following phenomena is least likely to lead the formation of a cumulonimbus with thunderstorm?

- A) Convection.
- B) Ground radiation.
- C) Convergence.
- D) Orographic lift.

293- What is the average vertical extent of radiation fog?

- A) 2000 ft
- B) 500 ft
- C) 5000 ft
- D) 10000 ft

294- Frontal fog is most likely to occur:

- A) In winter in the early morning.
- B) In rear of a warm front.
- C) In summer in the early morning.
- D) In advance of a warm front.

295- When does frontal fog also known as mixing fog occur?

- A) When very humid warm air meets with dry cold air.
- B) When very humid warm air meets with very humid cold.
- C) When very humid cold air meets with dry warm air.
- D) When very dry cold air meets with very dry warm air.

296- Freezing fog consists of:

- A) Frozen water droplets.
- B) Super cooled water droplets.
- C) Frozen minute snow flakes.
- D) Ice crystals.

297- Which of the following is most likely to lead to the formation of radiation fog?

- A) Dry, warm air passing over warm ground.
- B) Heat loss from the ground on clear nights.
- C) The passage of fronts.
- D) Cold air passing over warm ground.

298- Conditions favorable for the development of radiation fog (FG) are:

- A) High relative humidity, no cloud.
- B) High relative humidity, little or no cloud.
- C) High relative humidity, little or no cloud, a strong sea breeze.
- D) High relative humidity, little or no cloud, light wind.



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299- Which of the following statements is true?

- A) Radiation fog only forms on a clear night with no wind.
- B) Radiation fog only forms in valleys (the katabatic effect).
- C) Radiation fog only forms when the air is very dry and there is an inversion.
- D) Radiation fog cannot form over the sea.

300- Advection fog:

- A) Is formed by advection.
- B) Can form a persist with moderate or even strong wind.
- C) Is cleared by change of air mass or less commonly by an increase in wind strength.
- D) All answers are correct.

301- Advection of very cold air over a warm sea current can cause:

- A) Frontal fog.
- B) Advection fog.
- C) No fog at all.
- D) Steaming fog.

302- As a result of diurnal variation radiation fog is lifted and a cloud cover is formed. Which statement is true?

- A) Layers of altocumulus will develop caused by increasing wind speed.
- B) Low stratus will develop caused by radiation in combination with low geotropic wind speed
- C) Low stratus will develop caused by increasing wind speed.
- D) Stratus will develop caused by insulation.

303- Frontal fog can be formed by:

- A) Cooling at night.
- B) Condensation of air saturated by adiabatic cooling.
- C) Evaporation of moisture at the surface.
- D) Warming at day.

304- Which statement is correct?

- A) Fog can be super cooled and can also contain ice crystals.
- B) Mist and haze consist of water droplets.
- C) Fog and haze do not occur in the tropics.
- D) Mist and haze only differ by different values of visibility.



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305- What can be said about the formation of haze?

- A) Dust particles are trapped below an inversion.
- B) The air is very cold and thus the relative humidity increases.
- C) A strong lifting action in the atmosphere is necessary.
- D) A frontal system is the cause.

306- An autumn day with rain showers and terminated by evening clear sky will be followed in the next morning by:

- A) Advection fog.
- B) Radiation fog.
- C) Orographic fog.
- D) Frontal fog.

307- Fog which reaches only 2 meter above ground or 10 meters above the sea is called:

- A) Smog.
- B) Mist.
- C) Drifting fog.
- D) Shallow fog.

308- Freezing rain occurs when:

- A) Snow falls into an above-freezing layer of air.
- B) Ice pellets melt.
- C) Water vapour first turns into water droplets.
- D) Rain falls into a layer of air with a temperature below 0°C.

309- The widest precipitation zone occurs usually:

- A) Ahead of a warm front.
- B) Ahead of a cold front.
- C) In rear of a cold front.
- D) In rear of a warm front

310- Which of the following cloud is classified as low level cloud?

- A) ST
- B) CS
- C) AS
- D) CC

311- Which types of clouds are typical evidence of stable air conditions?

- A) ST, AS.
- B) CU, CB.
- C) NS, CU.
- D) CB, CC.



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312- Convective clouds are formed:

- A) In stable atmosphere.
- B) In unstable atmosphere.
- C) In summer during the day only.
- D) In mid-latitudes only.

313- What is the main composition of clouds classified as high level clouds?

- A) Super cooled water droplets.
- B) Ice crystals.
- C) Water droplets.
- D) Water vapor.

314- What are the characteristics of cumuliform clouds?

- A) Large water droplets, stability, no turbulence, showers and mainly rime ice.
- B) Small water droplets, stability, no turbulence and extensive areas of rain.
- C) Large water droplets, instability, turbulence, showers and mainly clear ice.
- D) Small water droplets, instability, turbulence, extensive areas of rain and rime ice.

315- Cumuliform clouds are formed as a result of unstable air mass being lifted, most typically by convection. The flying conditions in cumuliform clouds typically include:

- A) Icing in the clouds
- B) Precipitation in the form of showers (large water droplets)
- C) Turbulence inside the cloud and frequently also below the cloud base
- D) All answers are correct

316- In cumuliform clouds with extensive vertical development (TCU, CB) we can expect: severe turbulence and icing:

- A) Electrical discharges (thunderstorms)
- B) Gusting surface winds
- C) Up and down drafts in and around the cloud
- D) All answers are correct

317- Cumulus clouds are an indication for:

- A) Stability.
- B) Up and down draughts.
- C) The approach of a cold front.
- D) The approach of a warm front.



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318- The presence of altocumulus Castellanos indicates:

- A) Stability in the higher troposphere.
- B) Strong convection at low height.
- C) Instability in the middle troposphere.
- D) Subsidence in a large part of the troposphere.

319- Which of the following cloud types can project up into the stratosphere?

- A) Cumulonimbus.
- B) Cirrostratus.
- C) Altocumulus.
- D) Altostratus.

320- Lenticular clouds in mountainous areas indicate:

- A) Unstable air.
- B) Turbulence.
- C) An inversion.
- D) Light variable winds.

321- The presence of lenticular cloud is an indication of:

- A) Jet streams.
- B) Mountain waves.
- C) Stratospheric inversions.
- D) Areas of high level clear air turbulence.

322- Stratiform clouds indicate stable air. Flight generally will be:

- A) Rough with good visibility.
- B) Smooth with low ceiling and visibility.
- C) Smooth with good visibility.
- D) Smooth with moderate turbulence and good visibility

323- The family of medium clouds include altostratus, altocumulus and nimbostratus. In moderate latitudes their height of base ranges from:

- A) 3000 to 5000 feet.
- B) 2000 to 10000 feet.
- C) 2000 to 12000 feet.
- D) 6500 to 23000 feet.

324- State the four families of clouds:

- A) High, medium and low clouds.
- B) High and medium clouds, and clouds with extensive vertical development.
- C) Heap clouds, stratified clouds, layered clouds and nimbus clouds.
- D) High, medium and low clouds, and clouds with extensive vertical development.



325- Given a surface temperature of +10 °C, and a dew point of +5 °C, at what height might you expect cumulus clouds to form?

- A) 2000 ft
- B) 4000 ft
- C) 1000 ft
- D) 3000 ft

326- If a stable air mass is forced to rise, what type of cloud is most likely?

- A) CU
- B) NS
- C) TCU
- D) CB

327- What will be the classification of high level clouds and where will their bases be situated?

- A) Above 14000 ft, Nimbus.
- B) Above 16500 ft, Cumuliform.
- C) Above 16500 ft, Cirriform.
- D) Above 7000 ft, Cumuliform.

328- What is the primary factor that determines the structure or type of clouds which will form as a result of air being forced to ascend?

- A) The stability of the air before lifting occurs.
- B) The method by which air is lifted.
- C) The relative humidity of the air after lifting occurs.
- D) The atmospheric pressure lapse rate.

329- What conditions can you generally expect with fair weather cumulus clouds?

- A) Turbulence at and below the cloud level.
- B) Smooth flight below the cloud level.
- C) Continuous rain.
- D) Turbulence in and above the clouds up to approximately FL250.

330- Which precipitation type generally has the greatest impact on visibility?

- A) Heavy rain.
- B) Drizzle.
- C) Hail.
- D) Snow.



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331- What is drizzle?

- A) Small water droplets of 0.2 to 0.5 mm in diameter.
- B) Water droplets of more than 0.5 mm in diameter.
- C) Precipitation which forms mostly in CB and CU clouds
- D) Typical precipitation, when NS clouds are present.

332- Which precipitation type normally indicates freezing rain at some altitude above the ground?

- A) Snow.
- B) Hail.
- C) Ice pellets.
- D) Ice crystals.

333- When is heavy precipitation unlikely?

- A) In summer, with SC and AC clouds.
- B) In summer, with CB and CU clouds.
- C) In spring and autumn, with NS and CB clouds.
- D) In winter, with CB clouds.

334- In which air mass are extremely low temperatures encountered?

- A) Arctic maritime air.
- B) Polar maritime air.
- C) Tropical continental air.
- D) Polar continental air.

335- Which of these phenomena usually forms in the transition zone between two air masses?

- A) An unstable low pressure.
- B) Radiation fog.
- C) A frontal low pressure.
- D) A ridge of high pressure.

336- Air masses which are being cooled from below are often characterized by:

- A) Fog, poor visibility and layered clouds.
- B) Strong winds, cumulus clouds, good visibility.
- C) Uniform temperature, good visibility.
- D) Continuous rain and freezing temperatures.

337- Which of the following is typical for the passage of a cold front in the summer?

- A) Rapid increase in temperature once the front has
- B) Mainly layered clouds.
- C) Rapid drop in pressure once the front has passed.
- D) Mainly towering clouds.



338- Where is the coldest air to be found, in an occlusion with Cold front characteristics?

- A) Ahead of the front.
- B) Behind the front.
- C) At the surface position of the front.
- D) At the junction of the occlusion.

339- What types of cloud will you meet flying towards a warm front?

- A) Extensive areas of fog. At some 100 km from the front NS begin.
- B) At some 800 km CS, later AS, and at some 300 km NS until the front.
- C) At some 500 km AS, later CS and at some 80 km before the front CB.
- D) At some 500 km from the front, groups of CB, later at some 250 km thickening AS.

340- During a cross-country flight at FL050, you observe the following sequence of clouds: nimbostratus, altostratus, cirrostratus, cirrus. Which of the following are you most likely to encounter?

- A) Strong, gusty winds.
- B) Decreasing temperatures.
- C) A strong downdraught.
- D) Increasing temperatures.

341- In a polar front depression, an occlusion is called a warm which occlusion when the cold air

- A) Behind is less cold than the cold air in front, with the warm air at a high altitude.
- B) In front of the surface position of front is only at a high altitude.
- C) Behind is colder than the cold air in front.
- D) Behind is colder than the cold air in front with the warm air being at a high altitude.

342- What will be the effect on the reading of an altimeter of an aircraft parked on the ground as an active cold front is approach and then passing?

- A) It will first increase then decrease
- B) It will remain unchanged
- C) It will first decrease then increase
- D) Will fluctuate up and down by about ± 50 feet

343- The average slope of a cold front is in the order of:

- A) 1:150.
- B) 1:250.
- C) 1:500.
- D) 1:80.



344- Which one of the following alternatives indicates how an occluded front is generated?

- A) Warm air supersedes cold air.
- B) Cold air wedges under warm air.
- C) A cold front overtakes a warm front and the warm air between the fronts is lifted.
- D) A cold front is halted and becomes almost stationary.

345- When flying through a cold front from the warm air side in the summer the following flying weather may be expected:

- A) Towering clouds with showery precipitation.
- B) Horizontally extended clouds with drizzle.
- C) Horizontally extended clouds with even tops and bases.
- D) Towering clouds without turbulence.

346- When a cold front has passed over a meteorological station it will result in:

- A) A steady fall in pressure and a backing of the surface wind.
- B) A steady rise in pressure and a veering of the surface wind.
- C) A steady fall in pressure and a veering of the surface wind.
- D) A steady rise in pressure and a backing of the surface wind.

347- Which of the following are low level clouds?

- A) AS, AC.
- B) ST, SC.
- C) CI, ST.
- D) NS, CI.

348- Which of the following are high level cloud? State the most complete answer:

- A) AS, AC.
- B) ST, NS.
- C) CI, CC.
- D) NS, CI.

349- Flying conditions associated with cumulonimbus (CB) at summer time are:

- A) Hazy weather combined with drizzle and turbulence.
- B) Good visibility, intervals of fine weather and little turbulence.
- C) Bad visibility, continuous rain and little turbulence.
- D) Bad visibility in showers and pronounced turbulence.

350- The type of cloud formed when warming from below:

- A) Stratus type.
- B) Cumulus type.
- C) Stratocumulus type.
- D) Nimbostratus type.



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351- Which of the following conditions is most likely to lead to the formation of advection fog?

- A) Moist cold air moving over a warm surface.
- B) Moist warm air moving over a cold surface.
- C) Dry warm air moving over a cold surface.
- D) Dry cold air moving over a warm surface.

352- Which of the following circumstances most favor the development of radiation fog?

- A) Warm moist air at the windward side of a mountain.
- B) Moist air over land during clear night with little wind.
- C) Maritime tropical air flowing over cold sea.
- D) Advection of very cold air over much warmer sea.

353- The range of wind speed in which radiation fog is most likely to form is:

- A) Above 15 kts.
- B) Between 10 and 15 kts.
- C) Between 5 and 10 kts.
- D) Below 5 kts.

354- Which of the following statements is true concerning advection fog?

- A) It forms slowly and disappears rapidly.
- B) It forms at night or the early morning.
- C) It forms when unstable air is cooled adiabatically.
- D) It can be formed suddenly by day or night.

355- The morning following a clear, calm night when the temperature has dropped to the dew point, is likely to produce:

- A) A cold front.
- B) Radiation fog.
- C) Advection fog.
- D) Good clear weather.

356- When the temperature and dew point are less than one degree apart the weather conditions are most likely to be:

- A) Unlimited visibility.
- B) Clear and cool.
- C) High scattered clouds.
- D) Fog or low cloud.



357- Which of the following is most likely to lead to the dissipation of radiation fog?

- A) A buildup of a high pressure area resulting in adiabatic warming associated with a sinking air mass.
- B) A marked decrease in wind velocity close to the ground.
- C) Ground cooling caused by radiation during the night.
- D) A marked increase in wind velocity near the ground.

358- Which type of fog is likely to form when air having temperature of 15°C and dew point of 12°C blows at 10 knots over a sea surface having temperatures of 5°C?

- A) Radiation fog.
- B) Advection fog.
- C) Steam fog.
- D) Frontal fog.

359- Which of the following weather conditions favor the formation of radiation fog?

- A) Light wind, little or no cloud, moist air.
- B) Light wind, extensive cloud, dry air.
- C) Light wind, extensive cloud, moist air.
- D) Strong wind, little or no cloud, moist air.

360- Radiation fog can be dispersed by:

- A) Insolation.
- B) Strong winds.
- C) Replacement of moist air by drier air.
- D) All answers are correct.

361- Radiation fog most frequently occurs in:

- A) Low pressure systems over sea.
- B) High pressure systems over land.
- C) High pressure systems over sea.
- D) Low pressure systems over land.

362- The formation of morning fog before sunrise is possible if:

- A) Air temperature and dew point are equal or close to one another.
- B) The wind is strong.
- C) The sky is overcast.
- D) The turbulence in the lower layers is moderate.

363- Which type of fog cannot be formed over water?

- A) Advection fog.
- B) Radiation fog.
- C) Arctic smoke.
- D) Frontal fog.



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364- The danger of experiencing fog is greatest when:

- A) Dew point temperature is high.
- B) Dew point temperature is low.
- C) There is little dew point spread.
- D) There is great dew point spread

365- What enhances the growth rate of precipitation?

- A) Adjective action.
- B) Upward currents.
- C) Cyclonic movement.
- D) Temperature inversions.

366- Fall streaks or Virga are:

- A) Water or ice particles falling out of a cloud that evaporate before reaching the ground.
- B) Strong down draughts in the polar jet stream, associated with jet streaks.
- C) Gusts associated with a well-developed Bora.
- D) Strong katabatic winds in mountainous areas and accompanied by heavy precipitation.

367- In the typical weather pattern behind a cold front the visibility outside precipitation is:

- A) Low and the precipitation is showers.
- B) Good and the precipitation is steady rain.
- C) Good and the precipitation is showers.
- D) Low and the precipitation is steady rain.

368- The passage of a warm front can be associated with areas of fog. The types of fog just in advance and just after the passage are respectively:

- A) Arctic smoke and frontal fog.
- B) Advection fog and radiation fog.
- C) Frontal fog and advection fog.
- D) Advection fog and steaming fog.

369- What surface weather is associated with a stationary high pressure region over land in the winter?

- A) Thunderstorms.
- B) A tendency for fog and low ST.
- C) NS with continuous rain.
- D) The possibility of snow showers.



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370- What is the correct term for the descending air flow in a large high pressure area?

- A) Convection.
- B) Convergence.
- C) Advection.
- D) Subsidence.

371- When flying at 5000 feet in the northern hemisphere over plains (flat country) with an anticyclone on the left and a depression on the right the wind will be:

- A) From the right.
- B) From the left
- C) A headwind.
- D) A tailwind.

372- Freezing precipitation occurs:

- A) Only in the precipitate on of a warm front.
- B) Only in the precipitation of a cold front.
- C) Mainly in the form of freezing rain or freezing drizzle.
- D) Mainly in the form of freezing hail or freezing snow.

373- The presence of ice pellets at the surface is evidence that:

- A) Freezing rain occurs at a higher altitude.
- B) A cold front has passed.
- C) There are thunderstorms in the area.
- D) A warm front has passed.

374- What type of cloud can produce hail showers?

- A) CS
- B) NS
- C) CB
- D) AC

375- What type of clouds are associated with snow showers?

- A) Nimbostratus.
- B) Cumulus and altostratus.
- C) Altostratus and stratus.
- D) Cumulonimbus.

376- Large hailstones:

- A) Only occur in thunderstorms of mid-latitudes.
- B) Are typically associated with severe thunderstorms.
- C) Are entirely composed of clear ice.
- D) Only occur in frontal thunderstorms.



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377- Precipitation in the form of showers occurs mainly from:

- A) Clouds containing only ice crystals.
- B) Stratified clouds.
- C) Cirrus clouds.
- D) Convective clouds.

378- What type of clouds are associated with rain showers?

- A) Nimbostratus.
- B) Towering cumulus and altostratus.
- C) Altostratus and stratus.
- D) Towering cumulus and cumulonimbus.

379- Which one of the following types of cloud is most likely to produce heavy precipitation?

- A) SC
- B) CS
- C) NS
- D) ST

380- Which of the following cloud types is least likely to produce precipitation?

- A) CI
- B) AS
- C) CB
- D) NS

381- In which of the following situations can freezing rain be encountered?

- A) Ahead of a warm front in the winter.
- B) Ahead of a cold front in the winter.
- C) Behind a warm front in the summer
- D) Ahead of a cold front in the summer.

382- Super cooled droplets can occur in:

- A) Clouds, fog and precipitation.
- B) Clouds but not in precipitation.
- C) Precipitation but not in clouds
- D) Clouds but not in fog

383- Which of the following types of cloud is most likely to be associated with prolonged and continuous moderate rain?

- A) NS
- B) CU
- C) ST
- D) CI



384- What type of cloud is pertinent for showers?

- A) CB
- B) NS
- C) CI
- D) AS

385- An unstable air mass will normally be characterized by:

- A) Stratiform cloud.
- B) Cumuliform cloud and good visibility except in precipitation.
- C) Continuous light rain from medium level layer cloud.
- D) Poor visibility due to haze at the lower levels.

386- An air mass acquires its characteristics by:

- A) Rising of the warm air above the underlying cold air.
- B) Convection.
- C) Stagnation of the air for a long period of time over areas having particular characteristics.
- D) Air circulation around centers of permanent action.

387- What are the most common characteristics of a cold air mass moving over a warm surface?

- A) Cumuliform clouds, turbulence, and good visibility.
- B) Cumuliform clouds, turbulence, and poor visibility.
- C) Stratiform clouds, smooth air, and poor visibility.
- D) Stratiform clouds, turbulence, and good visibility.

388- What are the most common characteristics of a warm air mass, moving over a cold surface?

- A) Cumuliform clouds, turbulence, and good visibility.
- B) Cumuliform clouds, turbulence, and poor visibility.
- C) Stratiform clouds, smooth air, and poor visibility.
- D) Stratiform clouds, turbulence, and good visibility.

389- The first clouds are thin, wispy cirrus, followed by sheets of cirrus and cirrostratus, and altostratus. The sun is obscured as the altostratus thickens and drizzle or rain begins to fall. The cloud base is lowering as nimbostratus arrives. These phenomenon is due to

- A) Warm front.
- B) Cold front.
- C) Trade wind front.
- D) Sea-breeze front.



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390- An occlusion takes place when:

- A) A cold front catches up with a warm front.
- B) Warm air displaces cold air.
- C) Cold air displaces warm air.
- D) The front no longer moves.

391- Subsidence is:

- A) Vertically upwards motion of air.
- B) Horizontal motion of air.
- C) Vertically downwards motion of air.
- D) The same as convection.

392- Areas of sinking air are generally cloudless because as air sinks it:

- A) Reaches warmer layers.
- B) Is heated by compression.
- C) Is heated by expansion.
- D) Loses water vapor.

393- Define a "HIGH";

- A) An area with higher pressure than that of the horizontal environments.
- B) A high pressure ridge.
- C) An area of divergence.
- D) None of the above.

394- A trough of low pressure on a surface synoptic chart is an area of:

- A) Divergence and subsidence.
- B) Convergence and widespread ascent.
- C) Divergence and widespread ascent.
- D) Convergence and Subsidence.

395- Which statement is true regarding squall lines?

- A) They are always associated with cold front.
- B) They are non-frontal and often contains sever steady state thunderstorm.
- C) They form slowly but move rapidly.
- D) They are associated with frontal systems only.

396- A "trough" is a:

- A) Type of a low pressure area.
- B) Type of a high pressure area.
- C) Tropical thunderstorm.
- D) Tropical wind.



397- An area on a synoptic chart appearing as a "V-shaped" extension of a low pressure area is called a:

- A) Ridge
- B) Col
- C) Trough
- D) Occlusion

398- The downdrafts and rain starts and rain reach the ground when a thunderstorm cell is in ---- stage and the cell has reached a height 25000 ft/min or more.

- A) Mature
- B) Thermal
- C) Cumulus
- D) Dissipating

399- A strong, dry and warm katabatic wind, produced by prior enforced ascent of air over hills or mountains is known as a:

- A) Bora
- B) Harmattan
- C) Mistral
- D) Foehn

400- A Foehn wind occurs on the:

- A) Leeward side of a mountain range and is caused by the condensation level being lower on the leeward side than on the windward side.
- B) Windward side of a mountain range and is caused by surface heating.
- C) Windward side of a mountain range and is caused by surface cooling and reverse air flow.
- D) Leeward side of a mountain range and is caused by significant moisture loss by precipitation from cloud.

401- What type of air movement is associated with the center line of a trough?

- A) Divergence with lifting.
- B) Divergence with descending air.
- C) Convergence with lifting.
- D) Convergence with descending air.

402- Which is true of a typical non frontal thermal depression?

- A) It forms over the ocean in summer.
- B) It forms over land in summer.
- C) It forms both over the ocean and land in winter.
- D) It forms over land in winter.



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403- What is meant by an area of divergence?

- A) An area where air masses are moving in.
- B) An area where air masses are moving out.
- C) A frontal zone.
- D) A high pressure area.

404- The formation of a thermal low pressure is by:

- A) Advection of warm air.
- B) Advection of cold air.
- C) A dynamic effect.
- D) A temperature rises in an area in relation to the environment.

405- What type of clouds, visible even at a long distance, could indicate the presence of a tropical revolving storm?

- A) NS spread over a large area.
- B) Frequent SC.
- C) Excessive accumulation of CU.
- D) Dense CI.

406- During which seasons are hurricanes most likely to appear in the northern hemisphere?

- A) All seasons.
- B) Winter.
- C) Winter and spring.
- D) Summer and autumn.

407- Where is the most dangerous zone in a tropical revolving storm?

- A) Anywhere in the eye.
- B) In the wall of clouds around the eye.
- C) In the center of the eye.
- D) About 600 km away from the eye.

408- What is the reason for seasonal changes in climate?

- A) Because the earth spin axis is inclined to the plane of its orbit round the sun.
- B) Because the distance between the earth and the sun varies over a year.
- C) Because the earth's orbital speed round the sun varies according to the time of the year.
- D) Because of the difference between the tropical year and the calendar year.



409- Which one of the following statements regarding the inter-tropical convergence zone (ITCZ) is correct?

- A) The ITCZ does not change its position during the course of the year.
- B) Thunderstorms seldom occur within the area of the ITCZ.
- C) The ITCZ is always associated with a strong jet stream.
- D) Frequent and widespread thunderstorms are to be expected within the area of the ITCZ.

410- Which of the following statements concerning the inter-tropical convergence zone is true:

- A) There are frequent occurrences of CB.
- B) It lies totally in the northern hemisphere in July and totally in the southern hemisphere in January.
- C) It does not change its position over the oceans during the year.
- D) It is an area of low pressure and low relative humidity.

411- Which wind systems converge on the ITCZ when it lies at the equator?

- A) SE trade winds and NE trade winds.
- B) SW monsoon and NW monsoon.
- C) SW monsoon and NW trade winds.
- D) NW monsoon and SW trade winds.

412- In which month does the humid monsoon in India start?

- A) In October.
- B) In June.
- C) In December.
- D) In March.

413- From which direction for the trade winds blow in the southern hemisphere?

- A) N
- B) NE
- C) SW
- D) SE

414- Define the Chinook:

- A) Warm and dry air descending at the leeward side of the Rocky Mountains.
- B) Cold and dry air descending at the leeward side of the Appalachian Mountains.
- C) A dust and sand laden northeasterly wind in Northwest Africa.
- D) Warm and dry air ascending on the west side of the Rocky Mountains.

415- Large super cooled water drops, which freeze on impact on an airplane, form:

- A) Rime ice.
- B) Clear ice.
- C) Hoar frost.
- D) Cloudy ice.



416- While descending through a cloud cover at high level, a small amount of a white and rough powder like contamination is detected along the leading edge of the wing. This contamination is called:

- A) Clear ice.
- B) Rime ice.
- C) Mixed ice.
- D) Frost.

417- In which of the following conditions is moderate to severe airframe icing most likely to be encountered?

- A) Within cloud of any type.
- B) Below the freezing level in clear air.
- C) In clear air above the freezing level.
- D) In nimbostratus cloud.

418- Clear ice is dangerous because it:

- A) Spreads out and contains many air particles.
- B) Is translucent and only forms at the leading edges.
- C) Is not translucent and forms at the leading edges.
- D) Is heavy and is difficult to remove from the aircraft surfaces.

419- The most dangerous form of airframe icing is:

- A) Rime ice.
- B) Hoar frost.
- C) Dry ice.
- D) Clear ice.

420- A thin coating of Hoar frost on the airfoil surface:

- A) Does not affect takeoff performance.
- B) Has significant negative effects on the lift of the wing.
- C) Affects the aspect ratio of the wing.
- D) Only affects stability.

421- Which conditions result in the formation of hoar frost?

- A) The temperature of the collecting surface is at or below freezing and small droplets of moisture are falling.
- B) When dew forms and the temperature is below freezing.
- C) Temperature of the collecting surface is below the dew point of surrounding air and the dew point is colder than freezing.
- D) None.



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422- Why is frost considered hazardous to flight?

- A) The increased weight requires a greater takeoff distance.
- B) Frost causes early airflow separation resulting in a loss of lift.
- C) Frost decreases control effectiveness.
- D) All answers are correct.

423- The possibility of significant icing at altitude, should be expected when on ground you observe:

- A) Ice pellets.
- B) Hail.
- C) Snow.
- D) Ice droplet.

424- How does moderate turbulence affect an aircraft?

- A) Large, abrupt changes in altitude or attitude occur but the aircraft may only be out of control momentarily.
- B) Rapid and somewhat rhythmic bumpiness is experienced without appreciable changes in altitude or attitude.
- C) Changes in altitude or attitude occur but the aircraft remains in positive control at all times.
- D) Continued flight in this environment will result in structural damage. With reference to ICAO scale of Intensity of turbulence.

425- The mechanical turbulence will increase when:

- A) Flying from land to sea.
- B) Temperature falls.
- C) Pressure rises.
- D) The wind speed increases.

426- Hazardous wind shear is encountered near the ground:

- A) During periods when the wind velocity is stronger than 35 knots.
- B) During periods when the wind velocity is stronger than 35 knots and near mountain valleys.
- C) During periods of strong temperature inversion and near thunderstorms.
- D) Near mountain valleys and on the windward side of hills and mountains.

427- What is a microburst?

- A) A small low pressure system where the wind circulates with very high speeds.
- B) A concentrated down draught with high speeds and a higher temperature than the surrounding air.
- C) An extremely strong wind gust in a tropical revolving storm.
- D) A concentrated downdraught with high speeds and a lower temperature than the surrounding air.



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428- What are squall lines?

- A) Unusual intensive cold fronts.
- B) Bands of intensive thunderstorms.
- C) The surface weather associated with upper air troughs.
- D) The paths of tropical revolving storms.

429- During which stage of thunderstorm development are rotor winds characterized by roll clouds most likely to occur?

- A) Dissipating stage.
- B) Cumulus stage.
- C) Mature stage.
- D) Cumulus stage and mature stage.

430- In addition to a lifting action, what are two other conditions necessary for thunderstorm formation?

- A) Stable conditions and high moisture content.
- B) Unstable conditions and high moisture content.
- C) Stable conditions and low atmospheric pressure.
- D) Unstable conditions and low atmospheric pressure.

431- During the life cycle of a thunderstorm, which stage is characterized predominantly by downdraughts?

- A) Dissipating stage.
- B) Initial stage.
- C) Mature stage.
- D) Anvil stage.

432- Thunderstorms reach their greatest intensity during the:

- A) Dissipating stage.
- B) The initial stage.
- C) Mature stage.
- D) Period in which precipitation is not falling.

433- A microburst:

- A) Always occurs in thunderstorms.
- B) Has a life time of more than 30 minutes.
- C) Has a diameter of up to 4 km.
- D) Occurs only in tropical areas.



434- Which thunderstorms generally produce the most severe conditions, such as heavy hail and destructive winds?

- A) Warm front thunderstorms.
- B) Squall line thunderstorms.
- C) Nocturnal air mass thunderstorms.
- D) Daytime air mass thunderstorms.

435- A thunderstorm has the following stages in its life cycle:

- A) Initial, mature or building and declining.
- B) Building, mature, declining and dissipating.
- C) Initial, declining and dissipating.
- D) Cumulus, mature and dissipating.

436- The initial stage of a thunderstorm last for approximately:

- A) 20 min.
- B) 30 min.
- C) 20 - 30 min.
- D) 40 min.

437- The mature stage of a thunderstorm lasts for approximately:

- A) 5 -15 min
- B) 30 - 60 min
- C) 20 - 30 min
- D) 45 min

438- Which of the following statements is true with regard to a mature thunderstorm?

- A) Both up-currents and down-currents appear concurrently.
- B) The cloud top assumes an anvil shape.
- C) Water droplets, hail and snow are all present.
- D) The top of the cloud is negatively charged and the base is positively charged.

439- The final stage of a thunderstorm is reached when:

- A) No further electrical charge is developed.
- B) The lower portion of the cloud dissipates.
- C) A well-developed anvil can be seen.
- D) All answers are correct.



440- What is a signal of the beginning of the mature stage of a thunderstorm?

- A) The appearance of an anvil top.
- B) Growth rate of the CB cloud is maximum.
- C) The start of precipitation.
- D) CB cloud stops growing vertically

441- What is the location of a squall line?

- A) Ahead of a cold front.
- B) Ahead of a warm front.
- C) Between cold and warm front.
- D) On the rear side of a frontal system.

442- Which type of clouds are associated with "Microburst"?

- A) Stratus (ST).
- B) Altocumulus (AC).
- C) Cumulonimbus (CB).
- D) Cumulus (CU).

443- Which of the following best describes the inter-tropical convergence zone?

- A) The zone where the Harmattan meets the northeasterly trade winds over Africa.
- B) The zone where the trade winds of the northern hemisphere meet those of the southern hemisphere.
- C) The zone where cold fronts form in the tropics.
- D) The zone where the west winds meet the subtropical high pressure belt.

444- What is the name of the low level winds between the subtropical high pressure belt and the ITCZ?

- A) Monsoon.
- B) Trade winds.
- C) Easterly wave.
- D) Low level jet stream.

445- How do you recognize a cold air pool?

- A) A cold air pool may only be recognized on the surface chart as a low pressure area.
- B) As a high pressure area aloft (e.g. on the 500 hPa chart).
- C) As a low pressure area aloft (e.g. on the 500 hPa chart).
- D) A cold air pool may only be recognized on the surface chart as a high pressure area.



446- What is encountered during the summer over land in the center of a cold air pool?

- A) Noting (CAVOK)
- B) Strong westerly winds
- C) Fine weather CU
- D) Showers and thunderstorms

447- The polar front is the boundary between:

- A) Maritime polar air and continental polar air.
- B) Arctic air and polar air.
- C) Arctic air and tropical air.
- D) Polar air and tropical air.

448- What will be the effect on the reading of an altimeter of an aircraft parked on the ground shortly before an active cold front passes over the airport?

- A) It will be decreasing.
- B) It will remain unchanged.
- C) It will be increasing.
- D) It will fluctuate up and down by about ± 50 feet.

449- What type of precipitation would you expect at an active unstable cold front?

- A) Showers associated with thunderstorms.
- B) Freezing rain.
- C) Light to moderate continues rain.
- D) Drizzle.

450- You have been flying for some time in dense layered cloud. The outside air temperature is -25°C which of the following statements is true?

- A) If you do not have weather radar on board there is no need to worry as CB is unlikely to form in such cloud.
- B) Severe airframe icing is quite likely under these conditions.
- C) Severe air frame icing is unlikely under these conditions.
- D) In a dense layered cloud icing is unlikely also at an outside air temperature of -30°C .

451- Which one of the following statements concerning the formation of aircraft icing is most correct?

- A) Risk for icing increases when cloud temperature decreases well below minus 12°C .
- B) Greatest risk of icing conditions is experienced in cirrus clouds.
- C) A cloud consisting of both super cooled cloud droplets and ice crystals produces aircraft icing.
- D) Probability of icing increases when dry snow starts to fall from a cloud.



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452- Hoar frost is most likely to form when?

- A) Flying inside convective clouds.
- B) Taking off from an airfield with a significant ground inversion.
- C) Flying inside Stratiform clouds.
- D) Flying in super cooled drizzle.

453- Which of the following factors have the greatest effect on the formation of the various types of ice on an aircraft?

- A) Relative humidity inside the cloud.
- B) Aircraft speed and size of cloud droplets.
- C) Aircraft speed and curvature of the airfoil.
- D) Cloud temperature and droplet size.

454- Freezing fog exists if fog droplets:

- A) Are frozen.
- B) Are super cooled.
- C) Are freezing very rapidly.
- D) Freeze when temperature falls below zero.

455- Which of the following cloud types are most likely to produce light to moderate icing when they are not subject to orographic lifting and consist of super cooled cloud droplets:

- A) Stratocumulus and cirrostratus.
- B) Altocumulus and altostratus.
- C) Stratus and cumulonimbus.
- D) Altostratus and cirrocumulus.

456- How does a pilot react to heavy freezing rain at 2000 ft AGL when he is unable to de-ice, nor land?

- A) He turns back before the aircraft loses maneuverability.
- B) He descends to the warm air layer below.
- C) He ascends to the cold air layer above.
- D) He continues to fly at the same altitude.

457- Which of the following statements is true regarding moderate to severe airframe icing?

- A) It may occur in the uppermost levels of a cumulonimbus capillatus formation.
- B) It always occurs in altostratus cloud.
- C) It may occur in nimbostratus cloud.
- D) It will occur in clear-sky conditions.



458- In which conditions would you most likely encounter clear icing and how would it normally appear?

- A) Cumuliform clouds small water droplets temperatures between -20°C and 25°C appears transparent and tends to take the shape of the surface on which it freezes
- B) Stratiform clouds small water droplets temperatures between -10°C and -20°C . Appears granular and tends to accumulate forward into the air stream.
- C) Cumuliform clouds large water droplets temperatures between 0°C and -15°C appear smooth and tends to spread back over an aircraft wing.
- D) Stratiform clouds large water droplets temperatures will below freezing appears opaque and builds forward form leading surface in to a sharp edge.

459- What intensity and type of aircraft icing is likely to occur at FL100 in a thunderstorm with the freezing level at 7000 ft?

- A) Moderate to severe icing due to clear ice.
- B) Light icing due to rime ice.
- C) Moderate to severe icing due to rime ice.
- D) Light icing due to clear ice.

460- In which cloud type does moderate to severe airframe icing most probably occur?

- A) NS
- B) ST
- C) CS
- D) AC

461- What is normally the most effective measure to reduce or avoid the clear air turbulence effects?

- A) Decrease of speed.
- B) Change of course.
- C) Increase of speed.
- D) Change of flight level.

462- A zone of strong convection currents is encountered during a flight. In spite of moderate gust you decide to continue the flight. What are your precautionary measures?

- A) Increase the speed / try to descend below the zone of convective currents.
- B) Increase the speed / try to climb above the zone of convective currents if aircraft performance parameters allow.
- C) Decrease the speed / try to descend below the zone of convective currents.
- D) Decrease the speed / try to climb above the zone of convective currents if aircraft performance parameters allow.



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463- The degree of clear air turbulence experienced by an aircraft is proportional to the?

- A) Intensity of the solar radiation.
- B) Height of the aircraft.
- C) Stability of the air.
- D) Intensity of vertical and horizontal wind shear.

464- All pilots encountering clear air turbulence are requested to report it. You experience CAT which causes passengers and crew to feel definite strain against their seat belt or shoulders straps. Unsecured objects are dislodged food service and walking are difficult this intensity of CAT should be reported as:

- A) Severe.
- B) Extreme.
- C) Moderate.
- D) Light.

465- Conditions favorable for low-level frictional turbulence are:

- A) Strong wind, rough terrain, steep lapse rate.
- B) Strong wind, rough terrain, stable lapse rate.
- C) Light wind, rough terrain, stable lapse rate.
- D) Strong wind, smooth terrain, stable elapse rate.

466- In which zone of a polar front jet stream is the strongest clear air turbulence to be expected?

- A) Exactly in the center of the core.
- B) On the tropical air side of the core.
- C) On the polar air side of the core.
- D) About 12000 ft above the core.

467- When cat (CLEAR AIR TURBULENCE) conditions are anticipated the following procedure should be used as soon as turbulent air penetration speed is established:

- A) The airspeed indicator should be used as primary flight instrument.
- B) The attitude indicator should be used as secondary flight instrument.
- C) Maintain wings level and control pitch attitude smoothly.
- D) Prepare the use of large control inputs to fight the excessive G-force that may occur.

468- Clear air turbulence (CAT) should be anticipated when:

- A) Immediately after the passage of a thunderstorm.
- B) A sharp trough area aloft is present with wind speed considerable higher than that of jet stream winds.
- C) A sharp trough area aloft is present even though the wind speed may be considerably less than that of jet stream winds.
- D) Whenever a high pressure is present close to a thunderstorm area.



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469- What is the effect of a strong low level inversion?

- A) It results in good visual conditions.
- B) It promotes extensive vertical movement of air.
- C) It prevents vertical wind shear.
- D) It promotes vertical wind shear.

470- An important characteristic of wind shear is that:

- A) It is encountered most frequently near mountain waves during winter months.
- B) It is an atmospheric contention that is associated exclusively with zones of convergence.
- C) It only occurs with jet streams.
- D) It is an atmospheric condition that maybe associated with a low level temperature inversion a jet stream or a frontal zone.

471- In a microburst you may experience strong wind shear:

- A) 4 km
- B) 8 km
- C) 10km
- D) 15 km

472- Which thunderstorms move forward the fastest?

- A) Thunderstorms formed by lifting processes.
- B) Frontal thunderstorm.
- C) Thermal thunderstorm.
- D) Orographic thunderstorms.

473- At which altitude at temperate latitudes may hail be expected in connection with a CB?

- A) From the ground up to a maximum of FL450.
- B) From the ground up to about FL200.
- C) From the ground up to about FL100.
- D) From the base of the clouds up to FL200.

474- Which of the following meteorological phenomenon indicates upper level instability which may lead to thunderstorm development?

- A) Red cirrus
- B) Continuous downdraughts
- C) Light showery precipitation
- D) Continuous up draughts



475- Which of the following conditions are necessary for thunderstorms to form:

- A) Low surface temperature and high moisture content.
- B) High moisture content and a trigger action.
- C) Instability at night 0° isotherm.
- D) Low upper temperatures and a high.

476- Which types of thunderstorm can be the most difficult to avoid:

- A) Mature thunderstorms because they spread over such a wide area.
- B) Frontal thunder storms.
- C) Air mass thunderstorms.
- D) Low-level thunderstorms.

477- Convective weather phenomena include:

- A) Heavy showers, lightning strikes, hail, mist, squalls light rain over a range area.
- B) Thunderstorms, tornadoes, hail, haze, wind gusts, advection fog, lightning strikes.
- C) Thunderstorms, hail, tornadoes, wind gusts, heavy showers, lightning strikes.
- D) Hail, lightning, strikes, wind lulls, squalls, stratocumulus, low level wind maximum.

478- Thunderstorms are often preceded by:

- A) Altostratus clouds
- B) Nimbostratus clouds
- C) Altocumulus castellanos clouds
- D) Altocumulus lenticulars clouds

479- Which of the following sets of conditions are most favorable to the development of thunderstorms?

- A) Extensive isothermal layer, ice particles and water droplets must exist just below the freezing level and orographic lift in.
- B) Environmental lapse rate greater than saturated adiabatic lapse rate through a great vertical extent high relative humidity and an initial lifting process.
- C) Environmental lapse rate less than saturated adiabatic lapse rate with dew point below 0° C and considerable surface heating.
- D) Environmental lapse rate less than dry adiabatic lapse rate with freezing level below the cloud base high relative humidity and strong surface winds.

480- Which of the following situations favors the formation of heavy thunderstorms?

- A) A cold front approaching a mountain range in the evening.
- B) The passage of a warm front in the morning.
- C) A cold front on the leeward side of a mountain range.
- D) A warm sector moving over a snow –covered ground.



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481- Which of the following statements about lightning's and lightning strikes is correct?

- A) The aircraft is temporarily part of the lightning trajectory.
- B) Spherical lightning often penetrate into aircraft.
- C) Lightning strikes always cause heavy damage.
- D) Compasses and electronics are always affected.

482- Which one of the following can provide the initial lifting leading to air mass thunderstorms?

- A) Advection of cold air over a warm sea.
- B) Mountain waves.
- C) Advection of warm air over a cold sea.
- D) Low level wind shear.

483- Which statement is correct for microburst?

- A) They only develop below convective clouds with heavy rain.
- B) The diameter or the affected area on the surface does not exceed 4 km.
- C) They occur in the tropics only.
- D) Their downdraughts is warmer than the surroundings.

484- With the development of a thunderstorm at what stage will there be only up draughts of air?

- A) Anvil stage.
- B) Mature stage.
- C) Initial stage.
- D) Dissipating stage.

485- What conditions (amongst others) have to be met for the development of CBs and thunderstorms?

- A) Moist air must be present.
- B) Warm air has to move over a cold surface.
- C) There have to be significant pressure differences over a small area.
- D) A front has to be present.

486- Where can wind shear associated with a thunderstorm be found (choose the most complete answer)?

- A) In front of the thunderstorm cell (anvil side).
- B) Ahead of the roll clouds or gust front.
- C) In front of the thunderstorm cell and directly under the cell.
- D) On all sides of the thunderstorm cell and directly under the cell.



487- Concerning the radar reflectivity in relation to a thunderstorm the followings is true?

- A) Reflectivity decreases with severity and frequency of turbulence.
- B) Reflectivity increases with severity and frequency of turbulence.
- C) Reflectivity is a function of the number and size of water droplets in a given unit of volume.
- D) Both B and C are correct.

488- Which of the following conditions are most favorable to the formation of mountain waves?

- A) Unstable air at mountain top altitude and a wind at least 20 knot blowing across the mountain ridge.
- B) Either stable or unstable air at mountain top or a wind of at least 30 knots blowing parallel to the mountain ridge.
- C) Most unstable air at mountain top and wind of less than 5 knots blowing across the mountain ridge.
- D) Stable air at mountain top altitude and a wind at least 20 knots blowing across the mountain ridge.

489- With reference to rotor circulation?

- A) It can occur at levels up to 80000 ft.
- B) It is a low level phenomenon.
- C) It is found at approximately the tropopause level.
- D) It is another name for the rotor zones associated with mountain waves.

490- Mountain waves should be expected?

- A) When instability is high.
- B) On the downwind side of the maintain chain.
- C) Directly over the mountain chain.
- D) On the upwind side of the mountain chain.

491- The conditions most favorable to formations of mountain waves are?

- A) Wind direction parallel to the mountain range – wind speed increasing with height – extensive isothermal layer between mountain crests and the tropopause.
- B) Wind direction parallel to the general alignment of the mountain range wind speed increasing with height – intense surface heating.
- C) Wind speed above 20 kts and wind direction at right angles to mountains – wind speed increasing with height.
- D) Wind directing approximately at right angles to the mountain range – wind speed 30 kts and steadily increasing with height – an inversion just above the crest level with less stable air above and below.



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492- What is likely when mountain waves are observed?

- A) Strong wind and turbulence in the mountains.
- B) Unstable air.
- C) Rain on the leeward side of the mountains.
- D) Convection clouds.

493- Below a low level inversion visibility is often:

- A) Moderate or poor due to heavy snow showers.
- B) Very good at night.
- C) Very good in the early morning.
- D) Moderate or poor because there is no vertical exchange.

494- In unstable air, surface visibility is most likely to be restricted by:

- A) Low stratus.
- B) Haze.
- C) Drizzle.
- D) Showers of rain or snow.

495- The solid particles which reduce visibility in the atmosphere are:

- A) Atmospheric pollution, dust, ozone and moisture.
- B) Atmospheric pollution, volcanic fumes, dust and sand.
- C) Atmospheric pollution, dust, sand and spray.
- D) Atmospheric pollution, dust, sand and volcanic ash.



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	D	26	A	51	C	76	A
2	A	27	B	52	D	77	A
3	C	28	D	53	B	78	B
4	D	29	A	54	D	79	B
5	A	30	B	55	D	80	A
6	B	31	D	56	C	81	C
7	B	32	A	57	D	82	C
8	C	33	B	58	A	83	B
9	A	34	C	59	B	84	C
10	D	35	C	60	B	85	C
11	A	36	D	61	D	86	C
12	C	37	C	62	B	87	A
13	A	38	A	63	B	88	D
14	A	39	A	64	C	89	A
15	D	40	C	65	B	90	C
16	D	41	C	66	C	91	B
17	B	42	A	67	D	92	A
18	D	43	A	68	A	93	D
19	B	44	B	69	A	94	B
20	C	45	C	70	B	95	C
21	A	46	B	71	A	96	B
22	B	47	A	72	A	97	C
23	D	48	C	73	C	98	C
24	D	49	D	74	A	99	B
25	D	50	D	75	C	100	C



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	C	126	A	151	D	176	B
102	C	127	D	152	A	177	A
103	B	128	B	153	C	178	C
104	C	129	A	154	B	179	B
105	B	130	C	155	D	180	A
106	C	131	B	156	B	181	A
107	A	132	C	157	C	182	B
108	B	133	A	158	C	183	C
109	C	134	B	159	D	184	A
110	D	135	A	160	B	185	D
111	B	136	D	161	B	186	D
112	A	137	C	162	A	187	A
113	A	138	C	163	C	188	B
114	A	139	B	164	C	189	B
115	D	140	B	165	B	190	A
116	B	141	D	166	C	191	B
117	C	142	B	167	C	192	B
118	C	143	A	168	B	193	D
119	D	144	C	169	A	194	A
120	D	145	B	170	C	195	A
121	C	146	B	171	C	196	B
122	A	147	A	172	B	197	D
123	A	148	C	173	C	198	A
124	A	149	D	174	A	199	A
125	D	150	B	175	B	200	B



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	A	226	B	251	A	276	C
202	A	227	D	252	A	277	D
203	C	228	C	253	A	278	B
204	C	229	C	254	C	279	A
205	D	230	A	255	A	280	A
206	B	231	C	256	B	281	C
207	D	232	D	257	D	282	C
208	B	233	D	258	A	283	B
209	A	234	D	259	D	284	B
210	D	235	B	260	B	285	B
211	C	236	B	261	B	286	C
212	D	237	C	262	B	287	A
213	D	238	C	263	B	288	B
214	C	239	A	264	A	289	D
215	D	240	C	265	A	290	C
216	D	241	D	266	D	291	D
217	D	242	B	267	D	292	B
218	B	243	B	268	C	293	B
219	A	244	C	269	A	294	D
220	C	245	D	270	D	295	B
221	C	246	D	271	A	296	B
222	A	247	A	272	A	297	B
223	B	248	C	273	A	298	D
224	D	249	A	274	A	299	D
225	D	250	A	275	B	300	D

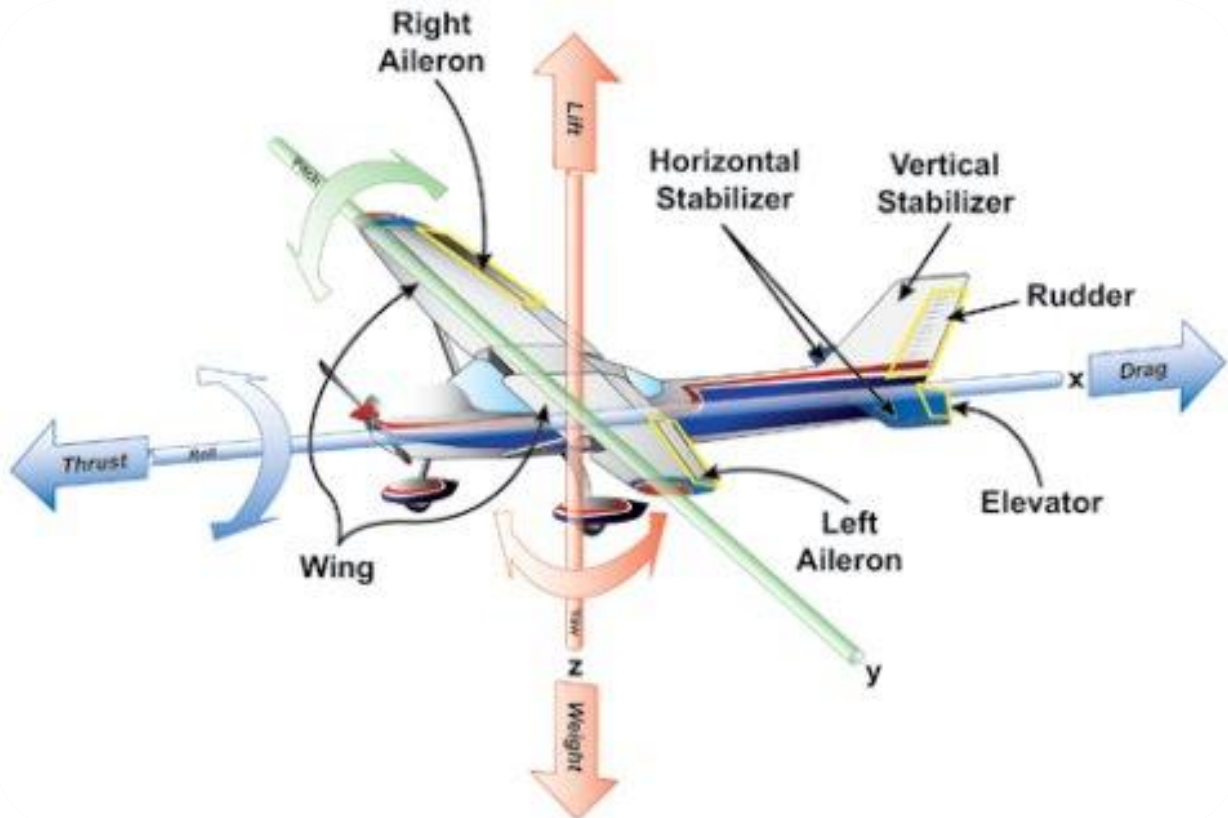


QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
301	D	326	B	351	B	376	B
302	C	327	C	352	B	377	D
303	C	328	A	353	D	378	D
304	A	329	A	354	D	379	C
305	A	330	D	355	B	380	A
306	B	331	A	356	D	381	A
307	D	332	C	357	D	382	A
308	D	333	A	358	B	383	A
309	A	334	D	359	A	384	A
310	A	335	C	360	D	385	B
311	A	336	A	361	B	386	C
312	B	337	D	362	A	387	A
313	B	338	B	363	B	388	C
314	C	339	B	364	C	389	A
315	D	340	B	365	B	390	A
316	D	341	A	366	A	391	C
317	B	342	A	367	C	392	B
318	C	343	D	368	C	393	A
319	A	344	C	369	B	394	B
320	B	345	A	370	D	395	B
321	B	346	B	371	C	396	A
322	B	347	B	372	C	397	C
323	D	348	C	373	A	398	A
324	D	349	D	374	C	399	D
325	A	350	B	375	D	400	D



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
401	C	426	C	451	C	476	B
402	B	427	D	452	B	477	C
403	B	428	B	453	D	478	C
404	D	429	C	454	B	479	B
405	D	430	B	455	B	480	A
406	D	431	A	456	A	481	A
407	B	432	C	457	C	482	A
408	A	433	C	458	C	483	B
409	D	434	B	459	A	484	C
410	A	435	D	460	A	485	A
411	A	436	A	461	D	486	D
412	B	437	C	462	D	487	D
413	D	438	A	463	D	488	D
414	A	439	C	464	C	489	B
415	B	440	C	465	A	490	B
416	B	441	A	466	C	491	C
417	D	442	C	467	C	492	A
418	D	443	B	468	C	493	D
419	D	444	B	469	D	494	D
420	B	445	C	470	D	495	D
421	C	446	D	471	A		
422	D	447	D	472	B		
423	A	448	C	473	A		
424	C	449	A	474	D		
425	D	450	C	475	B		

PRINCIPLES OF FLIGHT





1- During acceleration from subsonic to supersonic speed the center of pressure movement will be:

- A) Forward.
- B) Rearward.
- C) Remain stationary.
- D) Irregular, forward and aft, but overall rearward to the 50% chord.

2- What causes a large increase in drag at high transonic speed?

- A) An increase in parasite drag due to shock wave formation.
- B) An increase in induced drag due to shock wave formation.
- C) The reduction in thrust due to shock wave formation.
- D) Wave drag.

3- What is the effect of increasing weight on M_{CRIT} at a constant IAS?

- A) Increase.
- B) Decrease.
- C) Increase with increasing angle of attack.
- D) Decrease with increasing angle of attack.

4- Assuming ISA conditions, which statement with respect to the climb is correct?

- A) At constant TAS the Mach number decreases.
- B) At constant Mach number the IAS increases.
- C) At constant IAS the TAS decreases.
- D) At constant IAS the Mach number increases.

5- A jet transport aeroplane is in a straight climb at a constant IAS and constant weight. The operational limit that may be exceeded is:

- A) V_{NE}
- B) V_{MO}
- C) M_{MO}
- D) V_D

6- The recommended air speed at which to fly in turbulence is:

- A) V_{MD}
- B) V_{LO}
- C) V_{RA}
- D) V_{MO}

7- The local speed of sound is affected by the:

- A) Pressure of the air.
- B) Density of the air.
- C) Temperature of the air.
- D) Humidity of the air.



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8- At higher altitudes, the stall speed (IAS):

- A) Decreases until the tropopause.
- B) Decreases.
- C) Remains the same.
- D) Increases.

9- The regime of flight from the critical Mach number up to M 1.2 is called:

- A) Hypersonic range.
- B) Supersonic range.
- C) Transonic range.
- D) Subsonic range.

10- If the altitude is increased and the TAS remains constant in the standard troposphere the Mach number will:

- A) Not change.
- B) Decrease.
- C) Increase.
- D) Increase or decrease, depends on the type of aeroplane.

11- An aeroplane is descending at a constant Mach number from FL350. What is the effect on true airspeed?

- A) It remains constant.
- B) It decreases as pressure increases.
- C) It decreases as altitude decreases.
- D) It increases as temperature increases.

12- The two areas of speed instability in transonic aircraft are:

- A) Above V_{DMIN} , above M 0.40.
- B) Below V_{DMIN} , M 0.89 to 0.98.
- C) Above V_{DMIN} , M 0.75 to 0.81.
- D) Below V_{DMIN} , above M 1.0.

13- The Mach number:

- A) Increases at a given TAS, when the temperature rises.
- B) Is the ratio between the TAS of the aeroplane and the speed of sound at sea level.
- C) Is the ratio between the IAS of the aeroplane and the local speed of sound.
- D) Is the ratio between the TAS of the aeroplane and the local speed of sound.



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14- In the transonic range, the aeroplane characteristics are strongly determined by:

- A) The CAS.
- B) The TAS.
- C) The IAS.
- D) The Mach number.

15- Climbing at a constant Mach number up to FL350 the TAS will:

- A) Decrease.
- B) First increase, then remain constant.
- C) Increase.
- D) Remain constant.

16- The least energy loss through a normal shock wave occurs when the local Mach number is:

- A) Well above M 1.0 .
- B) Just above M 1.0 .
- C) Just below M 1.0 .
- D) Exactly M 1.0 .

17- To be able to predict compressibility effects you have to determine the:

- A) IAS
- B) EAS
- C) TAS
- D) Mach number

18- Which statement with respect to the speed of sound is correct?

- A) Varies with the square root of the absolute temperature.
- B) Increases always if the density of the air decreases.
- C) Is independent of altitude.
- D) Doubles if the temperature increases from 9° to 36° Celsius.

19- What is the effect on EAS as height is increased when you are holding a constant IAS?

- A) EAS remains the same.
- B) EAS falls.
- C) EAS rises.
- D) The effect depends on the temperature.

20- Assuming ISA conditions, climbing at a constant Mach number up the tropopause the TAS will:

- A) First increase, then decrease.
- B) Decrease.
- C) Increase.
- D) Remain constant.



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21- During a climb at a constant IAS, the Mach number will:

- A) Remain constant.
- B) Decrease initially and increase subsequently.
- C) Increase.
- D) Increase initially and remain constant subsequently.

22- Transonic speed is:

- A) A speed at which locally around the aeroplane both supersonic and subsonic speeds exist.
- B) A speed at which locally an oblique shock wave has developed in the flow along the aeroplane.
- C) A speed at which compressibility effects are first noticeable.
- D) The speed range between M_{CRIT} and M_{MO} .

23- An aircraft flying at M 0.5 would be flying at:

- A) Half the speed of sound at ground level only.
- B) Half the speed of sound at the tropopause only.
- C) Half the speed of sound under all conditions in the atmosphere.
- D) Half the speed of sound at sea level only.

24- The Mach number corresponding to a given TAS will:

- A) Be greater if temperature increases.
- B) Be less if temperature increases.
- C) Be the same at all temperatures.
- D) Temperature does not affect the Mach number because it is a ratio.

25- At a constant flight level and IAS, if the OAT increases, the Mach number will:

- A) Increase.
- B) Decrease.
- C) Remain constant.
- D) Could not be determined.

26- V_{MO} can be exceeded in a descent at a constant Mach number because:

- A) V_{MO} is an IAS and descending at a constant Mach will require a decrease in TAS which will reduce dynamic pressure.
- B) As altitude is reduced the speed of sound will increase which increases IAS.
- C) As altitude decreases the ASI will start to under-read due to the increasing air density.
- D) V_{MO} is an IAS and descending at a constant Mach will require an increase in TAS which will increase dynamic pressure.

27- An aircraft is descending at a constant Mach number and a constant weight. Which of the following operational speed limitations may likely be exceeded?

- A) V_{MO}
- B) V_{NE}
- C) M_{MO}
- D) V_D



28- Which of the following devices is used to counter adverse yaw on rolling into or out of a turn?

- A) Vortex generators.
- B) A yaw damper.
- C) A dorsal fin.
- D) Differential ailerons.

29- In the transonic speed range, what affects the flight handling characteristics?

- A) IAS
- B) CAS
- C) TAS
- D) Mach number

30- What phenomenon can exist at low Mach number?

- A) Mach tuck.
- B) Shock waves.
- C) Dutch roll.
- D) Tuck under.

31- What happens to Mach number if IAS is increased when flying at FL390?

- A) Remains constant.
- B) Increases.
- C) Decreases.
- D) Depends on the OAT.

32- Adverse aileron yaw can be countered by:

- A) Aileron reversal.
- B) Nothing because it is a desirable flight characteristic.
- C) Frise ailerons.
- D) Aileron snatch.

33- In a steady climb:

- A) At a steady IAS, Mach number remains constant because Mach number is only proportional to TAS and inversely proportional to the local speed of sound.
- B) At steady IAS, Mach number will increase.
- C) At steady IAS, Mach number will remain constant because the local speed of sound is proportional to the square root of the absolute temperature.
- D) At steady IAS, Mach number will decrease because the absolute temperature will decrease.



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34- How does temperature influence the speed of sound?

- A) Speed of sound increases with temperature increase.
- B) Speed of sound decreases with temperature increase.
- C) Speed of sound is not influenced by temperature.
- D) Speed of sound remains constant.

35- Damping is the property that:

- A) Slows down the rate or diminishes the amplitude of vibrations or cycles.
- B) Make a body decelerate when thrust is reduced.
- C) Requires an increased amount of energy to be used to accelerate a body when it approaches the speed of sound.
- D) Makes an aircraft more stable at high altitude.

36- When the air is passing through an expansion wave the static temperature will:

- A) Decrease.
- B) Increase.
- C) Stay constant
- D) Decrease and beyond a certain Mach number start increasing again.

37- Compared to a wing at sea level at 200 kts TAS, wing at 40000 ft at 400 kts TAS and the same angle of attack will have:

- A) 1.4 times the lift.
- B) The same lift.
- C) Twice the lift.
- D) Four times the lift.

38- Shockwaves at M_{FS} above M_{DET} will be:

- A) Sufficient to slow the local airflow to subsonic values.
- B) Normal.
- C) Oblique.
- D) Detached.

39- At what speed does the front of a shock wave move across the Earth's surface?

- A) The speed of sound at ground level.
- B) The ground speed of the aeroplane.
- C) The speed of sound at flight level.
- D) The true air speed of the aeroplane.



40- When a supersonic airflow passes through an oblique shockwave static pressure will ___ and temperature will ____.

- A) Rise; rise
- B) Fall; rise
- C) Fall; fall
- D) Rise; fall

41- Which statement about an expansion wave in supersonic flow is correct?

1) The temperature in front of an expansion wave is higher than the temperature behind it.

2) The speed in front of an expansion wave is higher than the speed behind it.

- A) 1 and 2 are incorrect.
- B) 1 and 2 are correct.
- C) 1 is incorrect and 2 is correct.
- D) 1 is correct and 2 is incorrect.

42- When air has passed an expansion wave, the static pressure is:

- A) Decreased or increased, depending on Mach number.
- B) Decreased.
- C) Increased.
- D) Unchanged.

43- Which statement about an expansion wave in supersonic flow is correct?

1) The density in front of an expansion wave is higher than behind.

2) The pressure in front of an expansion wave is higher than behind.

- A) 1 and 2 are correct.
- B) 1 is correct and 2 is incorrect.
- C) 1 is incorrect and 2 is correct.
- D) 1 and 2 are incorrect.

44- When the air is passing through an expansion wave the local speed of sound will:

- A) Stay constant.
- B) Increase.
- C) Decrease.
- D) Decrease and beyond a certain Mach number start increasing again.

45- How will the density and temperature change in a supersonic flow from a position in front of a shock wave to behind it?

- A) Density will increase, temperature will increase.
- B) Density will increase, temperature will decrease.
- C) Density will decrease, temperature will increase.
- D) Density will decrease, temperature will decrease.



46- When a supersonic airflow passes through an expansion wave, velocity will ___ and temperature will ___.

- A) Decrease; fall
- B) Decrease; rise
- C) Increase; rise
- D) Increase; fall

47- When the air is passing through an expansion wave, the Mach number will:

- A) Decrease.
- B) Increase.
- C) Stay constant.
- D) Decrease and beyond a certain Mach number start increasing again.

48- When an aircraft is flying at speeds above Mach 1, pressure disturbances from the aircraft will be felt only:

- A) In front of the normal shock wave.
- B) In front of the Mach cone.
- C) Within the Mach cone.
- D) In front of the oblique shock wave.

49- If the Mach number of an aeroplane in supersonic flight is increased, the shock wave angles will:

- A) Decreases, then increases above certain Mach number.
- B) Increase.
- C) Stay constant.
- D) Decrease.

50- When air has passed through a shock wave, the speed of sound is?

- A) Decreased.
- B) Not affected.
- C) Increased.
- D) Decreased and beyond a certain Mach number start increasing again.



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51- When considering air:

- 1) Air has mass
- 2) Air is not compressible
- 3) Air is able to flow or change its shape when subject to even small pressures
- 4) The viscosity of air is very high
- 5) Moving air has kinetic energy

The correct combination of all true statements is:

- A) 1, 2, 3, 5
- B) 2, 3, 4
- C) 1, 4
- D) 1, 3, 5

52- When considering air density:

- 1) Density is measured in millibar
- 2) Density increases with increasing altitude
- 3) If temperature increases the density will increase
- 4) As altitude increases, density will decrease
- 5) Temperature decreases with increasing altitude, this will cause air density to increase

The combination of correct statements is:

- A) 5 only
- B) 4 and 5
- C) 4 only
- D) 2, 3 and 5

53- Air density is:

- A) Mass per unit volume.
- B) Proportional to temperature and inversely proportional to pressure.
- C) Independent of both temperature and pressure.
- D) Dependent only on decreasing pressure with increasing altitude.

54- Mach number is:

- A) The indicated air speed divided by the local speed of sound sea level.
- B) The speed of sound in the ambient conditions in which the aircraft is flying.
- C) The true air speed of the aircraft at which the relative airflow somewhere on the aircraft first reaches the local speed of sound.
- D) The aircraft true air speed divided by the local speed of sound.

55- The definition of lift is:

- A) The aerodynamic force which acts perpendicular to the chord line of the airfoil.
- B) The aerodynamic force that results from the pressure differentials about an airfoil.
- C) The aerodynamic force which acts perpendicular to the upper surface of the airfoil.
- D) The aerodynamic force which acts at 90° to the relative airflow.



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56- An airfoil section is designed to produce lift resulting from a difference in the:

- A) Negative air pressure below and a vacuum above the surface.
- B) Vacuum below the surface and greater air pressure above the surface.
- C) Higher air pressure below the surface and lower air pressure above the surface.
- D) Higher air pressure at the leading edge than at the trailing edge.

57- On an airfoil section, the force of lift acts perpendicular to, and the force of drag acts parallel to the:

- A) Flight path.
- B) Longitudinal axis.
- C) Chord line.
- D) Airfoil section upper surface.

58- When the angle of attack of a positively cambered airfoil is increased, the center of pressure will:

- A) Have very little movement.
- B) Move forward along the chord line.
- C) Remain unaffected.
- D) Move back along the chord.

59- If more lift force is required because of greater operating weight, what must be done to fly at the angle of attack which corresponds to C_{LMAX} :

- A) Increase the angle of attack.
- B) Nothing, the angle of attack for C_{LMAX} is constant.
- C) It is impossible to fly at the angle of attack that corresponds to C_{LMAX} .
- D) Increase the indicated air speed (IAS).

60- What effect does landing at high altitude airports have on ground speed with comparable conditions relative to temperature, wind, and aeroplane weight:

- A) Higher than at low altitude.
- B) The same as at low altitude.
- C) Lower than at low altitude.
- D) Dynamic pressure will be the same at any altitude.

61- What flight condition should be expected when an aircraft leaves ground effect:

- A) A decrease in parasite drag permitting a lower angle of attack.
- B) An increase in induced drag and a requirement for a higher angle of attack.
- C) An increase in dynamic stability.
- D) A decrease in induced drag requiring a smaller angle of attack.



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62- By changing the angle of attack of a wing, the pilot can control the aeroplane's:

- A) Lift and airspeed but not drag.
- B) Lift, gross weight, and drag.
- C) Lift, airspeed and drag.
- D) Lift, and drag but not airspeed.

63- Given That:

Aircraft A.

Wingspan: 51 m

Average wing chord: 4 m

Aircraft B.

Wingspan: 48 m

Average wing chord: 3.5 m

Determine the correct aspect ratio and wing area.

- A) Aircraft A has an aspect ratio of 13.7, and has a larger wing area than aircraft B.
- B) Aircraft B has an aspect ratio of 13.7, and has a smaller wing area than aircraft A.
- C) Aircraft B has an aspect ratio of 12.75, and has a smaller wing area than aircraft A.
- D) Aircraft A has an aspect ratio of 12.75, and has a smaller wing area than aircraft B.

64- What is the effect on total drag of an aircraft if the airspeed decreases in level flight below that speed for L/D MAX?

- A) Drag increases because of increased induced drag.
- B) Drag decreases because of lower induced drag.
- C) Drag increases because of increased parasite drag.
- D) Drag decreases because of lower parasite drag.

65- In theory, if the airspeed of an airplane is doubled while in level flight, parasite drag will become:

- A) Twice as great.
- B) Half as great.
- C) Four times greater.
- D) One quarter as much.

66- At a constant velocity in airflow, a high aspect ratio wing will have (in comparison with a low aspect ratio wing):

- A) Increased drag, especially at a low angle of attack.
- B) Decreased drag, especially at a high angle of attack.
- C) Increased drag, especially at a high angle of attack.
- D) Decreased drag, especially at low angle of attack.



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67- The best lift to drag ratio of an aircraft in a given configuration and attitude is a value that:

- A) Varies with Indicated Air Speed.
- B) Varies depending upon the weight being carried.
- C) Varies with air density.
- D) Remains constant regardless of Indicated Air Speed changes.

68- At a constant CAS when flying below sea level an aircraft will have:

- A) A higher TAS than at sea level.
- B) A lower TAS than at sea level at ISA conditions.
- C) The same TAS as at sea level.
- D) The same TAS but an increased IAS.

69- The angle between the chord line of the wing and the longitudinal axis of the airplane is known as the angle of:

- A) Attack.
- B) Relative wind.
- C) Incidence.
- D) Dihedral.

70- The true airspeed (TAS) is:

- A) Higher than the speed of the undisturbed airstream about the aeroplane.
- B) Lower than the indicated airspeed (IAS) at ISA conditions at altitudes below sea level.
- C) Equal to the IAS, multiplied by the air density at sea level.
- D) Lower than the speed of the undisturbed airstream.

71- In a symmetrical airfoil the mean camber line is:

- A) A line joining points of mean camber along the wing.
- B) A line joining points of maximum camber along the wing.
- C) A curve co-incident with the top surface of the airfoil.
- D) A straight line co-incident with the chord line.

72- Which of the following statements is correct?

- A) Drag acts in the same direction as the relative airflow and lift perpendicular to it.
- B) Lift acts at right angles to the top surface of the wing and drag acts at right angles to lift.
- C) Drag acts parallel to the chord and opposite to the direction of motion of the aircraft and lift acts perpendicular to the chord.
- D) Lift acts perpendicular to the horizontal and drag parallel in a rearwards direction.



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73- The lift and drag forces, acting on a wing cross section:

- A) Vary linearly with the angle of attack.
- B) Depend on the pressure distribution about the wing cross section.
- C) Are normal to each other at just one angle of attack.
- D) Are proportional to each other, independent of angle of attack.

74- The relative thickness of an airfoil is expressed in:

- A) Degrees cross section tail angle.
- B) % chord.
- C) Camber.
- D) Meters.

75- The difference between IAS and TAS will:

- A) Increase with increasing air density.
- B) Increase with decreasing temperature.
- C) Decrease with decreasing altitude.
- D) Decrease with increasing speed.

76- To obtain TAS, the EAS must be corrected for:

- A) Relative density only.
- B) Relative density and compressibility.
- C) Position error and compressibility.
- D) Position error and relative density.

77- At higher elevation airports the pilot should know that indicated airspeed:

- A) Will be unchanged, but ground speed will be faster.
- B) Will be higher, but ground speed will be unchanged.
- C) Should be increased to compensate for the thinner air.
- D) To maintain the required dynamic pressure, the indicated airspeed should be increased.

78- A swept wing compared to the same wing without sweep will give:

- A) The same lift at a given angle of attack but a lower C_{LMAX} .
- B) More lift at a given angle of attack.
- C) Less lift at a given angle of attack.
- D) The same lift at a given angle of attack and a higher C_{LMAX} .

79- Effective angle of attack is the:

- A) Angle between the chord line and the mean direction of a non-uniform disturbed air stream.
- B) Angle between the relative airflow and the chord line.
- C) Angle between the chord line and the fuselage horizontal datum.
- D) Angle between the fuselage horizontal datum and the chord line of the horizontal stabilizer.



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80- A wing with a high thickness to chord ratio would be suitable for:

- A) An aircraft with a high wing loading.
- B) An aircraft intended to operate at high speed.
- C) An aircraft intended to operate at low speed.
- D) An aircraft designed to operate at extremely high altitudes.

81- How does increased weight affect the takeoff distance of an aeroplane?

- A) The aeroplane will accelerate more slowly with the same takeoff power output, and a higher airspeed is required to generate the necessary lift for takeoff.
- B) Every aeroplane has the same acceleration factor with the same power output, but a higher airspeed is needed to overcome the increased ground effect.
- C) The aeroplane will accelerate more slowly with the same power output, but the same airspeed is required to generate necessary lift for takeoff.
- D) The aeroplane will accelerate more slowly with a greater power output, and a decreased airspeed is required to generate necessary lift for takeoff.

82- A swept wing:

- A) Produces more lift at a given angle of attack than an equivalent straight wing.
- B) Reaches the critical angle of attack before an equivalent straight wing.
- C) Produces less lift at a given angle of attack than an equivalent straight.
- D) Produces zero lift at zero angle of attack.

83- If air is assumed to be incompressible, this means:

- A) There will be no change in pressure when the speed of the airflow is changed.
- B) There will be no change of density due to change of pressure.
- C) The density will only change with speed at supersonic speed.
- D) Pressure changes will only occur at very high speeds.

84- A line drawn from the leading edge to the trailing edge of an airfoil and equidistant at all points from the upper and lower contours is called the:

- A) Chord line.
- B) Mean chord line.
- C) Mean curvature line.
- D) Mean camber line.

85- If you want to maintain a constant TAS during a climb, you should during the climb:

- A) Reduce to a lower IAS.
- B) Maintain a stable IAS.
- C) Increase the IAS.
- D) Increase AOA.



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86- In level flight an increase in angle of attack will cause:

- A) The stagnation point to move down and aft.
- B) The boundary layer to become thinner.
- C) A decrease in pitch angle.
- D) The center of pressure to move aft.

87- Consider an airfoil with a certain camber and a positive angle of attack. At which location will the highest flow velocities occur?

- A) Upper side.
- B) Lower side.
- C) In front of the stagnation point.
- D) In the stagnation point.

88- On an airfoil the center of pressure will be most forward:

- A) At the optimum angle.
- B) At the stalling angle.
- C) Just below the stalling angle.
- D) Just above the stalling angle.

89- What is the stagnation point?

- A) The intersection of the total aerodynamic force and the chord line.
- B) The point where the velocity of the relative airflow is reduced to zero.
- C) The intersection of the thrust vector and the chord line.
- D) The point, relative to which the sum of all moments is independent of angle of attack

90- Within the normal operating angles of attack, the center of pressure of a biconvex symmetrical airfoil section:

- A) Moves nearer the trailing edge.
- B) Moves nearer the leading edge.
- C) Needs to be offset from the CG line of the rotor blade for control purposes.
- D) Moves very little.

91- The angle of attack of a wing controls the:

- A) Amount of airflow.
- B) Point at which the center of gravity is located.
- C) Distribution of positive and negative pressure acting on the wing.
- D) Angle of incidence of the wing.



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92- Lift is a function of:

- A) Velocity, density, wing shape and lift coefficient.
- B) Velocity, wing area, C_L and density.
- C) Velocity, wing shape, wing area and C_L .
- D) Velocity, density, gross wing area and C_D .

93- For a given angle of attack, a swept wing will:

- A) Have a lower lift coefficient than an equivalent straight one.
- B) Have the same lift coefficient as an equivalent straight one.
- C) Have reduced lateral stability than an equivalent straight one.
- D) Have the same lateral stability as an equivalent straight one.

94- If the weight of an aircraft is increased, the maximum lift to drag ratio will:

- A) Decrease.
- B) Increase.
- C) Not be affected.
- D) Increase although the aircraft will have to be flown more slowly.

95- The lift to drag ratio provides directly the:

- A) Distance for climb up to a certain altitude.
- B) Glide distance from a given altitude at zero wind.
- C) Glide distance from a given altitude.
- D) Distance for horizontal flight.

96- For a typical wing the optimum angle of attack is approximately:

- A) -3°
- B) 0°
- C) 4°
- D) 8°

97- To maintain the same aircraft lift, a swept wing compared to the same wing without sweep will require:

- A) A higher angle of attack.
- B) A lower angle of attack.
- C) The same angle of attack.
- D) The same angle of incidence.



98- The most correct list of factors that affect the lift produced by an airfoil are:

- A) Angle of attack, air density, velocity, wing area.
- B) Angle of attack, air temperature, velocity, wing area.
- C) Angle of attack, velocity, wing area, airfoil section, air density.
- D) Incidence, TAS, wing plan, leading edge radius and thrust.

99- Lift of a wing is increased by:

- A) An increase in the temperature of the atmosphere.
- B) An increase in the pressure of the atmosphere.
- C) An increase in the humidity of the atmosphere.
- D) A decrease in the density of the atmosphere at a constant TAS.

100- The takeoff distance required for a swept wing aircraft compared to the same aircraft without sweep would be:

- A) Less because the acceleration would be better.
- B) The same because the takeoff speed will be the same.
- C) Greater, because C_L will be less for a given IAS.
- D) Less because the takeoff speed will be lower.

101- Maximum gliding distance of an aircraft is obtained when (propeller driven airplane):

- A) Induced drag equals the coefficient of lift.
- B) Induced drag and parasite drag are equal.
- C) Parasite drag is the least.
- D) Parasite drag is greatest

102- Lift = $\frac{1}{2} \rho V^2 S C_L$, where S is:

- A) The speed of the air flow.
- B) The shape of the airfoil.
- C) The plan area of the airfoil.
- D) Air density.

103- What is the formula for lift?

- A) $L = C_L \frac{1}{2} \rho V^2 S$
- B) $L = C_L \frac{1}{2} \rho V S^2$
- C) $L = C_L \frac{1}{2} \rho V S$
- D) $L = C_L \frac{1}{4} \rho V^2 S$



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104- The Lift to drag ratio in flight will be at its highest value at:

- A) The optimum angle of attack.
- B) The stalling angle.
- C) A point just below the stalling angle.
- D) An angle of attack between 5° and 8° .

105- If velocity (TAS) and angle of attack is kept constant and density decreases, the lift:

- A) Increases.
- B) Decreases.
- C) Remains constant.
- D) Density has no effect.

106- How does static pressure affect lift?

- A) Lift increases when pressure decreases.
- B) Lift decreases with decreasing pressure.
- C) Lift is not influenced by pressure.
- D) Lift is only influenced by speed.

107- Increase in angle of attack (below the stalling angle of attack) increases lift because:

- A) Induced drag is reduced.
- B) The vertical component of weight is reduced.
- C) The lift coefficient increases.
- D) The impact pressure of the air on the lower surface of the airfoil creates less positive pressure.

108- If indicated air speed and angle of attack are kept constant and density decreases, the lift:

- A) Increases
- B) Decreases.
- C) Remains constant.
- D) Decreases and drag increases.

109- As fuel is consumed during a level fight cruising at high level:

- A) The angle of attack must be increased.
- B) The stalling speed will increase.
- C) The center of pressure will move forward.
- D) Induced drag will decrease.

110- At a constant IAS, induced drag is affected by:

- A) Aircraft weight.
- B) Changes in thrust.
- C) Angle between chord line and longitudinal axis.
- D) Wing location.



111- The induced drag:

- A) Increases as the lift coefficient increases.
- B) Increases as the aspect ratio increases.
- C) Has no relation to the lift coefficient.
- D) Increases as the magnitude of the tip vortices decreases.

112- Which statement about induced drag and tip vortices is correct?

- A) Tip vortices can be diminished by vortex generators.
- B) The flow direction at the upper side of the wing has a component in wing root direction, the flow at the underside of the wing in wing tip direction.
- C) The flow direction at the upper and under side of the wing, both deviate in wing tip direction.
- D) The wing tip vortices and the induced drag decrease at increasing angle of attack.

113- What is the effect on induced drag if weight and speed changes?

- A) Induced drag increases with decreasing speed and induced drag increases with decreasing weight.
- B) Induced drag increases with increasing speed and induced drag increases with decreasing weight.
- C) Induced drag decreases with decreasing speed and induced drag decreases with increasing weight.
- D) Induced drag decreases with increasing speed and induced drag decreases with decreasing weight.

114- What is the effect on induced drag, when aspect ratio increases?

- A) Induced drag increases, because the effect of tip vortices increases.
- B) Induced drag increases, because a larger aspect ratio increases the frontal area.
- C) Induced drag decreases, because the effect of tip vortices decreases.
- D) Induced drag decreases, because a larger aspect ratio causes more downwash.

115- Which statement concerning the local flow pattern around a wing is correct?

- A) Slat extension, at a constant angle of attack and normal extension speeds, will increase the lift coefficient, which will also increase the induced drag coefficient.
- B) By fitting winglets to the wing tip, the strength of the wingtip vortices is reduced which in turn reduces induced drag.
- C) Sweep back reduces drag since, compared with a straight wing of equal area, the span increases.
- D) Vortex generators on the wing partially block the span wise flow over the wing leading to a reduction in induced drag.

116- Which statement is correct?

- A) The vortices and induced drag decrease with increasing angle of attack.
- B) The vortices can be diminished by vortex generators.
- C) The flows on the upper and lower surfaces of the wing are both in wing tip direction.
- D) The flow on the upper surface of the wing has a component in wing root direction.



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117- Induced drag of an aircraft would be increased with:

- A) Increased speed.
- B) Increased weight.
- C) Increased aspect ratio.
- D) Decreased angle of attack

118- For aircraft of the same weight, flying at the same IAS the angle of attack will be:

- A) The same at altitude as at sea level.
- B) Greater at altitude than at sea level because the TAS is greater.
- C) Less at altitude than at sea level because the TAS is greater.
- D) Less at altitude than at sea level because the density is less.

119- If TAS is kept constant, to maintain straight and level flight with reduced air density the angle of attack of an aircraft's wings must be:

- A) Increased.
- B) Decreased.
- C) Unaltered.
- D) Increased to the critical angle of attack.

120- Both lift and drag of an airfoil are:

- A) Proportional to the square of the velocity of the relative airflow.
- B) Proportional to increases and decreases in the velocity of the relative airflow.
- C) Inversely proportional to the air density.
- D) Inversely proportional to the area of the wing.

121- Which of the following would occur if an aircraft in level flight maintaining a constant TAS, flew into an area of lower pressure?

- A) Total drag decrease.
- B) Parasite drag decrease.
- C) Lift increase.
- D) Induced drag increase.

122- What is the cause of induced angle of attack?

- A) Downwash from trailing edge in the vicinity of the wing tips.
- B) Change in flow from effective angle of attack.
- C) The upward inclination of the free stream flow around the wing tips.
- D) Wing downwash altering the angle at which the airflow meets the tail plane.



123- Which of the following wing planforms produces the highest lift coefficient at the wing root?

- A) Swept
- B) Rectangular
- C) Elliptical
- D) Tapered

124- When considering the aerodynamic forces acting on an airfoil section:

- A) Lift and drag increase linearly with an increase in angle of attack.
- B) Lift and drag act normal to each other only at one angle of attack.
- C) Lift and drag increase exponentially with an increase in angle of attack.
- D) Lift increases linearly and drag increases exponentially with an increase in angle of attack.

125- Induced drag on a wing is:

- A) A product of lift and is always greatest at the wing root.
- B) Greatest at the wing tip.
- C) A product of lift and skin friction and is greatest at the wing tip.
- D) A product of skin friction, profile and interference drag.

126- What changes in aircraft control must be made to maintain altitude while the airspeed is being decreased?

- A) Increase the angle of attack to compensate for the decreasing lift.
- B) Increase the angle of attack to produce more lift than drag.
- C) Decrease the angle of attack to compensate for the increasing drag.
- D) Maintain a constant angle of attack until the desired airspeed is reached, then increase the angle of attack.

127- How does the total drag vary as speed is increased from stalling speed to maximum level flight speed in a straight and level flight at constant weight?

- A) Decreasing, then increasing.
- B) Decreasing.
- C) Increasing.
- D) Increasing, then decreasing.

128- If the IAS is increased by a factor of 4, by what factor would the drag increase?

- A) 4
- B) 8
- C) 12
- D) 16



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129- When the undercarriage is lowered in flight:

- A) Form drag will increase and the aircraft's nose down pitching moment will be unchanged.
- B) Induced drag will increase and the aircraft's nose down pitching moment will increase.
- C) Form drag will increase and the aircraft's nose down pitching moment will increase.
- D) Induced drag will decrease and the aircraft's nose down pitching moment will increase.

130- How does aerodynamic drag vary when airspeed is doubled? By a factor of:

- A) 2
- B) 1
- C) 16
- D) 4

131- What does parasite drag vary with?

- A) Square of the speed.
- B) C_{LMAX}
- C) Speed.
- D) Weight.

132- An aircraft flying straight and level, if density halves, aerodynamic drag will:

- A) Increase by a factor of four.
- B) Increase by a factor of two.
- C) Decrease by a factor of two.
- D) Decrease by a factor of four.

133- The value of the parasite drag in straight and level flight at constant weight varies linearly with the:

- A) Angle of attack.
- B) Square of the angle of attack.
- C) Square of the speed.
- D) Speed.

134- Increasing air pressure will have the following effect on the drag of an aeroplane (angle of attack, OAT and TAS are constant):

- A) The drag is only affected by the ground speed.
- B) The drag increases.
- C) This has no effect.
- D) The drag decreases.



135- Increasing dynamic pressure will have the following effect on the drag of an aeroplane (all other factors of importance remaining constant):

- A) Drag increases across the whole speed range.
- B) At speeds greater than the minimum drag speed, drag increases.
- C) Drag decreases across the whole speed range.
- D) None.

136- For an aircraft flying at a constant IAS:

- A) The drag will be less at altitude than at sea level because the TAS is lower.
- B) The drag will be less at altitude than at sea level because density is lower.
- C) The drag will be greater at altitude than at sea level because TAS is higher.
- D) The drag will be the same at altitude as at sea level.

137- For an aircraft in level flight, as indicated air speed increases:

- A) Both parasite and induced drag increase.
- B) Parasite drag decreases, induced drag increases.
- C) Parasite drag increases, induced drag decreases.
- D) Both parasite and induced drag decrease.

138- If the weight of an aircraft is increased, for a constant speed:

- A) Profile drag will increase; induced drag will remain the same.
- B) Induced drag will increase; profile drag will remain the same.
- C) Both profile drag and induced drag will remain the same.
- D) Profile drag will increase, induced drag will decrease.

139- The drag of an aircraft will:

- A) Increase with increase in air temperature.
- B) Increase with decrease in air density.
- C) Increase with increase in air pressure.
- D) Decrease with an increase in stagnation pressure.

140- An aircraft is required to cruise, maintaining V_{MD} as the weight decreases the IAS must be:

- A) Decreased, and the angle of attack decreased.
- B) Decreased, and the angle of attack remain constant.
- C) Increased, and the angle of attack decreased.
- D) Kept the same, and the angle of attack kept the same.

141- At ___ weight the maximum level flight speed will be ___ because of a change in ___ drag.

- A) Lower; less; parasite
- B) Lower; less; induced
- C) Higher; less; induced
- D) Higher; less; parasite



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142- As altitude increases the excess thrust at a given IAS:

- A) Decreases because drag increases and thrust decreases.
- B) Increases because drag decreases and thrust is constant.
- C) Decreases because thrust decreases and drag is constant.
- D) Increases because drag decreases and thrust increases.

143- Parasite drag is linearly proportional to:

- A) Speed.
- B) Angle of attack.
- C) Speed².
- D) Weight.

144- When an aircraft selects its undercarriage and flaps down in flight, its V_{MD} will _____ (as opposed to maintaining the clean configuration). When in clean configuration the speed stability will _____ (as opposed to configuration with gear and flaps extended).

- A) Increase; reduce
- B) Increase; increase
- C) Reduce; reduce
- D) Reduce; increase

145- An aeroplane maintains straight and level flight while the speed is doubled. The change in lift coefficient will be:

- A) x 0.25
- B) x 2.0
- C) x 0.5
- D) x 4.0

146- To maintain level flight, if the angle of attack is increased the speed must be:

- A) Reduced.
- B) Increased in the same ratio as the lift to drag ratio decreases.
- C) kept constant.
- D) Increased.

147- An aeroplane flies in straight and level flight with a lift coefficient $C_L=1$. What will be the new value of C_L after the speed has doubled, whilst still maintaining the original condition of flight?

- A) 1.00
- B) 0.50
- C) 0.25
- D) 2.00



148- An increase in the speed at which an airfoil passes through the air increases lift because:

- A) The increased speed of air passing over the airfoil's upper surface decreases the pressure, thus creating a greater pressure differential between upper and lower surface.
- B) The increased speed of the airflow creates a lesser pressure differential between the upper and lower airfoil surfaces.
- C) The increased velocity of the relative wind increases the angle of attack.
- D) The impact pressure of the air on the lower surface of the airfoil creates less positive pressure.

149- With increasing angle of attack, the CP will reach its most forward point:

- A) Just below the stalling angle.
- B) Just above the stalling angle.
- C) At the stalling angle.
- D) It varies at various points dependent on aircraft weight.

150- Which of the following statements about stall speed is correct?

- A) Use of a T-tail will decrease the stall speed.
- B) Increasing the angle of sweep of the wing will decrease the stall speed.
- C) Decreasing the angle of sweep of the wing will decrease the stall speed.
- D) Increasing the anhedral of the wing will decrease the stall speed.

151- Which of the following is the speed in level flight that would activate the stall warning?

- A) $V_{S1G} + 15$ kts
- B) $1.2 V_{S1G}$
- C) $1.05 V_{S1G}$
- D) $1.5 V_{S1G}$

152- What effect on stall speed do the following have?

- A) Increased anhedral increases stall speed.
- B) Fitting a T-tail will reduce stall speed.
- C) Increasing sweep angle decreases stall speed.
- D) Decreasing sweep angle decreases stall speed.

153- The normal stall recovery procedure for a light single engine aeroplane is:

- A) Full power and stick roll-neutral nose-down, correction for angle of bank with stick.
- B) Full power and stick roll-neutral nose-down, correcting for angle of bank with rudder.
- C) Idle power and stick roll-neutral nose-down and no other corrections.
- D) Idle power and stick neutral, waiting for the natural nose-down tendency.



154- Following factors increase stall speed:

- A) A lower weight, decreasing bank angle, a smaller flap setting.
- B) A higher weight, selecting a higher flap setting, a forward CG shift.
- C) Increasing bank angle, increasing thrust, slat extension.
- D) An increase in load factor, a forward CG shift, decrease in thrust.

155- The stalling speed as IAS will change by the following factors:

- A) Increase with increased load factor, icing conditions and an aft CG location.
- B) Decrease in a forward GG location, higher altitude and due to the slip stream from a propeller on an engine located forward of the wing.
- C) Increase during turn, increased mass and forward CG location.
- D) Increase with increased load factor, more flaps but will not increase due to the bank angle in a turn.

156- The stalling speed in IAS will change according to the following factors?

- A) Will increase during turn, increased mass and an aft CG location.
- B) Will decrease with a forward GG location, lower altitude and due to the slip stream from a propeller on an engine located forward of the wing.
- C) Will increase with increased load factor, icing conditions and more flaps.
- D) May increase during turbulence and will always increase when banking in a turn.

157- Compared with level flight prior to the stall, the lift _____ and drag _____ in the stall.

- A) Increases; decreases.
- B) Decreases; increases.
- C) Decreases; decreases.
- D) Increases; increases.

158- Increase of wing loading will:

- A) Decrease the minimum gliding angle.
- B) Increase C_{LMAX} .
- C) Decrease takeoff speeds.
- D) Increase the stall speeds.

159- What effect does an increased load have on an aircraft?

- A) The aircraft will have a tendency to spin.
- B) The aircraft will suffer immediate structural failure.
- C) The aircraft will stall at a higher speed.
- D) The aircraft will have a tendency to roll and yaw.

160- As the center of gravity is changed, recovery from a stall becomes progressively:

- A) More difficult as the center of gravity moves aft.
- B) More difficult as the center of gravity moves forward.
- C) Less difficult as the center of gravity moves aft.
- D) Is unaffected by center of gravity position, only by all up weight.



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161- Which action will result in a stall?

- A) Exceeding the critical angle of attack.
- B) Flying at a low airspeed.
- C) Raising the aircraft's nose too high.
- D) Lowering the flaps during the cruise.

162- A rectangular wing, compared to other wing planforms, has a tendency to stall:

- A) First at the leading edge, with progression outward toward the wing root and tip.
- B) First at the wingtip, with the stall progression toward the wing root.
- C) First at the wing root, with the stall progression towards the wing tip.
- D) First at the semi-span center, giving good aerodynamic stall warning.

163- The change-in downwash along a wing without taper:

- A) Reduces damping in roll.
- B) Reduces the adverse yaw effect in roll.
- C) Causes the stall to occur at the root first.
- D) Increases the load factor at the wing tip.

164- Which statement is true concerning the aerodynamic conditions which occur during a spin entry?

- A) After a full stall, the wing that drops continues in a stalled condition while the rising wing regains and continues to produce some lift, causing the rotation.
- B) After a partial stall, the wing that drops remains in a stalled condition while the rising wing regains and continues to produce lift, causing the rotation.
- C) After a full stall, both wings remain in a stalled condition throughout the rotation.
- D) After an incipient spin, the wing that drops remains in a stalled condition while the rising wing continues unstalled, causing the rotation.

165- During a spin to the left, which wing(s) is/are stalled?

- A) Neither.
- B) Only the left
- C) Both.
- D) Only the right.

166- During autorotation the:

- A) Outer wing is stalled.
- B) Outer wing is more stalled than the inner.
- C) Inner wing is more stalled than the outer.
- D) Outer wing is not stalled.



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167- The lift to drag ratio of a wing section at its stalling angle of attack is:

- A) High.
- B) Negative quantity.
- C) Maximum.
- D) Low.

168- Comparing the IAS and TAS stall speed at 5000 ft and sea level, the IAS stalling speed will normally be:

- A) The same as at sea level but the TAS will be higher.
- B) Higher than at sea level but the TAS will be the same.
- C) The same as at sea level and the TAS will be the same.
- D) Higher than at sea level and the TAS will be higher.

169- Which of the following are used as stall warning devices?

- A) Angle of attack sensor and stall strip.
- B) Stick shaker and angle of attack indicator.
- C) Angle of attack indicator and speed indicator.
- D) Stick shaker and stall strip.

170- The aerodynamic characteristics of an aircraft in an incipient spin is that the:

- A) Inner and outer wings are not completely stalled.
- B) Outer wing is completely stalled.
- C) Outer wing is stalled less than inner wing.
- D) Inner wing is stalled less than outer wing.

171- The angle of attack at which an aircraft stalls:

- A) Decreases with an increase in engine power.
- B) Remains constant regardless of gross weight.
- C) Increases with an increase in engine power.
- D) Varies with gross weight and density altitude.

172- With increasing altitude flying at a constant IAS will result in:

- A) A reduction in TAS.
- B) A reduction in the stalling angle.
- C) No change in the stalling angle.
- D) An increased stalling angle.



173- The trailing edge flaps when extended:

- A) Increase the zero lift angle of attack.
- B) Worsen the best angle of glide.
- C) Significantly increase the angle of attack for maximum lift.
- D) Significantly lower the drag.

174- Which of the following occurs when trailing edge flaps are extended?

- A) The critical angle of attack decreases and C_{LMAX} increases.
- B) C_{LMAX} increases and the critical angle of attack increases.
- C) The critical angle of attack is constant, but C_{LMAX} increases.
- D) The critical angle of attack remains constant and stall speed increases.

175- Which statement is correct?

- A) Spoiler extension decreases the stall speed and the minimum rate of descent, but increases the minimum descent angle.
- B) Extension of flaps will increase (C_L/C_D) causing the minimum rate of descent to decrease.
- C) Extension of flaps has no influence on the minimum rate of descent, as only the TAS has to be taken into account.
- D) Extension of flaps causes a reduction of the stall speed, the maximum glide distance also reduces.

176- What is the effect of deploying leading edge flaps?

- A) Decrease C_{LMAX} .
- B) Decrease the critical angle of attack.
- C) Not affect the critical angle of attack.
- D) Increase the critical angle of attack.

177- Compared with the trailing edge flap up configuration the maximum angle of attack for the flaps down configuration is:

- A) Unchanged.
- B) Larger.
- C) Smaller.
- D) Smaller or larger depending on flap deflection.

178- When flaps are deployed at constant angle of attack the lift coefficient will:

- A) Remain the same
- B) Decrease.
- C) Increase.
- D) Vary as the square of IAS.



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179- Deflection of leading edge flaps will:

- A) Increase critical angle of attack.
- B) Decrease C_{LMAX} .
- C) Decrease drag.
- D) Not affect critical angle of attack.

180- In order to maintain straight and level flight at a constant airspeed, whilst the flaps are being retracted, the angle of attack will:

- A) Increase.
- B) Decrease.
- C) Remain constant.
- D) Increase or decrease depending on type of flap.

181- A deployed slat will:

- A) Decrease the boundary layer energy and decrease the suction peak on the slat, so that C_{LMAX} is reached at lower angles of attack.
- B) Increase the boundary layer energy and increase the suction peak on the fixed part of the wing, so that the stall is postponed to higher angles of attack.
- C) Increase the boundary layer energy, move the suction peak from the fixed part of the wing to the slat, so that the stall is postponed to higher angles of attack.
- D) Increase the camber of the airfoil and increase the effective angle of attack, so that C_{LMAX} is reached at higher angles of attack.

182- During the extension of the flaps at constant angle of attack the aeroplane starts to (all other factors of importance being constant):

- A) Sink suddenly.
- B) Bank.
- C) Climb.
- D) Yaw.

183- What is the most effective flap system?

- A) Single slotted flap.
- B) Split flap.
- C) Plain flap.
- D) Fowler flap.

184- When a trailing edge flap is lowered fully:

- A) The CP moves to the rear and lift to drag ratio is unaffected.
- B) The CP moves to the rear and lift to drag ratio is decreased.
- C) The CP moves forwards and lift to drag ratio is decreased.
- D) The CP moves to the rear and lift to drag ratio is increased.



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185- During flap down selection in a continuous straight and level flight at constant IAS and weight:

- A) The lift coefficient and the drag coefficient increase.
- B) The center of pressure moves aft.
- C) The stall speed increases.
- D) The total boundary layer becomes laminar.

186- During the retraction of the flaps at constant angle of attack the aeroplane starts to (all other factors of importance being constant):

- A) Bank.
- B) Sink suddenly.
- C) Climb.
- D) Yaw.

187- On a wing fitted with a fowler type trailing edge flap, the full extended position will produce:

- A) An unaffected wing area and increase in camber
- B) An increase in wing area and camber.
- C) An unaffected C_D at a given angle of attack.
- D) An increase in wing area only.

188- How do vortex generators work?

- A) Re-direct span wise flow.
- B) Take energy from free stream and introduce it into the boundary layer.
- C) Reduce kinetic energy to delay separation.
- D) Reduce the adverse pressure gradient.

189- (Refer to figure I-34) Which type of flap is shown in the picture?

- A) Plain flap.
- B) Split flap.
- C) Single slotted flap.
- D) Fowler flap.

190- If the flaps are lowered but the airspeed is kept constant, to maintain level flight:

- A) The nose must be pitched down.
- B) The nose must be pitched up.
- C) The altitude must be held constant.
- D) Spoilers must be deployed.



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191- When deploying the flaps, the effective angle of attack:

- A) Decreases.
- B) Remains the same.
- C) Increases.
- D) May increase or decrease depending on the aircraft type.

192- The lift coefficient C_L of a wing at a given angle of attack:

- A) Is dependent on the surface area of the wing.
- B) Is increased by the use of high lift devices.
- C) Is constant and not affected by high lift devices.
- D) Is reduced when high lift devices are used.

193- C_{LMAX} may be increased by the use of:

- A) Flaps.
- B) Slats.
- C) Boundary layer control.
- D) All answers are correct.

194- An aeroplane has the following flap positions: 0° , 15° , 30° , 45° , slats can also be selected.

Generally speaking, which selection provides the highest positive contribution to the C_{LMAX} ?

- A) The flaps from 0° to 15° .
- B) The flaps from 30° to 45° .
- C) The slats from the retracted to the takeoff position.
- D) The flaps from 15° to 30° .

195- Compared with the clean configuration, the angle of attack at C_{LMAX} with trailing edge flaps extended is:

- A) Smaller or larger depending on the degree of flap extension.
- B) Larger.
- C) Unchanged.
- D) Smaller.

196- Trailing edge flaps once extended:

- A) Degrade the best angle of glide.
- B) Increase the zero lift angle of attack.
- C) Significantly increase the angle of attack for maximum lift.
- D) Significantly lower the drag.



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197- When fowler type trailing edge flaps extended at a constant angle of attack, the following changes will occur:

- A) C_L increases and C_D remains constant.
- B) C_L increases and the center of pressure moves forward.
- C) C_L and C_D increase.
- D) C_D decreases and the center of pressure moves aft.

198- When trailing edge flaps are extended in level flight, the change in pitching moment, ignoring any effects on the tailplane, will be:

- A) Dependent on CG location.
- B) Nose up.
- C) Zero.
- D) Nose down.

199- A slat is fitted to an airfoil to:

- A) Reduce the stalling angle.
- B) Delay the stall and so increase the lift.
- C) Increase the drag and so enable the aircraft to fly more slowly.
- D) Increase the speed at which the aircraft stalls.

200- Because of the reduction in C_L when flaps are raised, to maintain a constant lift force:

- A) The angle of attack must be decreased.
- B) The angle of attack must be increased.
- C) The angle of attack must remain the same.
- D) The nose of the aircraft should be lowered.

201- A slat is:

- A) A leading edge high lift device, hinged at its forward edge, which increases the camber and leading edge radius of the main airfoil when deployed.
- B) A trailing edge device which is automatically deployed by movement of the stagnation point at high angles of attack.
- C) An auxiliary, cambered airfoil positioned forward of the main airfoil so as to form a slot.
- D) A fixed slot in the leading edge of some older types of aircraft.

202- Because of the increase in C_L when the flaps are extended in flight, to maintain level flight, the angle of attack:

- A) Would have to be decreased.
- B) Would have to be increased.
- C) Would be required to remain the same.
- D) Would have to be decreased, then increased.



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203- What is the effect of deployment of a plain flap?

- A) Increases camber.
- B) Decreases angle of attack.
- C) Changes position of CP.
- D) Decreases the aspect ratio.

204- Which of the following increases the stall angle?

- A) Slats
- B) Flaps
- C) Spoilers
- D) Ailerons

205- In order to maintain straight and level flight when trailing edge flaps are retracted, the angle of attack must:

- A) Be increased or decreased depending on type of flap.
- B) Be decreased.
- C) Be increased.
- D) Stay the same because the lift requirement will be the same.

206- The increased upwash experienced at the leading edge of a wing when trailing edge flaps are lowered causes:

- A) An increase in the angle of attack.
- B) A rearwards movement of the CG.
- C) A forward movement of the CP.
- D) A reduction in C_{LMAX} .

207- When (in flight) you lower the trailing edge flaps fully down:

- A) The wing CP moves forward and the L/D ratio increases.
- B) The wing CP moves aft and the L/D ratio decreases.
- C) The stalling angle increases and the L/D ratio reduces.
- D) The stalling angle reduces and the L/D ratio increases.

208- The purpose of deploying leading edge slats is to:

- A) Decrease induced and profile drag.
- B) Decrease the critical angle.
- C) Increase the stalling angle.
- D) Increase profile drag.



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209- Trailing edge flaps are used in order to:

- A) Decrease stalling speed and reduce maximum angle of attack thereby achieving a more nose down attitude near and at stalling speed.
- B) Increase maximum lift coefficient by increasing maximum angle of attack.
- C) Increase L/D max.
- D) Reducing drag.

210- Which of the following is the most important result problem caused by ice formation?

- A) Increased drag.
- B) Increased weight.
- C) Blockage of the controls.
- D) Reduction in C_{LMAX} .

211- If an aircraft has positive static stability:

- A) It is always dynamically stable.
- B) It is always dynamically unstable.
- C) It can be dynamically neutral, stable or unstable.
- D) It is always dynamically neutral.

212- The sum of the moments in flight are movement would take place about:

- A) The CG.
- B) The neutral point.
- C) The maneuver point.
- D) The CP.

213- The maneuverability of an aeroplane is best when the:

- A) CG is on the aft CG limit.
- B) Speed is low.
- C) CG position is on the forward CG limit.
- D) Flaps are down.

214- When an aeroplane with the center of gravity forward of the center of pressure of the combined wing/fuselage is in straight and level flight, the vertical load on the tailplane will be:

- A) Downwards because it is always negative regardless of the position of the center of gravity.
- B) Upwards.
- C) Zero because in steady flight all loads are in equilibrium.
- D) Downwards.



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215- The maneuver stability is positively affected by:

- A) Forward CG position.
- B) Aeroplane nose up trim.
- C) Aft CG position.
- D) Aeroplane nose down trim.

216- Longitudinal static stability is creating by the fact that the:

- A) Wing surface is greater than the horizontal tail surface.
- B) Centre of gravity is located in front of the leading edge of the wing.
- C) Centre of gravity is located in front of the neutral point of the aeroplane.
- D) Aeroplane possesses a large trim speed range.

217- The center of gravity moving aft will:

- A) Increase the elevator up effectiveness.
- B) Decrease the elevator up effectiveness.
- C) Not affect the elevator up or down effectiveness.
- D) Increase or decrease the elevator up effectiveness, depending on wing location.

218- Maneuverability is best at:

- A) Aft CG position.
- B) Forward CG position.
- C) High flap settings.
- D) Low speed.

219- What is the effect on the aeroplanes static longitudinal stability of a shift of the center of gravity to a more aft location and on the required control deflection for a certain pitch up or down?

- A) The static longitudinal stability is smaller and the required control deflection is larger.
- B) The static longitudinal stability is larger and the required control deflection is smaller.
- C) The static longitudinal stability is larger and the required control deflection is larger.
- D) The static longitudinal stability is smaller and the required control deflection is smaller.

220- Positive static longitudinal stability means that a:

- A) Nose up moment occurs with a speed change at constant angle of attack.
- B) Nose down moment occurs after encountering an up gust.
- C) Nose down moment occurs with a speed change at constant angle of attack.
- D) Nose up moment occurs after encountering an up gust.



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221- The effect of the wing downwash on the static longitudinal stability of an aeroplane is:

- A) Negligible.
- B) Negative.
- C) Positive.
- D) Smallest at high values of the lift coefficient.

222- Changes in the center of pressure of a wing affect the aircraft:

- A) Lift to drag ratio.
- B) Lifting capacity.
- C) Aerodynamic balance and controllability.
- D) Drag.

223- With the CG on the aft limit the control forces required to pitch the aircraft would be:

- A) Less than with a forward CG.
- B) More than with a forward CG.
- C) The same as with a forward CG.
- D) Its depends on wing plan form.

224- Moving the CG rearwards will:

- A) Have no effect on stability.
- B) Increase lateral stability.
- C) Increase longitudinal stability.
- D) Reduce longitudinal stability.

225- If the CG of an aircraft is moved from the aft limit to the forward limit, how will it affect the stalling speed and stick force?

- A) Increase stalling speed and stick force.
- B) Decrease the stalling speed and stick force.
- C) Decrease the stalling speed and increase the stick force.
- D) Increase the stalling speed and decrease the stick Force.

226- When an aircraft's forward CG limit is exceeded, it will affect the flight characteristics of the aircraft by producing:

- A) Very light elevator control forces.
- B) Higher stalling speeds and more longitudinal stability.
- C) Improved performance since it reduces the induced drag.
- D) An extremely high tail down force.



227- Forward and aft movement of the CG effect on stability and controllability will be:

- A) Rearward movement of the CG will reduce controllability and stability.
- B) Rearward movement of the CG will reduce controllability and increase stability.
- C) Forward movement of the CG will increase stability and reduce controllability.
- D) Forward movement of the CG will reduce stability and increase controllability.

228- If an aircraft is longitudinally statically unstable, at the same time it will be dynamically:

- A) Unstable.
- B) Neutral.
- C) Stable.
- D) Positively stable.

229- In order to remain in level balanced flight:

- A) The wing lift must be greater than weight, if the tailplane is giving a download for balance.
- B) The wing lift has to be less than weight, if the tail plane is giving a download for balance.
- C) The wing lift must be equal to weight.
- D) The wing lift must be less than weight at all times.

230- The effect of a positive wing sweep on static directional stability is as follows:

- A) Negative dihedral effect.
- B) No effect.
- C) Destabilizing dihedral effect.
- D) Stabilizing effect.

231- Directional static stability is determined by:

- A) Aircraft weight.
- B) Tail volume.
- C) Fin area.
- D) Elevator angle for trim.

232- Which of the following gives an unstable contribution in sideslip?

- A) Wing sweep.
- B) Flap extension.
- C) Dihedral.
- D) High wing.

233- The primary function of the fin is to give:

- A) Lateral stability - around the longitudinal axis.
- B) Directional stability - around the normal axis.
- C) Directional stability - around the longitudinal axis.
- D) Directional stability - around the lateral axis.



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234- The contribution of swept back wings to static directional stability:

- A) Is nil.
- B) Is negative.
- C) Is positive.
- D) Decreases as the sweep back increases.

235- Directional stability is the stability around the:

- A) Longitudinal axis.
- B) Lateral axis.
- C) Normal axis.
- D) Pitch axis.

236- Compared to straight wings, swept back wings have:

- A) Less directional stability.
- B) Better longitudinal stability.
- C) Better directional stability.
- D) Less longitudinal stability.

237- Increasing the size of the fin:

- A) Increases lateral stability and directional control.
- B) Increases the directional stability.
- C) Reduces directional stability.
- D) Reduces lateral stability.

238- With a swept wing aircraft, with increase in altitude, which of the following statements about lateral stability is correct?

- A) Static lateral stability increases, dynamic lateral stability increases.
- B) Static lateral stability remains the same, dynamic lateral stability decreases.
- C) Static lateral stability decreases, dynamic lateral stability increases.
- D) Static lateral stability increases, dynamic lateral stability decreases.

239- Which of the following lists aeroplane features that each increase static lateral stability?

- A) Fuselage mounted engines, dihedral, T-tail.
- B) Low wing, dihedral, elliptical wing planform.
- C) High wing, sweep back, large and high vertical fin.
- D) Sweep back, under-wing mounted engines, winglets.

240- Which of the following will reduce lateral stability?

- A) Anhedral.
- B) Tip tanks.
- C) Dihedral.
- D) Wing root fairing.



241- Considering the lateral stability of a swept wing aircraft, at high flight levels the static lateral stability will be and the dynamic lateral stability will be

- A) Greater; greater.
- B) The same; lower.
- C) Lower; greater.
- D) The same; greater.

242- The effect of a high wing with zero dihedral is as follows:

- A) Its only purpose is to ease aeroplane loading.
- B) Negative dihedral effect.
- C) Positive dihedral effect.
- D) Zero dihedral effect.

243- Dihedral of the wing:

- A) Is the only way to increase the static lateral stability.
- B) Increases the static lateral stability.
- C) Is only positive for aeroplanes with high mounted wings.
- D) Decreases the static lateral stability.

244- The effect of a swept wing is to give:

- A) Positive dihedral effect.
- B) Negative dihedral effect.
- C) Decreased roll-with-yaw effect.
- D) Adverse yaw effect.

245- What happens to lateral stability when flaps are extended?

- A) Lateral stability is decreased.
- B) Lateral stability is increased as lift is increased.
- C) Lateral stability is unaffected, as the wings are symmetrical.
- D) Lateral stability is increased as the center of pressure moves inboard.

246- Which of the following statements about dihedral is correct?

- A) Dihedral is necessary for the execution of slip-free turns.
- B) Effective dihedral is the angle between the $\frac{1}{4}$ chord line and the lateral axis of the aeroplane.
- C) Dihedral contributes to dynamic but not to static lateral stability.
- D) The effective dihedral of an aeroplane component means the contribution of that component to the static lateral stability.



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247- Which type of wing arrangement decreases the static lateral stability of an aeroplane?

- A) Increased wing span.
- B) Dihedral.
- C) High wing.
- D) Anhedral.

248- How can the designer of an aeroplane with straight wings increase the static lateral stability?

- A) By increasing the aspect ratio of the vertical stabilizer, whilst maintaining a constant area.
- B) Fitting a ventral fin (a fin at the underside of the aeroplane).
- C) By applying wing twist.
- D) By increasing anhedral.

249- Static lateral stability should not be too large, because:

- A) Too much rudder deflection would be required in a crosswind landing.
- B) Too much aileron deflection would be required in a crosswind landing.
- C) Constant aileron deflection would be required during cruise in case of crosswind.
- D) The roll trim sensitivity would increase sharply.

250- The effect on static lateral stability of an aeroplane with a high wing as compared with a low wing is:

- A) Zero dihedral effect.
- B) A negative dihedral effect.
- C) No effect as it is only used to improve aeroplane loading.
- D) A positive dihedral effect.

251- Which statement concerning sweep back is correct?

- A) Sweep back provides a positive contribution to static lateral stability.
- B) Sweep back increases speed stability at Mach numbers above M_{CRIT} .
- C) Sweep back is mainly intended to increase static directional stability.
- D) A disadvantage of sweep back is that it decreases M_{CRIT} .

252- For an aircraft with neutral static roll stability, following a wing drop:

- A) The wing would tend to return to the level position.
- B) The wing would continue to drop.
- C) The wing would remain in its displaced position.
- D) The forces of lift and weight would remain in balance.



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253- Which of the following will increase lateral stability?

- A) Dihedral, wing mounted engines, high wing.
- B) High wing, high vertical stabilizer, sweep back.
- C) Low wing, dihedral, elliptical plan form.
- D) Anhedral, low wing, sweep back.

254- The dihedral construction of an aircraft wing provides:

- A) Lateral stability about the longitudinal axis.
- B) Lateral stability about the normal axis.
- C) Longitudinal stability about the lateral axis.
- D) Directional stability about the lateral axis.

255- Compared to a rectangular wing, a swept wing will for a given angle of attack and wing area:

- A) Be more laterally stable and produce less lift.
- B) Produce more lift and be more laterally stable.
- C) Increase lateral stability with reduced tip stall tendency.
- D) Advance M_{CRIT} .

256- Why do some wings have dihedral?

- A) To increase longitudinal stability.
- B) To reduce directional stability.
- C) To increase directional stability.
- D) To increase lateral stability.

257- Which of the following flight phenomena can happen at Mach numbers below the critical Mach number?

- A) Dutch roll.
- B) Tuck under.
- C) Mach buffet.
- D) Shock stall.

258- When considering the relationship between lateral static stability and directional stability:

- A) Dominant directional static stability gives an increased tendency for Dutch roll.
- B) Dominant lateral static stability gives an increased tendency for spiral instability.
- C) Dominant lateral static stability gives an increased tendency for Dutch roll.
- D) They are mutually independent and have no effect on Each other.



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259- An aircraft is placed in a level balanced turn and the controls released. It is spirally unstable if:

- A) The bank steadily increases.
- B) The bank remains the same.
- C) The bank reduces.
- D) The pitch attitude increases.

260- Which of the following statements about static lateral and directional stability is correct?

- A) The effects of static lateral and static directional stability are completely independent of each other because they take place about different axis.
- B) An aeroplane with an excessive static directional stability in relation to its static lateral stability, will be prone to spiral dive (spiral instability).
- C) An aeroplane with an excessive static directional stability in relation to its static lateral stability, will be prone to Dutch roll.
- D) Static directional stability can be increased by installing more powerful engines.

261- Which aeroplane behavior will be corrected by a yaw damper?

- A) Spiral dive.
- B) Tuck under.
- C) Dutch roll.
- D) Buffeting.

262- Sensitivity for spiral dive will occur when:

- A) The static directional stability is negative and the static lateral stability is positive.
- B) The static directional stability is positive and the static lateral stability is relatively weak.
- C) The static lateral and directional stability are both negative.
- D) The Dutch roll tendency is too strongly suppressed by the yaw damper.

263- An aircraft's tendency to Dutch roll may be reduce:

- A) Reducing the size of the fin.
- B) Giving the wings an angle of anhedral.
- C) Sweeping the wings.
- D) Giving the aircraft longitudinal dihedral.

264- Which moments or motions interact Dutch roll?

- A) Rolling and yawing.
- B) Pitching and yawing.
- C) Pitching and rolling.
- D) Pitching and adverse yaw.



265- Which one of the following systems suppresses the tendency to Dutch roll?

- A) Rudder limiter.
- B) Yaw damper.
- C) Roll spoilers.
- D) Spoiler mixer.

266- If the static lateral stability of an aeroplane is increased, whilst its static directional stability remains constant:

- A) Its sensitivity to Dutch roll increases.
- B) Its spiral stability decreases.
- C) Turning flight becomes more difficult.
- D) The nose-down pitching moment in a turn increases.

267- Static lateral stability should not be too small because:

- A) The aeroplane would show too strong a tendency to spiral dive.
- B) After a disturbance around the longitudinal axis the aeroplane would show too strong a tendency to return to the original attitude.
- C) The stick force per G would become unacceptably small.
- D) The aeroplane would show too strong a tendency to Dutch roll.

268- What will increase the tendency to Dutch roll?

- A) An increased static lateral stability.
- B) An increased static directional stability.
- C) A forward movement of the center of gravity.
- D) An increased anhedral.

269- Which of the following conditions would leave an aircraft susceptible to spiral divergence?

- A) Positive lateral stability, negative directional stability.
- B) Over active rudder inputs from the yaw damper when recovering from Dutch roll.
- C) Positive longitudinal stability.
- D) Positive directional stability, weak lateral stability.

270- Dutch roll is a combination of:

- A) Pitch and roll.
- B) Pitch and yaw.
- C) Yaw and roll.
- D) None of the above.



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271- Aft settings of the CG will:

- A) Increase the possibility of spiral instability.
- B) Increase V_{MCG} .
- C) Increase the possibility of Dutch roll.
- D) Increase the elevator stick force gradient

272- Dutch roll occurs when:

- A) Lateral stability is too great compared to directional stability.
- B) Directional stability is too great compared to lateral stability.
- C) Directional and lateral stability is equal.
- D) Directional stability is compensated by ailerons.

273- If the sum of moments in flight is not zero, the aeroplane will rotate about:

- A) The aerodynamic center of the wing.
- B) The neutral point of the aeroplane.
- C) The center of gravity.
- D) The center of pressure of the wing.

274- In a twin-engine jet powered aeroplane (engines mounted below the low wings) the thrust is suddenly increased. Which elevator deflection will be required to maintain the pitching moment zero?

- A) Down.
- B) Up.
- C) No elevator movement will be required because the thrust line of the engines remains unchanged.
- D) It depends on the position of the center of gravity.

275- Which of the following is the reason for putting the horizontal stabilizer on top of the fin, known as a T-tail?

- A) To improve ground clearance during takeoff and landing on a contaminated runway.
- B) To decrease the tendency for super stall.
- C) To improve the aerodynamic efficiency of the vertical tail.
- D) To improve the wing efficiency.

276- An advantage of locating the engines at the rear of the fuselage, in comparison to a location beneath the wing, is:

- A) A wing which is less sensitive to flutter.
- B) Easier maintenance of the engines.
- C) Less influence on longitudinal control of thrust changes.
- D) Lighter wing construction.



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277- When the control column is moved forward and to the right:

- A) The elevator goes down, the right aileron moves down and the left aileron moves up.
- B) The elevator goes up, the right aileron moves up and the left aileron moves down.
- C) The elevator goes down, the right aileron moves up and the left aileron moves down.
- D) The elevator goes up, the right aileron moves down and the left aileron moves up.

278- An aircraft is approaching to land with its CG at the forward limit. It will be to flare and V_{REF} will be than normal.

- A) Difficult; higher
- B) Easy; lower
- C) Remain the same, lower
- D) Difficult; lower

279- When the CG position is moved forward, the elevator deflection for a maneuver with a load factor >1 will be:

- A) Larger.
- B) Smaller.
- C) Unchanged.
- D) Dependent on trim position.

280- A pitch up could be caused by:

- A) Forward movement of the center of gravity.
- B) A reduction in varying loads due to G.
- C) Forward movement of the center of pressure.
- D) Lateral movement of the center of gravity.

281- When an aircraft pitches up, the angle of attack of the tailplane will:

- A) Remain the same.
- B) Depend solely upon the rigger's angle of incidence.
- C) Decrease.
- D) Increase.

282- A jet transport aeroplane exhibits pitch up when thrust is suddenly increased from an equilibrium condition, because the thrust line is below the:

- A) CG.
- B) Drag line of action.
- C) Neutral point.
- D) Centre of pressure.



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283- If an aircraft has a down load on the tail plane, as the elevator is lowered:

- A) The down load is increased.
- B) The down load is decreased.
- C) The down load remains the same unless the tail plane incidence is changed.
- D) The negative camber is increased.

284- When the landing gear is lowered, given that the CG does not move longitudinally, to maintain level flight, the download on the tail plane must:

- A) Increase.
- B) Decrease.
- C) Remain the same.
- D) None of above.

285- If the horizontal stabilizer gets stuck in the cruise position, what action should you take on landing?

- A) Land at slower speed.
- B) Land at faster speed with less flap.
- C) Move Passengers forward.
- D) Use the Mach trim system.

286- When is the greatest up elevator angle required for landing?

- A) Flaps extended with a forward CG.
- B) Flaps extended and an aft CG.
- C) Flaps up with a forward CG.
- D) Flaps up with an aft CG.

287- When the stick is moved forward, the stabilizer lifts:

- A) Decreases.
- B) Increases.
- C) Remains the same.
- D) Initially decreases, then increases.

288- The purpose of the horizontal stabilizer is to:

- A) Give the aeroplane sufficient longitudinal stability.
- B) Give the aeroplane sufficient directional stability.
- C) Give the aeroplane enough weight in the tail.
- D) Give the aeroplane sufficient lateral stability.



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289- Left rudder input will cause:

- A) Left yaw about the vertical axis and left roll about the longitudinal axis.
- B) Right yaw about the vertical axis and right roll about the longitudinal axis.
- C) Left yaw about the vertical axis and right roll about the longitudinal axis.
- D) Right yaw about the vertical axis and left roll about the longitudinal axis.

290- The fin of an aircraft is a symmetrical airfoil:

- A) It will only provide an aerodynamic force when the rudder is moved.
- B) It will give drag, but no lift because it is a symmetrical airfoil.
- C) It can give no lift, only drag.
- D) It could stall if the fin angle of attack is too great.

291- If the right rudder is pushed forward:

- A) The rudder moves to the left and the aircraft yaws to the right.
- B) The rudder moves to the right and the aircraft yaws to the left.
- C) The rudder moves to the right and the aircraft yaws to the right.
- D) The rudder moves to the left and the aircraft yaws to the left.

292- A symmetrical fin will give a side force:

- A) With rudder neutral and no yaw.
- B) Only when rudder is applied.
- C) Only when the aircraft yaws.
- D) When rudder is applied and when the aircraft yaws.

293- When the rudder pedals are moved to cause a yaw to the left:

- A) The left pedal is moved forward and the rudder moves to the right.
- B) The right pedal is moved forward and the rudder moves to the left.
- C) The left pedal is moved forward and the rudder moves to the left.
- D) The right pedal is moved forward and the rudder moves to the right.

294- During flight the yaw pedals are used to control:

- A) Aircraft heading, balance, slip and skid.
- B) Aircraft direction, slip and skid.
- C) Turning, balance, direction and slip.
- D) Direction of movement and heading.

295- Differential ailerons deflection:

- A) Increases the C_{LMAX} .
- B) Is required to keep the total lift constant when ailerons are deflected.
- C) Equals the drag of the right and left aileron.
- D) Is required to achieve the required roll-rate.



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296- A modern jet aeroplane equipped with inboard and outboard ailerons plus roll control spoilers is cruising at its normal cruise Mach number:

- A) Only the inboard ailerons are active, the spoilers may be active.
- B) The inboard and outboard ailerons are active, the spoilers may be active.
- C) Only the outboard ailerons are active, the spoilers may be active.
- D) Only the spoilers will be active, not the ailerons.

297- When are outboard ailerons (if present) deactivated?

- A) Flaps (and slats) retracted or speed above a certain value.
- B) Flaps (and/or slats) extended or speed below a certain value.
- C) Landing gear retracted.
- D) Landing gear extended.

298- A jet aeroplane equipped with inboard and outboard ailerons is cruising at its normal cruise Mach number. In this case:

- A) Only the inboard ailerons are active.
- B) Only the outboard aileron is active.
- C) The inboard and outboard ailerons are active.
- D) Only the spoilers will be active, not the ailerons.

299- An aeroplane is provided with spoilers and both inboard and outboard ailerons. Roll control during cruise is provided by:

- A) Outboard ailerons and roll spoilers.
- B) Inboard ailerons and roll spoilers.
- C) Inboard and outboard ailerons.
- D) Outboard ailerons only.

300- In which phase of flight are the outboard ailerons (if fitted) not active?

- A) Takeoff, until lift-off.
- B) Cruise.
- C) Approach.
- D) Landing with a strong and gusty crosswind, to avoid over-controlling the aeroplane.

301- Which component of drag increases most when an aileron is deflected upwards?

- A) Induced drag.
- B) Interference drag.
- C) Wave drag.
- D) Form drag.



302- An aircraft on which the ailerons are assisted by spoilers to give lateral control, if the control wheel is turned to the right:

- A) The right aileron moves up, right spoiler remains retracted, left spoiler moves up. left aileron down.
- B) The right aileron moves up, right spoiler up, left spoiler remains retracted, left aileron down.
- C) The right aileron moves down, right spoiler up, left spoiler remains retracted, left aileron up.
- D) The right aileron moves up, right spoiler up, left spoiler moves up only slightly, left aileron down.

303- Spoilers are operated asymmetrically:

- A) To provide pitch control.
- B) To provide roll control.
- C) To provide yaw control.
- D) As air brakes in flight.

304- Which of the following is true with regard to inboard ailerons?

- A) Used during low speed flight only.
- B) Used during low and high speed flight.
- C) Used during high speed flight only.
- D) Activated by the GPWS.

305- When the control column is moved back and to the left:

- A) The elevators move down and the left aileron moves down.
- B) The left aileron moves up and the elevators move up.
- C) The elevators move up and the left aileron moves down.
- D) The left aileron moves down and the elevators move down.

306- Adverse yaw during a turn entry is cause by:

- A) Decreased induced drag on the lowered wing and increased induced drag on the raised wing.
- B) Increased induced drag on the lowered wing and decreased induced drag on the raised wing.
- C) Increased parasite drag on the raised wing and decreased parasite drag on the lowered wing.
- D) Decreased induced drag on the raised wing and decreased induced drag on the lowered wing.

307- When rolling out of a steep banked turn, what causes the lowered aileron to create more drag than when rolling into the turn?

- A) The wing being raised is traveling faster through the air than the wing being lowered.
- B) The wing being lowered is traveling faster through the air and producing more lift than the wing being raised.
- C) The angle of attack of the wing being raised is greater as the rollout is started.
- D) None of the above.

308- In a turn with speed brakes extended, roll control spoilers:

- A) Move on the down-going wing only.
- B) Move on the up-going wing only.
- C) Move up on the down-going wing, down on the up-going wing.
- D) Move down on the down-going wing, up on the up-going wing.



309- An aeroplane fitted with differential ailerons, is in level turn to the right. Which of the following statements is correct?

- A) The left aileron moves up more than the right aileron moves down.
- B) The left aileron moves down more than the right aileron moves up.
- C) The right aileron moves up more than the left aileron moves down.
- D) The right aileron moves down more than left aileron moves up.

310- The effect of differential ailerons in a turn will be:

- A) Increased profile drag on the inner wing.
- B) Reduced drag on the inner wing.
- C) Produced equal form drag on the inner and outer wings.
- D) Reduced induced drag on the inner and outer wings.

311- If the nose of an aeroplane yaws to the left, this causes:

- A) A roll to the right.
- B) A decrease in relative airspeed on the right Wing.
- C) An increase in lift on the left wing.
- D) A roll to the left.

312- If left rudder is applied:

- A) The aircraft will roll to the left and yaw to the right.
- B) The aircraft will yaw to the left and roll to the right.
- C) The aircraft will yaw to the left and roll to the left.
- D) The aircraft will yaw to the left, but there will be no rolling moment.

313- When the rudder is moved to the right the force acting on the fin:

- A) Gives a yawing moment but no rolling moment.
- B) Gives a rolling moment to the left.
- C) Gives a rolling moment to the right.
- D) Gives a nose-up pitching moment because the force is applied above the CG.

314- What is the fundamental difference between a trim tab and a servo tab?

- A) A servo tab affects the stick force stability, whereas a trim tab does not.
- B) The purpose of a trim tab is to reduce continuous stick force to zero, a servo tab only reduces stick force.
- C) A trim tab is automatically adjusted when its particular control surface moves, whereas a servo tab is moved independently of its particular control surface.
- D) The functioning of a trim tab is based on aerodynamic balancing, whereas a servo tab is usually adjusted via a screw jack.



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315- In a servo tab operated control system, movement of the tab:

- A) Is always in the same direction as the control surface.
- B) Is always in the opposite direction to the control surface.
- C) May be either opposite or in the same direction as the control surface.
- D) Is controlled directly by the main control surface.

316- In straight and level flight, as speed is increased:

- A) The elevator is deflected further upwards and the trim tab further downwards.
- B) Both elevator and trim tab are deflected further upwards.
- C) The elevator and trim tab do not move.
- D) The elevator is deflected further downwards and the trim tab further upwards.

317- Which statement in respect of a trimable horizontal stabilizer (THS) is correct?

- A) Takeoff speeds do not vary with center of gravity location, the need for stabilizer adjustment is dependent on flap position only.
- B) An aeroplane with a forward CG requires the stabilizer leading edge to be lower than for one with an aft CG in the same trimmed condition.
- C) An aeroplane with a forward CG requires the stabilizer leading edge to be higher than for one with an aft CG in the same trimmed condition.
- D) At the forward CG limit, stabilizer trim is adjusted fully nose down to obtain maximum elevator authority at rotation during takeoff.

318- Which direction from the primary control surface does an elevator adjustable trim tab move when the control surface is moved?

- A) Same direction.
- B) Opposite direction.
- C) In the same direction at high speeds to increase the stick force, but in the opposite direction at low speed.
- D) Remains fixed for all positions.

319- If the elevator trim wheel is move, what happen to the control range?

- A) No effect on range.
- B) Increase elevator range.
- C) Decrease elevator range.
- D) Exceed the stall limits.

320- A small piston engine aircraft keeps yawing to the left, you would correct and trim it by:

- A) Moving the fixed trimming tab on the rudder over to the left.
- B) Moving the adjustable trim tab to the right.
- C) Adjusting the rudder bar to keep the left rudder pedal forward.
- D) Adjusting the aileron trim tab wheel to the right.



321- To trim an aircraft which tends to fly tail heavy with hands off, the top of the elevator trimming wheel mounted on a shaft running laterally would be rotated:

- A) Forward / trim tab down / elevator up.
- B) Rearward / trim tab up / elevator up.
- C) Rearward / trim tab down / elevator down.
- D) Forward / trim tab up / elevator down.

322- To adjust for a deceleration while maintaining a level flight, the trim tab on an elevator:

- A) Moves up, making the elevator move down.
- B) Moves down, making the elevator move up.
- C) Moves down, adjusting the variable incidence tail plane.
- D) Moves up, making the variable incidence tail plane increase.

323- Deflecting the elevator up, when the trim tab is in neutral will cause the tab to:

- A) Move down relative to the elevator chord line.
- B) Move up relative to the elevator chord line.
- C) Remain in line with the tail plane.
- D) Remain in line with the elevator.

324- V_{LE} is defined as the:

- A) Maximum landing gear extended speed.
- B) Maximum speed at which the landing gear may be extended or retracted.
- C) Maximum flap extended speed.
- D) Maximum authorized speed.

325- V_{NE} is defined as:

- A) Never exceed speed.
- B) Maximum nose wheel extended speed.
- C) Maximum landing gear extended speed.
- D) Maximum flap extended speed.

326- V_A is:

- A) The speed that should not be exceeded in the climb.
- B) The maximum speed at which rolls are allowed.
- C) The speed at which a heavy transport aeroplane should fly in turbulence.
- D) The maximum speed at which maximum elevator deflection up is allowed.

327- Which load factor determines V_A ?

- A) Maneuvering flap limit load factor.
- B) Maneuvering ultimate load factor.
- C) Gust load factor at 66 ft/sec gust.
- D) Maneuvering limit load factor.



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328- When flying at speeds above V_A :

- A) Full elevator deflection may result in damage to the air frame or structural failure.
- B) An over speed warning will be activated.
- C) The aircraft may self-destruct in a turn.
- D) The aircraft cannot be stalled.

329- Which has the effect of increasing load factor? (all other relevant factors being constant)

- A) Rearward CG location.
- B) Increased aeroplane mass.
- C) Increased air density.
- D) Vertical gusts.

330- What can happen to the aeroplane structure flying at a speed just exceeding V_A ?

- A) It may break if the elevator is fully deflected upwards.
- B) It may suffer permanent deformation if the elevator is fully deflected upwards.
- C) It may suffer permanent deformation because the flight is performed at too large dynamic pressure.
- D) It will collapse if a turn is made.

331- The positive maneuvering limit load factor for a light aeroplane in the utility category in the clean configuration is:

- A) 2.5
- B) 4.4
- C) 3.8
- D) 6.0

332- Load factor is the actual lift supported by the wings at any given time:

- A) Divided by the surface area of the wing.
- B) Divided by the total weight of the aircraft.
- C) Subtracted from the aircraft's total weight.
- D) Divided by the aircraft's empty weight.

333- An aeroplane enters a horizontal turn with a load factor $n=2$ from straight and level flight whilst maintaining constant indicated airspeed. The:

- A) Lift doubles.
- B) Induced drag doubles.
- C) Lift becomes four times its original value.
- D) Total drag becomes four times its original value.



334- When flying slightly faster than V_A :

- A) The airframe may collapse in a turn.
- B) Possible permanent deformation of the structure may occur with full elevator deflection.
- C) A high speed warning will be activated.
- D) The aircraft cannot stall.

335- With regard to V_A which of the following statements is correct?

- A) When flying at speeds up to V_A it is possible to carry out full control deflection maneuvers without exceeding the limit load factor.
- B) The aircraft will be damaged if it stalls at full control deflection at speeds below V_A .
- C) V_A is the speed that should never be exceeded in normal operation.
- D) The structure will be permanently deformed by maneuvering the aircraft at speeds greater than V_A .

336- Which of the following statements is true?

- A) Flight in severe turbulence may lead to a stall and/or structural limitations being exceeded.
- B) Flap extension in severe turbulence at constant speed increases both the stall speed and the structural limitation margins.
- C) By increasing the flap setting in severe turbulence at constant speed the stall speed will be reduced and the risk for exceeding the structural limits will be decreased.
- D) Flap extension in severe turbulence at constant speed moves the center of pressure aft, which increases the structural limitation margins.

337- Which statement is correct about the gust load factor on an aeroplane?

- 1) When the mass increases, the gust load factor increases.
- 2) When the altitude decreases, the gust load factor increases

- A) 1 is correct; 2 is correct.
- B) 1 is incorrect; 2 is incorrect.
- C) 1 is incorrect; 2 is correct.
- D) 1 is correct; 2 is incorrect.

338- Which of the following wing planforms will be least affected by turbulence?

- A) Straight, high aspect ratio.
- B) Swept, low aspect ratio.
- C) Straight, moderate aspect ratio.
- D) Swept, high aspect ratio.

339- The turn indicator shows a right turn. The slip indicator is left of neutral. To coordinate the turn:

- A) A higher turn rate is required.
- B) More right rudder is required.
- C) Less right bank is required.
- D) More right bank is required.



340- What action must the pilot take to maintain altitude and airspeed when turning in a jet aircraft?

- A) Increase thrust.
- B) Increase angle of attack.
- C) Decrease the turn radius.
- D) Increase angle of attack and thrust.

341- The effect of headwind is to the effective climb angle and to the rate of climb

- A) Increase; not affect
- B) Increase; decrease
- C) Decrease; increase
- D) Not affect; increase

342- In a steady climb:

- A) Thrust equals drag plus the weight component perpendicular to the flight path and lift equals the weight component along the flight path.
- B) Thrust equals drag plus the weight component along the flight path and lift equals the weight component perpendicular to the flight path.
- C) Thrust equals the weight component along the flight path and lift equals the sum of the components of drag and weight along the flight path.
- D) If the angle of climb is 20° , lift equals weight times $\sin 20^\circ$.

343- The bank angle in a rate turn depends on:

- A) Wind
- B) Weight
- C) Load factor
- D) TAS

344- In a steady turn at constant height:

- A) The radius of turn depends upon the weight and load factor.
- B) The rate of turn depends upon the TAS and angle of bank.
- C) The rate of turn depends upon the weight, TAS and angle of bank.
- D) The radius of turn depends only upon load factor.

345- Weight acts:

- A) Perpendicular to the chord line.
- B) Parallel to the gravitational force.
- C) Perpendicular to the longitudinal axis.
- D) Perpendicular to the relative airflow.



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346- The maximum glide range of a wing and:

- A) The ratio of lift to drag which varies according to angle of attack.
- B) Speed for minimum power required.
- C) C_{LMAX} .
- D) Minimum lift to drag ratio.

347- The angle of climb of an aircraft is proportional to and as weight increases.

- A) Excess power; decreases
- B) Excess thrust; increases
- C) Excess thrust; decreases
- D) Excess power; increases

348- An aeroplane performs a continuous descent at 160 kts IAS and 1000 ft/min vertical speed. In this condition:

- A) Drag is less than the combined forces that move the aeroplane forward.
- B) Lift is equal to weight.
- C) Lift is less than drag.
- D) Weight is greater than lift.

349- Which of the following statements is correct?

- A) Lift acts perpendicular to the horizontal and drag parallel in a rearwards direction.
- B) Drag acts parallel to the chord and opposite to the direction of motion of the aircraft and lift acts perpendicular to the chord.
- C) Lift acts at right angles to the top surface of the wing and drag acts at right angles to lift.
- D) Drag acts in the same direction as the relative wind and lift perpendicular to it.

350- What factors determine the ground distance of an aeroplane in a glide?

- A) The wind and the lift/drag ratio, which changes with angle of attack.
- B) The wind and the aeroplane's mass.
- C) The wind and C_{LMAX} .
- D) The wind and weight together with power loading, which is the ratio of power output to the weight.

351- in a turn the load factor "n" and the stalling speed V_s will be:

- A) "n" greater than 1, V_s higher than in straight and level flight.
- B) "n" smaller than 1, V_s lower than in straight and level flight.
- C) "n" greater than 1, V_s lower than in straight and level flight.
- D) "n" smaller than 1, V_s higher than in straight and level flight.



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352- The greatest gliding range would be wing at:

- A) A high angle of attack at maximum lift/drag ratio.
- B) A small angle of attack at maximum lift/drag ratio.
- C) A small angle of attack at minimum lift/drag ratio
- D) A high angle of attack at minimum lift/drag ratio.

353- During the glide, the forces acting on an aircraft are:

- A) Thrust, lift and drag.
- B) Lift, weight and thrust.
- C) Lift, drag and weight.
- D) Drag, thrust and weight.

354- To cover the greatest distance during glide speed must be:

- A) Near to the stalling speed.
- B) As high as possible within V limits.
- C) Minimum control speed.
- D) The one that gives the lowest total drag.

355- An aeroplane performs a right turn the slip indicator is left of neutral. One way to co-ordinate the turn is to apply:

- A) A lesser turn rate.
- B) More right rudder.
- C) Less right bank.
- D) More left rudder.

356- During a climbing turn to the right the:

- A) Angle of attack of the left wing is larger than the angle of attack of the right wing.
- B) Angle of attack of the left wing is smaller than the angle of attack of the right wing.
- C) Angle of attack of both wings is the same.
- D) Stall angle of attack of the left wing will be larger than the corresponding angle for the right wing.

357- During a straight steady climb:

- 1) Lift is less than weight.
- 2) Lift is greater than weight.
- 3) Load factor is less than 1.
- 4) Load factor is greater than 1.
- 5) Lift is equal to weight.
- 6) Load factor is equal to 1.

Which of the following lists all the correct answers?

- A) 1, 3
- B) 2, 4
- C) 5, 6
- D) 1, 6



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358- In a slipping turn nose pointing outwards, compared with a coordinated turn, the bank angle (I) and the "ball" or slip indicator (II) are respectively:

- A) (I) too large; (II) displaced towards the high wing.
- B) (I) too small; (II) displaced towards the low wing.
- C) (I) too large; (II) displaced towards the low wing.
- D) (I) too small; (II) displaced towards the high wing.

359- What decreases the maximum ground distance during a glide with zero thrust?

- A) A decrease in aeroplane mass with zero wind.
- B) A tailwind with constant aeroplane mass.
- C) An increase in aeroplane mass with zero wind.
- D) A headwind with constant aeroplane mass.

360- What increases the maximum ground distance during a glide with zero thrust?

- A) A decrease in aeroplane mass with zero wind.
- B) A headwind with constant aeroplane mass.
- C) An increase in aeroplane mass with zero wind.
- D) Tailwind with constant aeroplane mass.

361- The lift to drag ratio determines the:

- A) Horizontal distance in the climb up to a given altitude.
- B) Maximum rate of climb.
- C) Endurance speed.
- D) Horizontal glide distance from a given altitude at zero wind and zero thrust.

362- In steady level flight the load factor is:

- A) Zero
- B) 1.0
- C) 1.5
- D) 2.0

363- To maintain level flight at a steady speed:

- A) Thrust must be exactly equal to drag.
- B) Thrust must be slightly greater than drag.
- C) Thrust must be much greater than drag.
- D) Thrust must be less than drag.

364- When an aircraft is in level unaccelerated flight:

- A) Parasite drag equals induced drag.
- B) Lift is greater than weight.
- C) Lift equals weight and thrust equals drag.
- D) Lift and weight are equal and act through the CP.



365- Which statement is true, if during a level coordinated turn the load factor was kept constant?

- A) A decrease in airspeed results in an increase in radius.
- B) An increase in airspeed results in an increase in radius.
- C) An increase in airspeed results in a decrease in radius.
- D) An increase in airspeed would result in the same radius.

366- For a given TAS and bank angle, a heavy aircraft:

- A) Will have a larger radius of turn than a lighter one.
- B) Will have a smaller radius of turn than a lighter one.
- C) Will have the same radius of turn as a lighter one, but at a higher G load.
- D) Will have the same radius of turn as a lighter one, and the same G load.

367- What action is necessary to make an aircraft turn?

- A) Change the direction of lift.
- B) Change the direction of thrust.
- C) Yaw the aircraft.
- D) Roll the aircraft.

368- When an aircraft is in level unaccelerated flight:

- A) Parasite drag equals induced drag.
- B) Lift must be greater than weight.
- C) Upward forces equal downward forces and thrust equals drag.
- D) Lift and weight are equal and both act through the CP.

369- When an aircraft is climbing the requirements to maintain equilibrium are:

- A) Thrust equals the sum of drag and the weight component along the flight path, and lift equals the weight component perpendicular to the flight path.
- B) Thrust equals the weight component along the flight path, and lift equals the sum of the drag and weight component perpendicular to the flight path.
- C) Thrust equals the weight component perpendicular to the flight path, and lift equals the weight component along the flight path.
- D) Lift equals weight, and thrust equals drag.

370- The force which causes an aircraft to turn is given by:

- A) The rudder.
- B) The ailerons.
- C) The wing lift.
- D) The weight.



371- Which statement is correct with respect to rate and radius of turn for an aeroplane flown in a coordinated turn at a constant altitude?

- A) For any specific angle of bank and airspeed, the lighter the aeroplane the faster the rate and the smaller the radius of turn.
- B) For a specific angle of bank and airspeed the rate and radius of turn will not vary.
- C) The faster the true airspeed, the faster the rate and larger radius of turn regardless of the angle of bank.
- D) To maintain a steady rate of turn, the angle of bank must be increased as the airspeed is decreased.

372- If an aircraft maintains a constant radius of turn but the speed is increased:

- A) The bank angle must be increased.
- B) The bank angle must be decreased.
- C) The bank angle will remain constant and the G load will be constant.
- D) The bank angle will remain constant but the G load will increase

373- In coordinated flight for any specific bank the faster the speed of the aircraft the:

- A) Smaller the radius and slower rate of turn.
- B) Greater the radius and faster rate of turn.
- C) Smaller the radius and faster rate of turn.
- D) Greater the radius and slower rate of turn.

374- While holding the angle of bank constant, if the rate of turn is varied the load factor would:

- A) Vary depending upon the resultant lift vector.
- B) Remain constant regardless of air density and the resultant lift vector.
- C) Vary depending upon speed and air density provided the resultant lift vector varies proportionally.
- D) Increase at an increasing rate.

375- Which statement is true, regarding the opposing forces acting on an aeroplane in steady state level flight?

- A) Thrust is greater than drag and weight and lift are equal.
- B) Thrust is greater than drag and lift is greater than weight.
- C) Thrust is less than drag and lift is less than weight.
- D) The opposing forces are equal.

376- With the CG on the aft limit, compared to the forward limit, the wing lift required for level flight will be:

- A) Less.
- B) Greater.
- C) The same.
- D) It depends on the exact CG location.



377- Which is true regarding the forces acting on an aircraft in a steady state descent?

- A) The sum of all rearward forces is greater than the sum of all forward forces.
- B) The sum of all forward forces is equal to the sum of all rearward forces.
- C) The sum of all rearward forces is less than the sum of all forward forces.
- D) The sum of all upward forces is greater than the sum of all downward forces.

378- If during a level turn the rate of turn is kept constant, an increase in airspeed will result in a:

- A) Decrease in centrifugal force.
- B) Constant load factor regardless of changes in bank angle.
- C) Need to decrease angle of bank to maintain the same radius of turn.
- D) Need to increase angle of bank to maintain the same radius of turn.

379- If no corrective action is taken by the pilot, as angle of bank is increased, how is the vertical component of lift and sink rate affected?

- A) Lift increases and sink rate increases.
- B) Lift decreases and sink rate decreases.
- C) Lift increases and sink rate decreases.
- D) Lift decreases and sink rate increases.

380- What is the relationship of the rate of turn with the radius of turn with a constant angle of bank but increasing airspeed?

- A) Rate will increase and radius will decrease.
- B) Rate will decrease and radius will increase.
- C) Rate and radius will increase.
- D) Rate and radius will decrease.

381- Why is it necessary to increase back pressure maintain altitude during a turn?

- A) Rudder deflection and slight aileron use throughout the turn.
- B) Due to the reduction of the vertical component of lift.
- C) Due to the reduction of the horizontal component of lift.
- D) Because the wing tip on the outside of the turn is travelling faster.

382- For an aircraft at high weight, the minimum possible radius of turn will be at given angle of attack:

- A) Less than when at low weight.
- B) The same as when at a low weight.
- C) More than when at a low weight.
- D) Unable to solve without additional information.



383- What effect does an increase in airspeed have on a coordinated turn while maintaining a constant angle of bank and altitude?

- A) The rate of turn will decrease resulting in a decreased load factor.
- B) The rate of turn will decrease resulting in no change in the load factor.
- C) The rate of turn will increase resulting in an increased load factor.
- D) The rate of turn will increase resulting in a decreased load factor.

384- To obtain the best possible gliding distance an aircraft should:

- A) Be as light as possible.
- B) Have a wing that will give high lift.
- C) Have the highest possible lift/drag ratio.
- D) Be as heavy as possible.

385- In a climb the weight component along the flight path is balanced by:

- A) Thrust
- B) Lift
- C) Drag
- D) Gravity

386- A glide ratio of 14:1 with respect to the air mass will be:

- A) 7:1 in a headwind and 28:1 in a tailwind.
- B) 7:1 in a tailwind and 28:1 in a headwind.
- C) 14:1 in a tailwind and 7:1 in a headwind.
- D) 14:1 regardless of wind direction and speed.

387- For a given angle of bank, the load factor imposed on both the aircraft and pilot in a coordinated constant altitude turn:

- A) Is constant, but the stall speed is higher than in straight and level flight.
- B) Varies with the rate of turn.
- C) Is directly related to the aeroplane's gross weight.
- D) Is inversely proportional to the bank angle.

388- The effect on turn radius at the same angle of bank at different weights will be to:

- A) Increase turn radius.
- B) Decrease turn radius.
- C) The turn radius will not be affected by different weights.
- D) The turn radius depends only upon the bank angle.

389- Except wind, what other factors affect the glide range?

- A) Weight.
- B) lift/drag ratio.
- C) C_{LMAX}
- D) Weight and power required.



390- An increase in weight will glide range but increases with a wind.

- A) Decrease; head
- B) Increase; tail
- C) Increase; head
- D) Have no effect; tail

391- For an aeroplane in a glide, what other factor apart from wind affects the minimum glide angle?

- A) Height
- B) Weight
- C) C_L/C_D
- D) CG

392- If the turn and slip indicator needle is to the left and the ball is to the right, what is the correct control input?

- A) More left rudder.
- B) Less left bank.
- C) Less left rudder.
- D) Increase rate of turn.

393- In straight and level flight the aircraft's normal axis is approximately:

- A) Horizontal
- B) Vertical
- C) Lateral
- D) Longitudinal

394- If the radius of a turn, flown at constant IAS is increased, the angle of bank will:

- A) Increase:
- B) Decrease.
- C) Remain the same.
- D) Change proportionally to the change of the radius.

395- The longitudinal static stability of an aircraft:

- A) Is reduced by the effects of wing downwash.
- B) Is increased by the effects of wing downwash.
- C) Is not affected by wing downwash.
- D) Is reduced for nose up displacements, but increased for nose down displacements by the effects of wing downwash.



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396- The tendency of an aircraft to suffer from Dutch roll instability can be reduced:

- A) By sweeping the wings.
- B) By giving the wings anhedral.
- C) By reducing the size of the fin.
- D) By longitudinal dihedral.

397- Following a lateral disturbance, an aircraft with Dutch roll instability will:

- A) Go into a spiral dive.
- B) Develop simultaneous oscillations in roll and yaw.
- C) Develop oscillations in pitch.
- D) Develop an unchecked roll.

398- A yaw damper:

- A) Increases rudder effectiveness.
- B) Must be disengaged before making a turn.
- C) Augments stability.
- D) Increases the rate of yaw.

399- A wing which is inclined downwards from root to tip is said to have:

- A) Wash out.
- B) Taper.
- C) Sweep.
- D) Anhedral.

400- Stability around the normal axis:

- A) Is increased if the keel surface behind the CG is increased.
- B) Is given by the lateral dihedral.
- C) Depends on the longitudinal dihedral.
- D) Is greater if the wing has no sweepback.



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	D	26	D	51	D	76	A
2	D	27	A	52	C	77	A
3	D	28	D	53	A	78	C
4	D	29	D	54	D	79	A
5	C	30	C	55	D	80	C
6	C	31	B	56	C	81	A
7	C	32	C	57	A	82	C
8	D	33	B	58	B	83	B
9	C	34	A	59	D	84	D
10	C	35	A	60	A	85	A
11	D	36	A	61	B	86	A
12	B	37	B	62	C	87	A
13	D	38	C	63	B	88	C
14	D	39	B	64	A	89	B
15	A	40	A	65	C	90	D
16	B	41	D	66	B	91	C
17	D	42	B	67	D	92	B
18	A	43	A	68	B	93	A
19	B	44	C	69	C	94	C
20	B	45	A	70	B	95	B
21	C	46	D	71	D	96	C
22	A	47	B	72	A	97	A
23	C	48	C	73	B	98	C
24	B	49	D	74	B	99	B
25	C	50	C	75	C	100	C



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	B	126	A	151	C	176	D
102	C	127	A	152	D	177	C
103	A	128	A	153	B	178	C
104	A	129	C	154	D	179	A
105	B	130	D	155	C	180	A
106	B	131	A	156	D	181	B
107	C	132	C	157	B	182	C
108	C	133	C	158	D	183	D
109	D	134	B	159	C	184	B
110	A	135	B	160	A	185	B
111	A	136	D	161	A	186	B
112	B	137	C	162	C	187	B
113	D	138	B	163	C	188	B
114	C	139	C	164	C	189	B
115	B	140	B	165	C	190	A
116	D	141	C	166	C	191	C
117	B	142	C	167	D	192	B
118	A	143	C	168	A	193	D
119	A	144	D	169	B	194	C
120	A	145	A	170	C	195	D
121	D	146	A	171	B	196	A
122	A	147	C	172	C	197	C
123	B	148	A	173	B	198	D
124	D	149	A	174	A	199	B
125	B	150	C	175	D	200	B



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	C	226	B	251	A	276	C
202	A	227	C	252	C	277	C
203	A	228	A	253	B	278	A
204	A	229	C	254	A	279	A
205	C	230	D	255	A	280	C
206	A	231	C	256	D	281	D
207	B	232	B	257	A	282	A
208	C	233	B	258	C	283	B
209	A	234	C	259	A	284	A
210	D	235	C	260	B	285	B
211	C	236	C	261	C	286	A
212	A	237	A	262	B	287	B
213	A	238	B	263	B	288	A
214	D	239	C	264	A	289	A
215	A	240	A	265	B	290	D
216	C	241	B	266	A	291	C
217	A	242	C	267	A	292	D
218	A	243	B	268	A	293	C
219	D	244	A	269	D	294	A
220	B	245	A	270	C	295	C
221	B	246	D	271	C	296	A
222	C	247	D	272	A	297	A
223	A	248	A	273	C	298	A
224	D	249	B	274	A	299	B
225	A	250	D	275	C	300	B



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
301	D	326	D	351	A	376	A
302	B	327	D	352	B	377	B
303	B	328	A	353	C	378	D
304	B	329	D	354	D	379	D
305	B	330	B	355	D	380	B
306	A	331	B	356	A	381	B
307	C	332	B	357	A	382	C
308	C	333	A	358	C	383	B
309	C	334	B	359	D	384	C
310	A	335	A	360	D	385	A
311	D	336	A	361	D	386	D
312	C	337	C	362	B	387	A
313	C	338	B	363	A	388	C
314	B	339	D	364	C	389	B
315	B	340	D	365	B	390	D
316	D	341	A	366	D	391	C
317	B	342	B	367	A	392	C
318	D	343	D	368	C	393	B
319	C	344	B	369	A	394	B
320	A	345	B	370	C	395	A
321	D	346	A	371	B	396	B
322	B	347	C	372	A	397	B
323	D	348	D	373	D	398	C
324	A	349	D	374	B	399	D
325	A	350	A	375	D	400	A

RADIO NAVIGATION





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1- Frequency is defined as the:

- A) Number of complete cycles recurring in one unit of time.
- B) Distance between a crest and a crest.
- C) Number of complete cycles recurring in ten units of time.
- D) Distance from the axis to the peak value.

2- The speed of radio waves is:

- A) 300 km per second
- B) 300 million meters per second
- C) 162 NM per second
- D) 162 million NM per second

3- If the wavelength of a radio wave is 3.75 meters, the frequency is:

- A) 80 kHz
- B) 8 MHz
- C) 80 MHz
- D) 800 kHz

4- The wavelength corresponding to a frequency of 125.000 MHz is:

- A) 2.4 m
- B) 24 m
- C) 24 cm
- D) 24 mm

5- The frequency band containing the frequency corresponding to 29.1 cm is:

- A) HF
- B) VHF
- C) SHF
- D) UHF

6- SELCAL is an equipment that:

- A) Is coupled with TCAS II and is to do with traffic advisory warning systems.
- B) Automatically transmits data signals.
- C) Automatically receives incoming signals.
- D) Functions as a frequency modulator.

7- Which of the following lists information required to input a way point or Phantom Station into a basic VOR/DME-based Area Navigation System?

- A) Magnetic track and distance from the aircraft to the way point or Phantom Station.
- B) Magnetic track and distance to a VOR/DME from the way point or Phantom Station.
- C) Radials from a minimum of two VORs to the way point or Phantom Station.
- D) Radial and distance from a VOR/DME to the way point or Phantom Station.



8- Which of the following is one of the functions of the computer in a basic RNAV system?

- A) It checks the ground station accuracy using a built-in test program.
- B) It transfers the information given by a VOR/DME station into tracking and distance indications to any chosen Phantom Station/waypoint.
- C) It automatically selects the two strongest transmitters for the Area-Nav Mode and continues working by memory in case one of the two necessary stations goes off the air.
- D) It calculates cross track information for NDB approaches.

9- On a 5 dot HSI in the RNAV approach mode (APR RNAV) what does one dot indicate?

- A) 0.25 NM
- B) 0.5 NM
- C) 1.0 NM
- D) 2.0 NM

10- Erratic indications may be experienced when flying towards a basic VOR/DME-based Area Navigation System Phantom Station:

- A) Because, under adverse conditions (relative bearing to the Phantom Station other than $180^\circ/360^\circ$).
- B) It takes the computer more time to calculate the necessary information.
- C) When operating at low altitudes close to the limit of reception range from the reference station.
- D) When in the cone of silence overhead the Phantom Station when the Phantom Station is out of range.

11- RNAV routes are:

- A) Usually specified by waypoints co-incident with point source aids such as VOR, DME or NDB facilities.
- B) Specified by waypoints defined as a position in latitude and longitude based on the WGS-84 system.
- C) Selected according to TCAS inputs.
- D) None of the above.

12- Basic RNAV requires a track-keeping accuracy of:

- A) $\pm 1^\circ$ or better for 95% of the flight time.
- B) $\pm 5^\circ$ or better for 95% of the flight time.
- C) ± 1 NM or better for 95% of the flight time.
- D) ± 5 NM or better for 95% of the flight time.

13- Precision RNAV (P-RNAV) requires a track-keeping accuracy of:

- A) $\pm 1^\circ$ or better for 95% of the flight time.
- B) $\pm 5^\circ$ or better for 95% of the flight time.
- C) ± 1 NM or better for 95% of the flight time.
- D) ± 5 NM or better for 95% of the flight time.



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14- With VOR/DME basic area navigation, the displacement of the CDI needle represents:

- A) Angular displacement from the course line (e.g. 5 dots = 5° off track)
- B) Angular displacement from the course line (e.g. 5 dots = 10° off track)
- C) Distance off track (e.g. 5 dots = 5 NM off track)
- D) Distance off track (e.g. 5 dots = 10 NM off track)

15- The range to a required waypoint presented by RNAV system is:

- A) Plan range or slant range depending on RNAV settings
- B) Plan range
- C) Slant range
- D) Neither plan range nor slant range

16- VORTAC-based RNAV systems allow you more lateral freedom, Because:

- A) The data base identifies surrounding airports you to track directly to or from navigation facilities.
- B) The signals radiate from satellites in space.
- C) You do not have to tune and identify the station.
- D) You do not have to track directly to or from navigations facilities.

17- When you are using a VORTAC-based RNAV system, the needle deflections on the VOR indicator show course deviation in terms of:

- A) Degrees.
- B) Radials.
- C) Statute miles.
- D) Nautical miles.

18- Which of the following is true in respect of using ILS back-beam approach procedure?

- A) When using a CDI you must set the OBS to the back-beam beam localizer course.
- B) When using a CDI in the overshoot sector you must disobey the needles.
- C) When using a HSI you must set the course arrow to the localizer front-beam course.
- D) When using a HSI the glide path must be set before approach.

19- The frequency band of the ILS glide path is:

- A) UHF
- B) VHF
- C) SHF
- D) VLF



20- In which frequency band does an ILS localizer transmit?

- A) VHF
- B) UHF
- C) SHF
- D) EHF

21- Which of the following correctly describes the Instrument Landing System (ILS) localizer radiation pattern?

- A) Two overlapping lobes on the same UHF carrier frequency.
- B) Two overlapping lobes on the same VHF carrier frequency.
- C) A pencil beam comprising a series of smaller beams each carrying a different modulation.
- D) Two overlapping lobes on different radio carrier frequencies but with the same modulation.

22- ILS marker beacons do not interfere with each other because:

- A) They operate on different modulations.
- B) They operate at different frequencies.
- C) They transmit in narrow vertical beams.
- D) They transmit low power signals, which cannot be detected by the aeroplane's receiver.

23- The principle of operation of the ILS localizer transmitter is that it transmits two overlapping lobes on:

- A) Different frequencies with different phases.
- B) The same frequency with different phases.
- C) The same frequency with different amplitude modulations.
- D) Different frequencies with different amplitude modulations.

24- The glide path transmitter operates on:

- A) 36 VHF frequencies, paired with localizer frequencies.
- B) The frequencies 90 and 150 MHz.
- C) On frequencies found by multiplying the localizer frequency by 3.
- D) 40 frequencies from 329.15 MHz to 335.00 MHz.

25- What is measured in order to establish aircraft position in relation to the localizer beam on an ILS?

- A) The difference in phase between the 90 Hz modulation and the 150 Hz modulation.
- B) The difference in depth between the 90 Hz modulation and the 150 Hz modulation.
- C) The bearing to the localizer antenna found by means of a loop antenna.
- D) The difference in time between the 90 Hz modulation and the 150 Hz modulation.



26- An aircraft is flying downwind outside the coverage of the ILS. The CDI indications will be:

- A) Unreliable in azimuth and elevation.
- B) Reliable in azimuth, unreliable in elevation.
- C) No indications will be shown.
- D) Reliable in azimuth and elevation.

27- Consider the following statements on ILS back-beam approach:

- A) Using a standard ILS indicator, a back beam approach must be flown with heading adjustments made away from the localizer needle.
- B) Only when a published procedure is at hand, a back beam approach may be flown.
- C) Using an HSI the course selector should be set to the inbound track of the localizer front beam, it orders to get normal sensing.
- D) All statements are correct.

28- ILS back beams may be received:

- A) When flying outside the area of coverage.
- B) Never.
- C) When approaching the ILS from behind the glide path aerial.
- D) When approaching the ILS from behind the localizer aerial.

29- Which of the following elements of an ILS transmit in the VHF band?

- A) Localizer only.
- B) Marker beacons only.
- C) Glide-path and marker beacons.
- D) Localizer and marker beacons.

30- ILS markers are identified in the aeroplane by color light and audio signal. The identification of the outer marker is:

- A) High-pitched dashes, amber light.
- B) Low-pitched dots and dashes, amber light.
- C) High pitched dots and dashes, blue light.
- D) Low-pitched dashes, blue light.

31- There are four types of marker beacons, all transmitting on the same carrier frequency:

- A) Airway marker (fan marker), outer marker, middle marker, intersection marker.
- B) Intersection marker, outer marker, middle marker, inner marker.
- C) Airway marker (fan marker), outer marker, middle marker, inner marker.
- D) Boundary marker, outer marker, middle marker, inner marker.



32- Which range facility associated with the ILS may be identified by a two-letter identification group?

- A) Locator.
- B) Inner marker.
- C) Outer marker.
- D) Glide path.

33- Consider the following statements on ILS:

- A) An ILS-approach may be flown only if all of the following components are operational: localizer, glide path and marker beacons/DME.
- B) If the localizer is out of service, an ILS approach with increased decision height (DH) may be carried out.
- C) ILS is the primary precision approach facility for civil aviation.
- D) When the pilot is reaching the decision height (DH) he may only continue the approach if both localizer and glide path indications are within one dot from the center positions.

34- The minima for a CAT I ILS are:

- A) Height: 100 ft, RVR: 550 m.
- B) Height: 100 ft, RVR: 700 m.
- C) Height: 200 ft, RVR: 550 m.
- D) Height: 200 ft, RVR: 700 m.

35- The minima for a CAT II ILS are:

- A) Height: 100 ft, RVR: 300 m.
- B) Height: 100 ft, RVR: 400 m.
- C) Height: 50 ft, RVR: 300 m.
- D) Height: 50 ft, RVR: 400 m.

36- The errors of an ILS localizer beam are due to:

- A) Emission side-lobes.
- B) Ground reflections.
- C) Spurious signals from objects near the runway.
- D) Interference from other systems operating on the same frequency.

37- Which of the following is correct regarding false beams on a glide path?

- A) False beams will only be found more than 10° to the left or to the right of the localizer center line.
- B) False beams will only be found above the correct glide path.
- C) False beams are only present when flying a back beam ILS approach.
- D) False beams will only be found below the correct glide path.



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38- ILS CAT II equipment will permit instrument approaches down to:

- A) DH 100 ft, RVR 150 m.
- B) DH 100 ft, RVR 300 m.
- C) DH 50 ft, RVR 200 m.
- D) DH 150 ft, RVR 400 m.

39- A HSI compass rose is stuck on 200°. When the aircraft is lined up on the centerline of the ILS localizer for runway 25, the localizer needle will be:

- A) Left of the center.
- B) Centered.
- C) Right of the center.
- D) Centered with the fail flag showing.

40- The sensitive area of an ILS is the area aircraft may not enter when:

- A) ILS operations are in progress.
- B) Category I ILS operations are in progress.
- C) Category II/III ILS operations are in progress.
- D) The ILS is undergoing calibration.

41- An ILS localizer can give reverse sense indications on the approach side and outside the protected coverage:

- A) Beyond 25 NM.
- B) Beyond 35° azimuths either side of the approach.
- C) Beyond 10° azimuths either side of the approach.
- D) At any time.

42- The middle marker is identified by:

- A) Audible alternate dots and dashes with tone 1300 Hz and an amber light.
- B) Audible alternate dots and dashes with tone 400 Hz and an amber light.
- C) Audible alternate dots and dashes with tone 400 Hz and a white light.
- D) Audible alternate dots and dashes with tone 1300 Hz and a white light.

43- Which of the following statements is true in respect of an ILS?

- A) If the glide path is not operating, the ILS will be switched off.
- B) An ILS cannot be used if either of the outer or middle markers is switched off.
- C) The glide path frequency is paired with the marker frequency.
- D) The glide path transmits on UHF.



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44- The ILS glide path coverage in elevation is accurate to:

- A) An angle 1.35° to an angle of 5.25° above the horizontal for a 3° glide path.
- B) An angle 1.35° to an angle of 5.25° above the horizontal for a 3.25° glide path.
- C) An angle 0.45° to an angle of 1.75° above the horizontal for a 3° glide path.
- D) An angle 0.45° to an angle of 1.75° above the horizontal for a 3.25° glide path.

45- The visual and aural indications of the ILS outer marker are:

- A) A blue light and 2 dashes per second of a 1300 Hz modulated tone.
- B) An amber light and alternate dots and dashes of a 1300 Hz modulated tone.
- C) A white light and 6 dots per second of a 30 Hz modulated tone.
- D) A blue light and 2 dashes per second of 400 Hz modulated tone.

46- What is the color sequence of lights when passing over an Outer, Middle and Inner Marker beacon when flying an ILS approach?

- A) White - Amber - Blue.
- B) Amber - White - Green.
- C) Blue - Amber - White.
- D) Blue - Green - White.

47- The middle marker of an ILS has an aural and visual identification of:

- A) Alternating dots and dashes with an amber light.
- B) Alternating dots and dashes with a blue light.
- C) Continuous dashes with an amber light.
- D) Continuous dashes with a blue light.

48- Which of the following statements is true?

- A) A localizer back beam should only be used for approaches if there is a published procedure.
- B) All localizers have back beams. They provide guidance in the event of a missed approach.
- C) Localizer back beams are never checked for accuracy.
- D) A localizer back beam will always provide reversed steering signals.

49- The reason why pre-takeoff holding areas are sometimes further from the active runway when ILS Category II and III landing procedures are in progress than during good weather operations is:

- A) Heavy precipitation may disturb guidance signals.
- B) Aircraft maneuvering near the runway may disturb guidance signals.
- C) To increase distance from the runway during offset approach operations.
- D) To increase aircraft separation in very reduced visibility conditions.



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50- The ILS glide path transmitter is located:

- A) No more than 600 meters from the localizer transmitter.
- B) About 150 meters upwind from the threshold and about 300 meters from the center line of the runway.
- C) About 400 meters upwind from the threshold and about 150 meters from the center line of the runway.
- D) As close to the runway threshold as possible without causing an obstruction to aircraft.

51- Flying an ILS approach, the middle marker is positioned so as to be passed:

- A) At about 200 ft AAL.
- B) About 1500 m from the threshold.
- C) At about 350 ft AAL.
- D) At about 100 ft above DH.

52- A CAT III ILS glide path transmitter facility provides reliable guidance information down to:

- A) The surface of the runway.
- B) A maximum height of 200 ft above the runway.
- C) A maximum height of 100 ft above the runway.
- D) A maximum height of 50 ft above the runway.

53- What are the modulation frequencies of the two overlapping lobes that are used on an ILS approach?

- A) 75 kHz, 135 kHz.
- B) 90 Hz, 150 Hz.
- C) 328 MHz, 335 MHz.
- D) 63 MHz, 123 MHz.

54- The rate of descent required to maintain a 3.25° glide slope at a groundspeed of 140 kts is approximately:

- A) 850 ft/min.
- B) 800 ft/min.
- C) 670 ft/min.
- D) 700 ft/min.

55- The rate of descent required to maintain a 3.25° glide slope at a ground speed of 110 kts is approximately:

- A) 850 ft/min.
- B) 770 ft/min.
- C) 630 ft/min.
- D) 700 ft/min.



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56- What frequency is assigned to all ILS marker beacons?

- A) One chosen from between 108.000 – 112.000 MHz at odd tenths.
- B) 75 MHz.
- C) 90 Hz.
- D) 150 Hz.

57- On what carrier frequency does the inner marker transmit?

- A) Same frequency as the localizer.
- B) 75 MHz.
- C) Same frequency as the glide path.
- D) 3000 Hz.

58- What approximate rate of descent is required in order to maintain a 3° glide path at a ground speed of 120 kts?

- A) 550 ft/min.
- B) 630 ft/min.
- C) 800 ft/min.
- D) 950 ft/min.

59- Flying a 3° glide path ILS approach, at a ground speed of 100 kts, the "rule of thumb" gives a required rate of descent of:

- A) 530 ft/min.
- B) 600 ft/min.
- C) 450 ft/min.
- D) 400 ft/min.

60- The rate of descent for a 3° glide slope at a ground speed of 140 kts is approximately:

- A) 350 ft/min
- B) 600 ft/min
- C) 740 ft/min
- D) 850 ft/min

61- One disadvantage of the GPS is that it is adversely affected by electrical disturbances such as thunderstorms and precipitation static.

- A) True.
- B) False.



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62- Full scale deflection of the localizer needle indicates that the aircraft is approximately:

- A) 10° offset from the localizer center line.
- B) 5° offset from the localizer center line.
- C) 1.25° offset from the localizer center line.
- D) 2.5° offset from the localizer center line.

63- Assuming a five dot display on either side of the ILS localizer cockpit display, what is the angular displacement of the aircraft from the localizer center line when the CDI is deflected 2 dots to the right?

- A) 1° to the right.
- B) 2° to the left.
- C) 2° to the right.
- D) 1° to the left.

64- The ILS localizer transmits VHF frequencies between:

- A) 108.00 and 117.95 MHz.
- B) 112.00 and 117.95 MHz.
- C) 108.00 and 111.95 MHz.
- D) 118.00 and 136.95 MHz.

65- At a distance of 18 NM from the localizer transmitter, the horizontal extent of the localizer coverage is:

- A) ±10 NM wide.
- B) 10 NM wide.
- C) ±10° from the runway extended center line.
- D) ±2.5°.

66- Assuming a five dot display on either side of the CDI on the ILS localizer cockpit display, what does each dot represent approximately?

- A) 2.5°
- B) 1.5°
- C) 0.5°
- D) 2.0°

67- Full deflection on a glide slope indicator indicates that the aircraft is:

- A) 2.5° above or below the correct glide path.
- B) 0.7° above or below the correct glide path.
- C) 0.5° above or below the correct glide path.
- D) 1.25° above or below the correct glide path.



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68- An aircraft tracking to intercept the Instrument Landing System (ILS) localizer inbound on the approach side, outside the published ILS coverage angle:

- A) Will receive signals without identification coding.
- B) Will not normally receive signals.
- C) May receive false course indications.
- D) Can expect signals to give correct indications.

69- On a localizer the modulations are at 150 Hz and 90 Hz, which of the following statements is correct?

- A) The 90 Hz modulation predominates to the right of the center line.
- B) The 150 Hz modulation predominates to the right of the center line.
- C) If the 150 Hz modulations predominates, the needle on the CDI moves to the right of center.
- D) When both modulations are received, the aeroplane will be on the center line.

70- The aircraft is approaching to Varamin NDB on heading 330°, Varamin holding is standard and inbound course is 001°, what is holding entry?

- A) Direct
- B) Parallel
- C) Offset
- D) Either direct or parallel

71- The aircraft is approaching to Varamin NDB on heading 135°, Varamin holding is standard and inbound course is 001°, what is holding entry?

- A) Direct
- B) Parallel
- C) Offset
- D) Either direct or offset

72- The aircraft is approaching to Varamin NDB on heading 185°, Varamin holding is standard and inbound course is 001°, what is holding entry?

- A) Direct
- B) Parallel
- C) Offset
- D) Either parallel or offset

73- The aircraft is approaching to Varamin NDB on heading 230°, Varamin holding is standard and inbound course is 001°, what is holding entry?

- A) Direct
- B) Parallel
- C) Offset
- D) Either direct or parallel



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74- The aircraft is approaching to RUS VOR on heading 234°, RUS holding is non-standard and inbound course is 047°, what is holding entry?

- A) Direct
- B) Parallel
- C) Offset
- D) Either parallel or offset

75- The aircraft is approaching to RUS VOR on heading 045°, RUS holding is non-standard and inbound course is 047°, what is holding entry?

- A) Direct
- B) Parallel
- C) Offset
- D) Either direct or offset

76- The aircraft is approaching to RUS VOR on heading 225°, RUS holding is non-standard and inbound course is 047°, what is holding entry?

- A) Direct
- B) Parallel
- C) Offset
- D) Either parallel or offset

77- You are flying on radial 120°, 30NM inbound VOR/DME station, ATC requests you to join non-published standard holding pattern at 20NM with inbound course 300°, what is holding entry?

- A) Direct
- B) Parallel
- C) Offset
- D) Either direct or offset

78- You are flying on radial 350°, 25NM inbound VOR/DME station. ATC requests you to join non-published standard holding pattern at 18NM with inbound course 350°, what is holding entry?

- A) Direct
- B) Parallel
- C) Offset
- D) Either parallel or offset



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79- An aeroplane's RMI shows a NDB bearing 070°, wind is calm, the aeroplane is to join a right hand holding pattern at the NDB, the inbound leg of which is 330°, the aeroplane should:

- A) Fly to the NDB and join the pattern.
- B) Fly to the NDB then fly outbound on 150° for 1 minute, then turn left to point directly at the NDB joining the pattern overhead.
- C) Fly to the NDB then fly a teardrop with an outbound heading of 120° for 1 minute and a rate one turn to join inbound.
- D) Either B or C above at pilot's discretion.

80- Transmissions from the VOR facilities may be adversely affected by:

- A) Static interference.
- B) Uneven propagation over irregular ground surfaces.
- C) Night effect.
- D) Quadrantal error.

81- The frequency band of the VOR is:

- A) VHF
- B) UHF
- C) HF
- D) LF and MF

82- What are the indications to show that you are receiving a Doppler VOR?

- A) The identification will always end with a D.
- B) There is no difference from the conventional VOR indications.
- C) The Doppler VOR identification begins with a D.
- D) The ident is spoken like Aberdeen Doppler VOR.

83- When the term "Radial" is used in reference to the VOR it means:

- A) The magnetic bearing of the VOR station.
- B) The magnetic bearing from the VOR station.
- C) The magnetic bearing of the aircraft to the station.
- D) The true bearing from the VOR station.

84- The information carried by a signal emitted from a VOR is:

- A) The direction from the aircraft to the VOR and the identification of the VOR.
- B) The accurate timing signal and the station identifier.
- C) The magnetic north reference signal and the identification signal for the correct direction to the aircraft.
- D) In the magnetic direction the signal left the VOR antenna, and the identification of the station.



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85- When a maximum range and altitude is published for a VOR:

- A) The signal from the VOR will be too weak to provide information when you are outside this airspace.
- B) The terrain will cause bends and/or scalloping on the VOR signal and make it inaccurate outside standards in the airspace outside the published airspace.
- C) The reception from this VOR is guaranteed free from harmful interference from other VORs when you are within this airspace.
- D) You are guaranteed to receive no interference to the VOR signal from other radio transmissions as long as you are within the air space published.

86- If VOR bearing information is used beyond the published protection range, errors could be caused by:

- A) Sky wave interference from distant transmitters on the same frequency.
- B) Interference from other transmitters.
- C) Noise from precipitation static exceeding the signal strength of the transmitter.
- D) Sky wave interference from the same transmitter.

87- The related accuracy of VOR is valid:

- A) At all times.
- B) By day only.
- C) By night only.
- D) At all times except dawn and dusk.

88- If you correctly tuned in a VOR situated to your east, your RMI should read and your OBS would read

- A) 000, 000 with needle central and TO indicated
- B) 090, 090 with needle central and FROM indicated
- C) 000, 000 with needle central and FROM indicated
- D) 090, 090 with needle central and TO indicated

89- An aeroplane flies over position A which is due North of a VOR station sited at position B, the magnetic variation at A is 18°W, and at B is 10°W, what radial from B is the aircraft on?

- A) 350°
- B) 360°
- C) 010°
- D) 342°

90- If a VOR station and a DME station, having different locations, are selected to provide a fix:

- A) Two different IDs will have to be checked.
- B) Two positions being ambiguous will be presented.
- C) Two navigation radio sets with separate frequency control are required in the aircraft.
- D) All answers are correct.



91- An aircraft wishes to track towards a VOR along the radial 274°, if variation is 10° W what should be set on the OBS?

- A) 274°
- B) 264°
- C) 094°
- D) 084°

92- When the warning flag on a VOR indicator appears, it may indicate:

- A) That no signal is received.
- B) That the received signal is too weak to be processed in the receiver.
- C) That the quality of the received signal is so poor that a stable establishment of phase difference between the reference and the variable signal is not possible.
- D) All answers are correct.

93- The TO/FROM indicator of a VOR:

- A) Tells whether you are now flying towards or from the VOR.
- B) Tells whether a track equal to the selected bearing will bring you to or away from the VOR.
- C) Tells whether the deviation indicator shows that you should maneuver the aircraft towards or from the CDI needle.
- D) Tells whether you should turn the aircraft towards or away from the CDI indication.

94- A Course Deviation Indicator (CDI) shows full deflection to the left when within range of a serviceable VOR What angular deviation are you from the selected radial?

- A) 10° or more.
- B) Less than 10°.
- C) 5° or more.
- D) 2.5° or more.

95- You are on compass heading of 090° on the 255° radial from a VOR, you set the course 190° on your OBS, the deviation bar will show:

- A) Full scale deflection right with a FROM indication.
- B) Full scale deflection left with a FROM indication.
- C) Full scale deflection left with a TO indication.
- D) Full scale deflection right with a TO indication.

96- An aircraft is on a VOR radial of 235°, heading 003° (M), and with the OBS set to 060°, the correct indications are:

- A) TO, 1/2 scale deflection to the left.
- B) FROM, 1/2 scale deflection to the left.
- C) TO, 1/2 scale deflection to the right.
- D) FROM, 1/2 scale deflection to the right.



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97- An aeroplane is on radial 070° of a VOR, HDG is 270°, If the OBS is set to 260°, the CDI will show:

- A) Fly left, TO.
- B) Fly right, TO.
- C) Fly left, FROM.
- D) Fly right, FROM.

98- In order to plot a bearing from a VOR station, a pilot needs to know the magnetic variation:

- A) At the VOR.
- B) At the aircraft location.
- C) At the half-way point between the aircraft and the station.
- D) At both the VOR and aircraft.

99- A VOT is:

- A) A VOR test.
- B) A terminal VOR.
- C) A trial VOR.
- D) A tracking VOR.

100- Your aircraft is heading 075°M, the OBS is set to 025°, the VOR indications are TO with the needle showing right deflection, relative to the station, you are situated in a quadrant defined by the radials:

- A) 115° and 205°.
- B) 295° and 025°.
- C) 250° and 115°.
- D) 205° and 295°.

101- An aircraft is required to approach a VOR via the radial 104°, which of the following settings should be made on the VOR/ILS deviation indicator?

- A) 284° with the FROM flag showing.
- B) 284° with the TO flag showing.
- C) 104° with the TO flag showing.
- D) 104° with the FROM flag showing.

102- Given:

OBS for a VOR is selected to 090°.

From/To indicator indicates TO.

CDI needle is deflected halfway to the right.

On what radial is the aircraft?

- A) 085°
- B) 275°
- C) 265°
- D) 095°



103- An aircraft on heading of 180° (M) is on a radial of 270° (M) from a VOR, the bearing you should select on the OBS to centralize the VOR/ILS, left/right deviation needle and to proceed to the VOR is:

- A) 360°
- B) 270°
- C) 090°
- D) 180°

104- An aircraft is on a VOR radial of 280° , heading 260° (M), and with the OBS set to 310° what is the intercept heading? (Intercept angle= 45°)

- A) 235°
- B) 355°
- C) 265°
- D) 305°

105- An aircraft is on a VOR radial of 355° , heading 355° (M), and with the OBS set to 015° , what is the intercept heading? (Intercept angle= 40°)

- A) 035°
- B) 335°
- C) 055°
- D) 315°

106- An aircraft is on a VOR radial of 150° , heading 360° (M), and with the OBS set to 350° , what is the intercept heading? (Intercept angle= 45°)

- A) 285°
- B) 215°
- C) 305°
- D) 315°

107- An aircraft is on a VOR radial of 005° , heading 175° (M), and with the OBS set to 170° , what is the intercept heading? (Intercept angle= 45°)

- A) 125°
- B) 215°
- C) 230°
- D) 220°

108- An aircraft is on a VOR radial of 120° , heading 030° (M), and with the OBS set to 290° , what is the intercept heading? (Intercept angle= 40°)

- A) 330°
- B) 300°
- C) 150°
- D) 350°



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109- An aircraft bears 036° (T) from a VOR station, it's heading is 330° (T) and the variation at the VOR station and aircraft is 8° E, what OBS setting would make the CDI needle central with TO showing?

- A) 028°
- B) 208°
- C) 232°
- D) 052°

110- OBS course is set to 123° with a TO indication, the CDI is indicating 4 dots right on a standard 5 dot indicator, on what radial is the position of your aircraft?

- A) 295°
- B) 131°
- C) 311°
- D) 115°

111- An aircraft is on heading of 100° (M) from a VOR, to make the VOR/ILS deviation indicator needle centralize with the TO flag showing, the following bearing should be selected on the OBS:

- A) 100°
- B) 110°
- C) 290°
- D) 280°

112- Which of the following is a valid frequency (MHz) for a VOR?

- A) 107.75
- B) 109.90
- C) 118.35
- D) 112.20

113- What is the approved frequency band assigned to VOR?

- A) 108.000 – 117.975 MHz which is LF.
- B) 108.000 – 117.975 MHz which is MF.
- C) 108.000 – 117.975 MHz which is HF.
- D) 108.000 – 117.975 MHz which is VHF.

114- An aircraft is tracking inbound to a VOR beacon on the radial 105° , the setting the pilot should put on the OBS and the CDI indications are:

- A) 285° TO
- B) 105° TO
- C) 285° FROM
- D) 105° FROM



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115- An aircraft is flying a heading of 090° along the Equator, tracking direct to a VOR, if the variation at the aircraft is 10°E and 15°E at the VOR, on which radial is the aircraft situated?

- A) 090°
- B) 105°
- C) 255°
- D) 285°

116- A VOR indicates 275° TO with the needle showing 2.5 dots fly right, the aircraft is 20 NM from the beacon on a heading of 330° (M), the radial that the aircraft is on and the correct way to turn after intercepting the required track to fly to the facility is:

- A) 092°, right.
- B) 100°, left.
- C) 272°, right.
- D) 280°, left.

117- Aircraft is maintaining magnetic heading of 268°, the needle of a Course Deviation Indicator is showing 3 dots right on a 5 dot scale, with 268° set and FROM showing, what radial is the aircraft on?

- A) 082°
- B) 094°
- C) 262°
- D) 274°

118- An aircraft on a heading of 280° (M) is on a radial 090° (M) from a VOR, the course you should select on the OMNI bearing selector (OBS) to centralize the VOR/ILS deviation needle with a TO indication is:

- A) 100°
- B) 090°
- C) 270°
- D) 280°

119- An aircraft on a heading of 270° (M) has 093° set on the OBS and TO indicated on the VOR L/R deviation indicator, the needle shows two dots fly left, the aircraft is on the:

- A) Radial 277°
- B) Radial 089°
- C) Radial 097°
- D) Radial 269°



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120- A VOR indication of 240° FROM is given. Variation at the aircraft position is 9°W and at the VOR is 7°W. True heading in no wind to reach the station is:

- A) 231° (T)
- B) 051° (T)
- C) 053° (T)
- D) 233° (T)

121- What is the theoretical maximum range that an aircraft at FL360 will obtain from a VOR beacon situated at 900 feet above mean sea level?

- A) 274 NM
- B) 255 NM
- C) 112 NM
- D) 224 NM

122- The OBS on a deviation indicator is set to 330° and gives a 3 dots fly right demand with FROM indicated. What is the QDM of the aircraft to the station?

- A) 144°
- B) 324°
- C) 336°
- D) 156°

123- What is the theoretical maximum range that an aircraft at FL420 will obtain from a VOR beacon situated at 400 feet above mean sea level?

- A) 225 NM
- B) 256 NM
- C) 281 NM
- D) 257 NM

124- Concerning Conventional and Doppler VORs (DVOR), which of the following is correct?

- A) There is no way of knowing from the instrumentation display which type is being used.
- B) The DVOR will always have a "D" in the ident.
- C) The DVOR has a higher pitch ident than the standard VOR.
- D) The conventional VOR has less site error.

125- An aircraft is attempting to home to VOR on the 064° radial. The CDI shows 4 dots fly right with TO indication, at the same time the co-located DME shows range of 45 NM. Where is the aircraft in relation to the required track?

- A) 6 NM right of track
- B) 3 NM right of track.
- C) 6 NM left of track.
- D) 3 NM left of track.



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126- (Refer to figure I-26) An aircraft is tracking away from a VOR on the 150° radial with 10° right drift. An NDB lies to the South of the VOR. Which of the RMIs illustrated in figure shows the aircraft when it is obtaining a relative bearing of 100° from the NDB?

- A) a
- B) b
- C) c
- D) d

127- An aircraft, heading 150°, is 100 NM north of a VOR, the pilot intends to home to the VOR on the 030° radial. The pilot should set on the OBS and on reaching the 030° radial should turn onto a heading of, assuming zero wind.

- A) 210°, left, 030°
- B) 030°, right, 210°
- C) 210°, right, 210°
- D) 150°, left, 210°

128- An aircraft is attempting to home to a VOR beacon. The pilot has set 329° on the OBS of the deviation indicator. If the aircraft is situated on the 152° radial, then the deviation indicator will show:

- A) One and a half dots fly right.
- B) One and a half dots fly left.
- C) Three dots fly right.
- D) Three dots fly left.

129- (Refer to figure I-27) Both the VOR and the ADF in an aircraft are correctly tuned and identified. The indications from both are shown on the RMI illustrated. Use the following information given on the RMI indicates?

- A) That the aircraft is heading 033°(M), is on the 310° radial from the VOR, and bears 050°(M) from the NDB.
- B) That the aircraft is heading 330°(M), is on the 310° radial from the VOR, and bears 050° from the NDB.
- C) That the aircraft is heading 330°(M), is on the 130° radial from the VOR, and bears 050°(M) from the NDB.
- D) That the aircraft is heading 330°(M), is on the 130° radial from the VOR, and bears 230°(M) from the NDB.



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130- The global positioning system (GPS) provides horizontal accuracy for civil user of approximately:

- A) 100 feet.
- B) 328 feet.
- C) 300 meters.
- D) 328 meters.

131- Where does the DME indicator have the greatest error between the ground distance and displayed distance to the VORTAC?

- A) High altitudes close to the VORTAC.
- B) Low altitudes close to the VORTAC.
- C) Low altitudes far from the VORTAC.
- D) High altitudes far from the VORTAC.

132- What DME indication should a pilot observe when directly over a VORTAC site at 24000 feet?

- A) 24 DME miles.
- B) 4 DME miles.
- C) 24000 feet.
- D) 6 DME miles.

133- To track inbound on the 215° radial of a VOR station, the recommended procedure is to set the OBS to:

- A) 215° and make heading corrections toward the CDI needle.
- B) 215° and make heading corrections away from the CDI needle.
- C) 035° and make heading corrections toward the CDI needle.
- D) 035° and make heading corrections away from the CDI needle.

134- If an airborne checkpoint is used to check the VOR system for VFR operations, the maximum bearing error permissible is:

- A) Plus or minus 6°
- B) Plus 6° or minus 4°
- C) Plus or minus 4°
- D) Zero

135- When the course deviation indicator (CDI) needle is centered during a receiver check using a VOR test signal (VOT), the OBS and the TO/FROM indicator should read:

- A) 180° FROM, only if the pilot is due north of the VOT.
- B) 0° TO or 180° FROM, regardless of the pilot's position from the VOT.
- C) 0° FROM or 180° TO, regardless of the pilot's position from the VOT.
- D) 0° FROM or 180° TO, only if the pilot is due north of the VOT.



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136- When correcting toward the CDI in a reverse sensing situation, you will:

- A) Parallel the radial, deflected away from the course you want to follow.
- B) Fly closer to the radial, this situation is known as reverse sensing.
- C) Fly further away from the radial.
- D) Stay the same distance from the radial.

137- A VORTAC facility provides you with:

- A) Course guidance only.
- B) Distance information only.
- C) Nautical mile distance information only.
- D) Course guidance and distance information.

138- The most accurate DME groundspeed readings occur when traveling:

- A) Directly to the station only.
- B) Directly from the station only.
- C) Directly to or from the station.
- D) At a 90° angle to the station.

139- When you are tuning a VOR/DME or VORTAC facility, the absence of the single-coded identification every 30 seconds indicates:

- A) The DME is not operational.
- B) The VOR is not operational.
- C) The system is working correctly.
- D) Your receiver is not operational.

140- A DME beacon having a transmit frequency of 962 MHz would have a receive frequency of:

- A) 1030 MHz
- B) 902 MHz
- C) 1025 MHz
- D) 962 MHz

141- Which of the following system provides distance information?

- A) DME
- B) VOR
- C) ADF
- D) VDF

142- Distance Measuring Equipment (DME) operates in the:

- A) UHF band and is a primary radar system.
- B) VHF band and uses the principle of phase comparison.
- C) UHF band and is a secondary radar system.
- D) SHF band and uses frequency modulation techniques.



143- Which one of the statements below is correct regarding the DME?

- A) Two lines of position obtained from two different DME's give an unambiguous fix.
- B) The DME operating frequencies are in the UHF frequency band.
- C) The indicated distance is the ground distance measured from the aircraft's projected position on the ground to the DME ground installation.
- D) The DME ground station is always co-located with a VOR station.

144- Which of the following will give the most accurate calculation of aircraft ground speed?

- A) A VOR station sited on the flight route.
- B) A VDF station sited across the flight route.
- C) A DME station sited on the flight route.
- D) An ADF sited on the flight route.

145- What is the approved frequency band assigned to DME?

- A) 960 - 1215 MHz which is VHF.
- B) 960 - 1215 MHz which is UHF.
- C) 960 - 1215 MHz which is SHF.
- D) 960 - 1215 MHz which is EHF.

146- A typical DME frequency is:

- A) 1000 MHz
- B) 1300 MHz
- C) 1000 kHz
- D) 113.55 MHz

147- The most accurate measurement of speed by DME for an aircraft at 30000 ft will be when the aircraft is:

- A) Tracking towards the beacon at 10 NM.
- B) Overhead the beacon.
- C) Tracking away from the beacon at 100 NM.
- D) Passing abeam the beacon at 50 NM.

148- Of what use, if any, is a military TACAN station to civil aviation?

- A) It can provide a DME distance and magnetic bearing.
- B) It is of no use to civil aviation.
- C) It can provide DME distance.
- D) It can provide a magnetic bearing.



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149- The indicated range from a DME station is:

- A) Slant range.
- B) Ground range.
- C) Zero when passing overhead the station.
- D) Ground range only if the beacon is co-located with VOR.

150- The operating principle of a DME is the measurement of the:

- A) Time between the transmission and reception of radio pulses.
- B) Frequency change between the emitted wave and reflected wave.
- C) Frequency of the reflected wave.
- D) Phase difference between emitted wave and reflected wave.

151- A VOR and DME are collocate, you want to identify the DME by listening to the Morse ident, having heard the same Morse indent 4 times in 30 seconds the:

- A) VOR and DME Morse idents were the same and broadcast with the same pitch.
- B) DME Morse ident was not transmitted; the distance information is sufficient proof of correct operation.
- C) DME Morse ident is the one with the lower pitch that was broadcast several times.
- D) DME Morse ident is the one with the higher pitch that was broadcast only once.

152- A DME is located at MSL. An aircraft passing vertically above the station at flight level FL360. At that time, the DME reading will be:

- A) FLAG/OFF, the aircraft is within the cone of silence.
- B) Fluctuating and not significant.
- C) 6 NM
- D) 0 NM

153- When considering the use of NDB, night effect has its greatest effect during:

- A) Autumn and winter.
- B) When using inland beacons.
- C) When using a horizontally polarized signal.
- D) At dawn and dusk.

154- A cumulonimbus cloud in the vicinity of an aeroplane can cause certain navigation systems to give false indications. This is particularly true of the:

- A) ADF
- B) VOR
- C) Weather radar
- D) DME



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155- The frequency band chosen for NDB is:

- A) Upper MF and lower LF
- B) VLF
- C) Upper LF and lower MF
- D) LF

156- NDBs transmit mainly in the:

- A) VHF band.
- B) UHF band.
- C) HF band.
- D) MF band.

157- Which of the following is the ICAO allocated frequency band for ADF receivers?

- A) 255 - 455 kHz.
- B) 190 - 1750 kHz.
- C) 300 - 3000 kHz.
- D) 200 - 2000 kHz.

158- The basic information given by the ADF is:

- A) The relative bearing from the aircraft to the NDB.
- B) The magnetic bearing from the aircraft to the NDB.
- C) The true great circle track from the NDB to the aircraft.
- D) The magnetic direction of the loop aerial with reference to the sense aerial.

159- An aircraft is intending to track from NDB 'A' to NDB 'B' on a track of 050° (T), heading 060° (T). If the RBI shows the relative bearing of 'A' to be 180° and the relative bearing of 'B' to be 330° then the aircraft is:

- A) Left of track and nearer 'A'.
- B) Left of track and nearer 'B'.
- C) Right of track and nearer 'A'.
- D) Right of track and nearer 'B'.

160- Flying in the vicinity of CB clouds and using ADF:

- A) The ANT position of the function switch should be used when listening for NDB identification.
- B) Strong static emitted from the CB may cause the ADF needle to deflect towards the CB.
- C) The static emitted from the CB will fade soon after you have passed it.
- D) All answers are correct.



161- Which of the following may cause inaccuracies in ADF bearings?

- A) Static interference, height effect, lack of failure warning.
- B) Station interference, mountain effect, selective availability.
- C) Coastal refraction, slant range, night effect.
- D) Lack of failure warning, station interference, static interference.

162- What action must be taken to receive a bearing from an ADF:

- A) BFO on.
- B) Select the loop position.
- C) Both the loop and sense aerials must receive the signal.
- D) Select the ANT position.

163- The 95% accuracy for ADF bearings of an NDB by day is:

- A) $\pm 2^\circ$
- B) $\pm 5^\circ$
- C) $\pm 10^\circ$
- D) $\pm 3^\circ$

164- When identifying an NDB (NON A1A) it is necessary to:

- A) Turn the BFO on.
- B) Turn the BFO off.
- C) Turn the ANT on.
- D) Turn the ANT off.

165- Using an ADF indicator of the manually rotatable card type:

- A) Relative bearing is normally indicated under the pointer needle.
- B) The aircraft heading may be marked on the indicator with a manually controlled "bug".
- C) May be combined with a VOR indicator.
- D) The card should be rotated so that the aircraft heading is at the top of the indicator.

166- The BFO selector on an ADF receiver is used to:

- A) Find the loop NULL position.
- B) Stop loop rotation.
- C) Hear the IDENT and must always be switched ON.
- D) Hear the IDENT of some NDB stations radiating a continuous wave signal.



167- Which of the following disturbances is most likely to cause the greatest inaccuracy in ADF bearings?

- A) Coastal refraction.
- B) Sky waves.
- C) Night effect.
- D) Thunderstorms nearby.

168- Aircraft is flying over the sea. The maximum errors when using ADF will occur in which of the following situations:

(i) Position of the NDB?

(ii) Angle of cut at the coast?

- A) (i) On the coast, (ii) 90°
- B) (i) Well inland, (ii) 90°
- C) (i) On the coast, (ii) 15°
- D) (i) Well inland, (ii) 20°

169- If an NDB has a published range of 30 NM, its accuracy is:

- A) Guaranteed to that range.
- B) Only guaranteed at night to that range.
- C) Only guaranteed by day to that range.
- D) Is not protected in any way.

170- Errors caused by the effect of coastal refraction on bearings at lower altitudes are maximum when the NDB is:

- A) Near the coast and the bearing crosses the coast at right angles.
- B) Inland and the bearing crosses the coast at an acute angle.
- C) Inland and the bearing crosses the coast at right angles.
- D) Near the coast and the bearing crosses the coast at an acute angle.

171- A failed RMI rose is locked on 090° and the ADF pointer indicates 225° . The relative bearing to the station is:

- A) 135° .
- B) Impossible to read, due to failure RMI.
- C) 315° .
- D) 225° .



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172- Given:

Actual QDM: 320°

Actual HDG: 050°

Required QDM: 340°

What should be the first turn to intercept the required QDM?

- A) 350°
- B) 005°
- C) 290°
- D) 340°

173- Given:

Actual QDM: 210°

Actual HDG: 060°

Required QDM: 260°

What should be the first turn to intercept the required QDM?

- A) Left HDG 170°.
- B) Right HDG 215°.
- C) Right HDG 170°.
- D) Right HDG 260°.

174- A VOR and an ADF are co-located, you cross the VOR radial of 240° on a magnetic heading of 360°. At the same time, you should read an ADF bearing of:

- A) 060°
- B) 240°
- C) 300°
- D) 120°

175- You are on a magnetic heading of 055° and your ADF indicates a relative bearing of 325°, the QDM is:

- A) 235°
- B) 200°
- C) 055°
- D) 020°

176- On the QDR of 075° (in the vicinity of the station) with a magnetic heading of 295°, the relative bearing on the ADF indicator is:

- A) 140°
- B) 040°
- C) 220°
- D) 320°



177- An aircraft is HOMING to a radio beacon whilst maintaining a relative bearing of zero. If the magnetic heading decreases, the aircraft is experiencing:

- A) Left drift.
- B) Right drift.
- C) A wind from the west.
- D) Zero drift.

178- Using an NDB it is possible to experience which of the following errors or limitations?

- A) Coastal refraction, timing error and night effect.
- B) Night effect, station interference and latitude error.
- C) Night effect, station interference and lack of a failure warning system.
- D) Coastal refraction, timing error and lack of a failure warning system.

179- Which of the following is true about the ADF?

- A) Its accuracy is the same by day and by night.
- B) It does not have a signal failure warning.
- C) It should not be used at night because of sky waves.
- D) Sky waves do not affect the bearing accuracy provided they come from the correct NDB.

180- Homing toward NDB:

- A) Will call for an assessment of the drift.
- B) Is most effective in strong winds.
- C) Will in most situations result in frequent heading changes when approaching the NDB.
- D) Will result in passing the NDB along the planned track.

181- Which of the following is correct regarding the range of an NDB?

- A) The range is limited to the line of sight.
- B) Aircraft height is not limiting for the reception of signals from the NDB.
- C) The range of an NDB will most likely increase at day time compared to night time.
- D) The transmitter power of the NDB station has no effect on the range.

182- The indications of a VOR in an aircraft tracking towards a VOR are 075°(M) with "TO" indication and the CDI needle centered, a co-located NDB shows 012° relative bearing, what are the drift and heading in °(M)?

- A) 12° right; 087°.
- B) 12° left; 063°.
- C) 12° right; 063°.
- D) 12° left; 087°.



183- Which is true about homing when using ADF during crosswind conditions?

- A) Homing to a radio station results in a curved path that leads a curved path to the station.
- B) Is a practical navigation method for flying both to and from a radio station.
- C) Homing to a radio station requires that the ADF have an automatically or manually rotatable azimuth.
- D) All answers are correct

184- The magnetic heading is 315° and the ADF shows a relative bearing of 140° , the magnetic bearing FROM the radio beacon would be:

- A) 095°
- B) 140°
- C) 175°
- D) 275°

185- The magnetic heading is 350° and the relative bearing to a radio beacon is 240° , what would be the magnetic bearing TO that radio beacon?

- A) 050°
- B) 230°
- C) 240°
- D) 295°

186- An aircraft is maintaining a magnetic heading of 265° and the ADF shows a relative bearing of 065° , this indicates that the aircraft is crossing the:

- A) 065° magnetic bearing FROM the radio-beacon.
- B) 150° magnetic bearing FROM the radio-beacon.
- C) 265° magnetic bearing FROM the radio-beacon.
- D) 330° magnetic bearing FROM the radio-beacon.

187- (Refer to Figure I-29) To intercept a magnetic bearing of 240° FROM at a 030° angle (while outbound), the airplane should be turned:

- A) Left 065°
- B) Left 125°
- C) Right 270°
- D) Left 240°

188- (Refer to Figure I-29) If the airplane continues to fly on the heading as shown, what magnetic bearing FROM the station would be intercepted at a 035° angle outbound?

- A) 035°
- B) 070°
- C) 165°
- D) 215°



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189- (Refer to Figure I-30) If the airplane continues to fly on the magnetic heading as illustrated, what magnetic bearing FROM the station would be intercepted at a 035° angle?

- A) 090°
- B) 062°
- C) 270°
- D) 305°

190- (Refer to Figure I-30) If the airplane continues to fly on the magnetic heading as illustrated, what magnetic bearing FROM the station would be intercepted at a 030° angle?

- A) 090°
- B) 130°
- C) 270°
- D) 310°

191- (Refer to Figure I-31) Which ADF indication represents the aircraft tracking TO the station with a right crosswind?

- A) 1
- B) 2
- C) 3
- D) 4

192- (Refer to Figure I-31-1) Determine the magnetic bearing TO the station:

- A) 030°
- B) 150°
- C) 210°
- D) 330°

193- (Refer to Figure I-31-2) What is the magnetic bearing TO the station:

- A) 010°
- B) 135°
- C) 190°
- D) 315°

194- (Refer to Figure I-31-2) Determine the approximate heading to intercept the 180° bearing TO the station:

- A) 040°
- B) 160°
- C) 180°
- D) 220°



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195- (Refer to Figure I-32-1) The relative bearing TO the station is:

- A) 045°
- B) 180°
- C) 135°
- D) 315°

196- (Refer to Figure I-32-2) The relative bearing TO the station is:

- A) 090°
- B) 180°
- C) 270°
- D) 360°

197- (Refer to Figure I-32-3) On a magnetic heading of 320°, the magnetic bearing TO the station is:

- A) 005°
- B) 045°
- C) 140°
- D) 225°

198- (Refer to Figure I-32-6) If the magnetic bearing TO the station is 240°, the magnetic heading is:

- A) 015°
- B) 045°
- C) 195°
- D) 225°

199- (Refer to Figure I-32-8) If the magnetic bearing TO the station is 135°, the magnetic heading is:

- A) 135°
- B) 270°
- C) 315°
- D) 360°

200- ADF equipment is capable of receiving signals from:

- A) Any FM radio station.
- B) Only AM radio station.
- C) Specially equipped VOR or VORTAC station.
- D) NDBs and commercial broadcast stations.



201- (Refer to Figure I-33) An aircraft is tracking away from an NDB on a track of $023^{\circ}(T)$. If the drift is 8° left and variation 10° west, which of the RMIs illustrated below shows the correct indications?

- A) a
- B) b
- C) c
- D) d

202- The BFO facility on ADF equipment should be used as follows when an NDB having NON A1A type emission is to be used:

- A) BFO on for tuning and identification but may be turned off for monitoring.
- B) BFO on for tuning but can be turned off for monitoring and identification purpose.
- C) BFO off during tuning, identification and monitoring because this type of emission is not modulated.
- D) BFO should be switched on for tuning, ident and monitoring.

203- An aircraft on a heading of $235^{\circ}(M)$, and RMI shows of 090° with respect to an NDB. Any quadrantal error which is affecting the accuracy of this bearing is likely to be:

- A) A maximum value.
- B) A very small value.
- C) Zero, since quadrantal error affects only the RBI.
- D) Zero, since quadrantal error affects only the VOR.

204- The heading read on a standard RMI is:

- A) The magnetic track.
- B) The relative heading.
- C) The magnetic heading.
- D) The true heading.

205- Of the bearing indicators available for use on ADF, the most sophisticated one is:

- A) The Relative Bearing Indicator.
- B) The Radio Magnetic Indicator.
- C) The Deviation Indicator.
- D) The Manually Rotatable Card.

206- An RMI indicates aircraft heading and bearing. To convert the RMI bearings of NDBs and VORs to true bearings the correct combination for the application of magnetic variation is:

- A) NDB: aircraft position; VOR: aircraft position.
- B) NDB: beacon position; VOR: beacon position.
- C) NDB: beacon position; VOR: aircraft position.
- D) NDB: aircraft position; VOR: beacon position.



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207- On which of the following displays are you able to get a direct read-out (no calculation is necessary from the pilot) of the magnetic bearing from the aircraft to the NDB?

- A) Fixed card ADF and RMI.
- B) Moving card ADF and RMI.
- C) Moving and fixed card ADF.
- D) Fixed card ADF only.

208- The RMI shows the bearing of a NDB as 020°. The heading of the aeroplane is 020°(M). In order to intercept an outbound course of 330° (from the NDB) at an angle of 40°, the aeroplane's heading should be altered to:

- A) 010°
- B) 330°
- C) 300°
- D) 040°

209- When using an RMI as an indicator for the VOR receiver:

- A) You will read the drift as the angle between the OBS bug and the tip of the VOR needle.
- B) You will read the number of the received radial under the tail of the VOR needle.
- C) The TO/FROM indication on the RMI will indicate which way to turn the aircraft in order to fly towards the VOR station being received.
- D) You will read the number of the received radial under the tip of the VOR needle.

210- An aircraft is inbound to VOR X on the 073° radial and experiences a drift of 12°L. A position report is required when crossing the 133° radial from VOR Y. If the aircraft is on track, the RMI indications at the reporting point will be:

- A) Heading: 085°, X Pointer: 073°, Y Pointer: 133°.
- B) Heading: 085°, X Pointer: 253°, Y Pointer: 133°.
- C) Heading: 265°, X Pointer: 073°, Y Pointer: 313°.
- D) Heading: 265°, X Pointer: 253°, Y Pointer: 313°.

211- The RMI is oriented toward:

- A) True north.
- B) Magnetic north.
- C) Grid north.
- D) The nose of the aircraft.



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212- An aircraft is on the 120° radial from a VOR station. Course 340° is selected on the HSI (Horizontal Situation Indicator). If the magnetic heading is 070°, the deviation bar relative to the aeroplane model, will be:

- A) Behind.
- B) In front.
- C) Right.
- D) Left.

213- Given:

Aircraft heading 160° (M).

Aircraft is on radial 240° from a VOR.

Selected course on HSI is 250°.

The HSI indications are deviation bar:

- A) Ahead of the aeroplane symbol with the FROM flag showing.
- B) Ahead of the aeroplane symbol with the TO flag showing.
- C) Behind the aeroplane symbol with the FROM flag showing.
- D) Behind the aeroplane symbol with the TO flag showing.

214- Given:

Aircraft heading 280° (M).

Aircraft is on radial 030° from a VOR.

Selected course on HSI is 010°.

The HSI indications are deviation bar:

- A) Ahead of the aeroplane symbol with the FROM flag showing.
- B) Ahead of the aeroplane symbol with the TO flag showing.
- C) Behind the aeroplane symbol with the FROM flag showing.
- D) Behind the aeroplane symbol with the TO flag showing.

215- Aircraft is proceeding to a VOR station. The EHSI is showing 5° "fly right" with a TO indication.

The aircraft heading is 280° (M) and the required track is 270° (M). The radial is:

- A) 275°
- B) 265°
- C) 085°
- D) 095°

216- How many satellites make up the Global Positioning System (GPS)?

- A) 20
- B) 22
- C) 25
- D) 24



217- GPS consists of:

- A) The space segment, the user segment and the ground segment.
- B) A ground segment, the receiver segment and five monitoring stations.
- C) A master control station, a back-up control station and antennas.
- D) A master control station, a back-up control station and the INMARSAT geostationary satellites.

218- The ground segment of GPS consists of:

- A) Master control station, a back-up control station and five monitoring stations.
- B) A ground segment, the INMARSAT geostationary satellites and five monitoring stations.
- C) A master control station, three ground antennas and five monitoring stations.
- D) A master control station, a back-up control station and the processors.

219- What is the minimum number of Global Positioning System (GPS) satellites that are observable by a user anywhere on earth?

- A) 6
- B) 5
- C) 4
- D) 3

220- How many Global Positioning System (GPS) satellites are required to make a three dimensional position (latitude, longitude, and altitude) and time solution?

- A) 6
- B) 5
- C) 4
- D) 3



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	A	26	A	51	A	76	D
2	B	27	D	52	A	77	A
3	C	28	D	53	B	78	D
4	A	29	D	54	B	79	A
5	D	30	D	55	C	80	B
6	C	31	C	56	B	81	A
7	D	32	A	57	B	82	B
8	B	33	C	58	B	83	B
9	A	34	C	59	A	84	D
10	C	35	A	60	C	85	C
11	B	36	B	61	B	86	B
12	D	37	B	62	D	87	A
13	C	38	B	63	D	88	D
14	C	39	B	64	C	89	C
15	A	40	C	65	C	90	D
16	D	41	D	66	C	91	C
17	D	42	A	67	B	92	D
18	C	43	D	68	C	93	B
19	A	44	A	69	B	94	A
20	A	45	D	70	A	95	B
21	B	46	C	71	C	96	A
22	C	47	A	72	D	97	A
23	C	48	A	73	B	98	A
24	D	49	B	74	C	99	A
25	B	50	C	75	A	100	D



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	B	126	A	151	D	176	D
102	B	127	C	152	C	177	B
103	C	128	A	153	D	178	C
104	B	129	D	154	A	179	B
105	C	130	B	155	C	180	C
106	C	131	A	156	D	181	B
107	B	132	B	157	B	182	C
108	A	133	C	158	A	183	A
109	B	134	A	159	D	184	D
110	C	135	C	160	D	185	B
111	D	136	C	161	D	186	B
112	D	137	D	162	C	187	B
113	D	138	C	163	B	188	B
114	A	139	A	164	A	189	D
115	C	140	C	165	D	190	D
116	B	141	A	166	D	191	D
117	C	142	C	167	D	192	C
118	C	143	B	168	D	193	C
119	D	144	C	169	C	194	D
120	C	145	B	170	B	195	D
121	A	146	A	171	A	196	A
122	A	147	C	172	C	197	C
123	C	148	C	173	C	198	C
124	A	149	A	174	A	199	D
125	C	150	A	175	D	200	D



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QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	D	206	D	211	B	216	D
202	D	207	B	212	A	217	A
203	A	208	A	213	C	218	C
204	C	209	B	214	A	219	B
205	B	210	D	215	D	220	C

SYSTEM





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1- Connecting two 12 volts, 40 ampere-hour, capacity batteries in series will provide a battery of:

- A) 24 volts and 40 ampere-hours capacity.
- B) 12 volts and 80 ampere-hours capacity.
- C) 24 volts and 80 ampere-hours capacity.
- D) 12 volts and 40 ampere-hours capacity.

2- A propeller blade is twisted along its length in order to:

- A) Give a progressively increasing pitch from root to tip.
- B) Give a progressively increasing blade angle from root to tip.
- C) Maintain the optimal Angle of Attack from root to tip.
- D) Compensate for the decreasing linear speed of the blade from root to tip.

3- The reason for fitting thermal plugs to aircraft wheels is that they:

- A) Prevent the brakes from overheating.
- B) Release air from the tire in case of overheating.
- C) Prevent heat transfer from the brake disks to the tires.
- D) Release air from the tire in case of overpressure.

4- The reason for fitting thermal plugs to aeroplane wheels is that they:

- A) Release air from the tire in the event of overpressure due to over-inflation.
- B) Prevent the brakes from overheating.
- C) Prevent heat transfer from the brake disks to the tires.
- D) Prevent tire burst.

5- Tire creep:

- A) Can be recognized by the misalignment of markings painted on the tire and the wheel.
- B) Can be prevented by painting lines on the tire and wheel.
- C) Refers to the movement of an aircraft against the brakes.
- D) Can be prevented with glue.

6- To avoid the risk of tire burst from overheating there is:

- A) A pressure relief valve situated in the filler valve.
- B) A thermal plug that deflates the tire at a specific temperature.
- C) The "Emergency Burst" function of the anti-skid system that adapts braking to the tire temperature.
- D) Water injection triggered at a fixed temperature in order to lower tire temperature.



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7- Where are thermal plugs fitted?

- A) Wheel rim.
- B) Cargo bay.
- C) Fuel tank.
- D) Oil tank.

8- In which of the following areas would an overheat/fire warning be provided?

- A) Fuel tank
- B) Cabin
- C) Tires
- D) Wheel/undercarriage bay

9- Theoretically, a 100 amp/hr battery will supply 25 amps for:

- A) 4 hours.
- B) 25 minutes.
- C) 100 minutes.
- D) 25 hours.

10- The reason for the trim switch on a control column to consist of two separate switches is:

- A) To be able to use two different trim speeds, slow trim rate at high speed and high trim rate at low speed.
- B) To prevent that both pilots perform opposite trim inputs.
- C) Because there are two trim motors.
- D) To reduce the probability of a trim-runaway.

11- In a steep turn to the left, when using spoilers at the same time for reducing the airspeed:

- A) The right aileron will ascend, the left one will descend, the right spoiler will extend and the left one will retract.
- B) The right aileron will descend, the left one will ascend, the right spoiler will extend and the left one will retract.
- C) The right aileron will descend, the left one will ascend, the right spoiler will retract and the left one will extend.
- D) The right aileron will ascend, the left one will descend, the right spoiler will retract and the left one will extend.



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12- A 100 Ampere-Hour battery:

- A) Takes 100 hours to charge.
- B) Must be used in parallel with another similar battery.
- C) Supplies the bus-bars through a 45 Ampere circuit breaker.
- D) Will, in theory, supply 20 Amps for up to 5 hours.

13- Blade angle _____ from the hub to the tip of a propeller blade in order to maintain an optimal _____ from hub to tip.

- A) Increases / Angle of Attack.
- B) Decreases / Angle of Attack.
- C) Decreases / Geometric Pitch.
- D) Increases / Effective Pitch.

14- As an aircraft with a variable-pitch, constant-speed propeller accelerates along the runway:

- A) The blade pitch angle increases, maintaining a constant angle of attack and RPM.
- B) The angle of attack will decrease and the engine RPM remain constant.
- C) The angle of attack will remain constant and the engine RPM will increase.
- D) The linear velocity of the propeller tip will gradually decrease.

15- Tire creep may be identified by:

- A) Alignment marks painted on the tire sidewall and wheel flange.
- B) Two yellow diametrically opposed arrows painted on the tire sidewalls.
- C) A tire pressure check.
- D) Two white blocks painted on the wheel flange.

16- In the aircraft tanks, fuel is most likely to be contaminated by water from:

- A) Poorly fitting fuel caps.
- B) Atmospheric air remaining in the tanks.
- C) Contamination during re-fueling.
- D) Leaks in the tanks that have let in rain.

17- Most nose wheels on modern light aircraft are:

- A) Oleo pneumatic shock-absorber struts.
- B) Spring steel struts.
- C) Spring coil struts.
- D) Compressed rubber struts.



18- Which of the following will increase the angle of attack of a fixed pitch propeller blade?

- A) Increased TAS and increased RPM.
- B) Decreased TAS and increased RPM.
- C) Increased TAS and decreased RPM.
- D) Decreased TAS and decreased RPM.

19- The prevention of excessive oil pressure in an aircraft engine is assured by:

- A) The engine's oil pressure relief valve.
- B) Ensuring that the engine does not exceed the red-line rpm value.
- C) The engine's high capacity pressure pump.
- D) The engine's filter by-pass valve.

20- Which of the following statements concerning the stresses "TORSION" and "TENSION" is correct?

- A) Tension is caused by twisting and torsion resists a force pulling it apart.
- B) Torsion is caused by twisting and tension resists a force pulling it apart.
- C) Torsion is caused by two layers sliding apart and tension resists a force pulling it apart.
- D) Torsion is caused by twisting and tension is a crushing force.

21- Define the term "FATIGUE":

- A) A one offloading that breaks the material.
- B) A loading on the material but it returns fully to its former state when the load is removed.
- C) If a material is continually loaded and unloaded, it will eventually break even though the load remains the same.
- D) The material suffers progressively more permanent damage each time that it is loaded and unloaded.

22- What are the most frequently used materials in a monocoque or semi-monocoque structure?

- A) Aluminum or magnesium alloy.
- B) Steel.
- C) Wood.
- D) Composite fibers.



23- In flight, a cantilever wing of an airplane containing fuel undergoes vertical loads which produce a bending moment:

- A) Highest at the wing root.
- B) Equal to the zero fuel weight multiplied by the span.
- C) Equal to half the weight of the aircraft multiplied by the semi span.
- D) Lowest at the wing root.

24- On a non-stressed skin type wing, the wing structure elements which take up the vertical bending moments are:

- A) Spars
- B) Ribs
- C) Skin
- D) Stringers

25- The advantage of mounting the tailplane on top of the vertical stabilizer is:

- A) To withdraw it from the influence of wing turbulence.
- B) To decrease fuel consumption by creating a tail heavy situation.
- C) To have greater effectiveness at high speed.
- D) That it does not require a de-icing system.

26- What is the reason for putting the horizontal stabilizer on top of the fin?

- A) To be more efficient at high speed.
- B) No need for anti-icing.
- C) Create a pitch up by making the aeroplane tail heavy.
- D) To be out of the way of the wing down wash.

27- A wing structure consists primarily of:

- A) A front and rear main spar.
- B) A front and rear main spar with ribs and stringers.
- C) Ribs and stringers only.
- D) Ribs only to give optimum and cost effective simple construction.

28- The empennage consists of the:

- A) Horizontal stabilizer only.
- B) Horizontal and vertical stabilizer.
- C) Vertical stabilizer only.
- D) Tailplane only.



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29- When do you say that an aircraft has a cantilever wing?

- A) When the wing is attached to the fuselage at or near one end only.
- B) When the wing planform is other than rectangular.
- C) When the wing is supported by braces or strut, linked to the fuselage.
- D) When the wing is attached to the lower part of the fuselage.

30- Stall fences mounted on an aircraft wing are used:

- A) To increase the maximum speed of the aircraft.
- B) To avoid the formation of shock waves.
- C) To increase the lift coefficient in landing.
- D) To prevent the tendency of the outer portion of the wing to stall first.

31- What mission does the strut have, often observed between the fuselage and the wing, on small high wing aircraft?

- A) Serves as a facilitating access to the upper side of the wing.
- B) Supporting the wing while the aircraft is on ground only.
- C) Supporting the wing while the aircraft is on ground and when airborne.
- D) Supporting the wing if the airplane should become inverted.

32- Wings without exterior support are called:

- A) Mono-lever.
- B) Monocoque.
- C) Cantilever.
- D) Sweepback.

33- On modern transport aircraft, cockpit windows are protected against icing by:

- A) Vinyl coating.
- B) Electric heating.
- C) Anti-icing fluid.
- D) Rain repellent system.

34- The part of the flight that will cause the highest loads the torsion link in a bogie gear is:

- A) Braking with an inoperative anti-skid system.
- B) Taxiing with a small turning radius.
- C) Touch down with crosswind.
- D) Gear down selection.



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35- Hydraulic power is a function of:

- A) Pump RPM only.
- B) System pressure and volume flow.
- C) System pressure and tank capacity.
- D) Pump size and volume flow.

36- The viscosity of a hydraulic fluid should be:

- A) The highest to minimize power consumption and resistance to flow.
- B) The lowest to provide excellent lubrication properties.
- C) The lowest to minimize power consumption and resistance to flow.
- D) The highest to provide excellent lubrication properties.

37- Viscosity is:

- A) The temperature dependence of an oil.
- B) The tendency of a liquid or gas to resist flow.
- C) The pressure resistance of an oil.
- D) The flow velocity inside the oil lines.

38- Relationships between the force, pressure and area is:

- A) Force = Pressure x Area
- B) Pressure = Force x Area
- C) Pressure = Area x Distance
- D) Force = Volume / Area

39- Pascal's law states that:

- A) For every action there is an opposite and equal reaction.
- B) The volume of a Liquid is constant, regardless of pressure and temperature.
- C) The force produced by a fluid depends only on the amount of fluid.
- D) Pressure in an enclosed container is transmitted equally and undiminished to all parts of the container and acts at right angles to the enclosing walls.

40- The tanks of a hydraulic system are pressurized:

- A) In flight only.
- B) By bleed air coming from the turbine-engine.
- C) By the air conditioning system.
- D) By an auxiliary system.



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41- The function of the selector valve is to:

- A) Discharge some hydraulic fluid if the system pressure is too high.
- B) Automatically activate the hydraulic system.
- C) Select the system to which the hydraulic pump should supply pressure.
- D) Communicate system pressure to either side of an actuator.

42- In a hydraulic system, the reservoir is pressurized in order to:

- A) Reduce fluid combustibility.
- B) Seal the system.
- C) Keep the hydraulic fluid at optimum temperature.
- D) Prevent pump cavitation.

43- The component that transforms the hydraulic pressure into a linear motion is called:

- A) An accumulator.
- B) A hydraulic pump.
- C) An actuator or jack.
- D) A pressure regulator.

44- In a modern transport aircraft what type of hydraulic fluid is typically used?

- A) Synthetic.
- B) Mineral.
- C) Mineral/alcohol.
- D) Vegetable.

45- The type of hydraulic fluid which has the highest resistance against cavitation is:

- A) Mineral oil based fluid.
- B) Water and glycol based fluid.
- C) Synthetic fluid.
- D) Vegetable oil based fluid.

46- A shuttle valve is used to:

- A) Restrict the rate of operation of a system.
- B) Select the most suitable system pressure.
- C) Allow two supplies to be available to a service.
- D) To allow a constant volume pump to idle.



47- Internal leakage in a hydraulic system will cause:

- A) Fluid loss.
- B) A decreased fluid temperature.
- C) An increased fluid temperature.
- D) An increased fluid pressure.

48- Hydraulic fluids must have the following characteristics:

- 1) Thermal stability
- 2) Low emulsifying characteristics
- 3) Corrosion resistance
- 4) Good resistance to combustion
- 5) High compressibility
- 6) High volatility
- 7) High viscosity

The combination regrouping all the correct statements is:

- A) 1,2,5,7
- B) 1,2,3,4
- C) 2,3,4,5
- D) 1,3,4,6

49- Large transport aeroplane hydraulic systems usually operate with a system pressure of approximately:

- A) 4000 PSI.
- B) 3000 PSI.
- C) 2000 PSI.
- D) 1000 PSI.

50- What color is the hydraulic liquid in a modern jet-powered aircraft?

- A) Purple
- B) Red
- C) Yellow
- D) Pink



51- A pressure regulator is used in a hydraulic system:

- A) In conjunction with a constant delivery type pump.
- B) In conjunction with a variable delivery type pump.
- C) To ensure that an equal pressure flow is delivered to critical components such as servo actuators.
- D) As an interface between the system and the cockpit indicators.

52- Filters in hydraulic systems often incorporate pop-out indicators to:

- A) Warn of a hydraulic system overheat.
- B) Indicate that the filter is clogged and unfiltered oil is passing around the system.
- C) Warn of an impending by-pass situation.
- D) Indicate that the filter is due maintenance.

53- Filtration in a hydraulic system is usually ensured by:

- A) A filter on the return line only.
- B) A filter in the pressure line only.
- C) Filters in both the pressure and return lines.
- D) The use of sealed containers only during replenishment.

54- One of the functions of an accumulator in a hydraulic system is:

- A) To act as the primary fluid storage.
- B) To damp pressure surges in the system.
- C) To maintain constant system pressure.
- D) To act as a pressure relief valve.

55- The purpose of a hydraulic fuse is to:

- A) Reduce pressure to the braking system.
- B) Restrict return fluid from the anti-skid unit.
- C) Allow the parking brake to remain on.
- D) Prevent leakage if the hydraulic line breaks.

56- What happens with the hydraulic fluid level (in the reservoir) as you energize the system?

- A) Stays the same.
- B) Increases and then stays the same.
- C) Decreases and then fluctuates.
- D) Increases initially and then returns.



57- In the event of the normal hydraulic pressure regulation system failure, the following component is fitted in a typical hydraulic system:

- A) An accumulator.
- B) A pressure relief valve.
- C) An automatic cut out valve.
- D) A non-return valve.

58- A "hydraulic fuse" will:

- A) In case of a too high pressure in the system, open up and relieve the pressure by dumping the fluid overboard or back to the reservoir.
- B) Detect a sufficient pressure drop across itself, or a specified volume of fluid passing through itself, and then shut off the flow of fluid to prevent the system of emptying itself.
- C) Activate the actuators after the pilot has used the emergency hand pump.
- D) Direct the hydraulic fluid to the proper actuator according to the power pack and sequence valve.

59- The oil reservoir in a hydraulic system has the purpose to serve as:

- A) The compartment that stores the fluid.
- B) A point at which the fluid can purge itself of air.
- C) An expansion chamber to provide a space for the fluid when its volume increases due to a high temperature.
- D) All answers are correct.

60- What is the purpose of a "relief valve" in the hydraulic system?

- A) Make sure that the pressure in the system exceeds a certain minimum pressure.
- B) Make sure that the pressure does not exceed the maximum permitted pressure in the system.
- C) To "even out" the pressure in the system.
- D) Make sure that the emergency hand pump will produce enough pressure when used.

61- The purpose of pressurizing some hydraulic reservoirs is to:

- A) Provide emergency pressure if the pump should fail.
- B) Provide a positive pressure to the return line.
- C) Provide a positive feed to the main pump.
- D) Prevent cavitation at the pressure filter.



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62- The illumination of the green landing gear light indicates that the landing gear is:

- A) Locked-down and its door is locked.
- B) In the required position.
- C) Locked-down.
- D) Not in the required position.

63- A main landing gear is said to be "locked down" when:

- A) The actuating cylinder is at the end of its travel.
- B) The corresponding indicator lamp is amber.
- C) The strut is locked by an overcentre mechanism.
- D) It is in the down position.

64- A red or an amber light on an undercarriage position indicator signifies:

- A) At least one wheel is in the traveling or unlocked condition.
- B) All wheels are up and locked.
- C) All wheels are down and locked.
- D) The landing has been selected down using the emergency extension system.

65- Overcentre mechanisms in landing gear systems are used to:

- A) Lock the landing gear in the up and/or down positions.
- B) Lock the landing gear in the up position only.
- C) Ensure that the nose-wheel does not exceed the maximum steering arc.
- D) Ensure the nose-wheel is positioned fore and aft prior to retraction.

66- The damping element in a landing gear shock absorber used on large aircraft is:

- A) Oil
- B) Nitrogen
- C) Oxygen
- D) Springs

67- The pilot may be prevented from retracting the landing gear whilst the aircraft is on the ground by:

- A) A pneumatic interlock which disables the hydraulic up selector.
- B) A guard on the selector switch which cannot be moved until the aircraft is airborne.
- C) Any attempt to select the landing gear up will result in a flashing warning light and a loud horn.
- D) The electrical control system being routed through the weight on wheels switch.



68- The systems used for emergency extension of landing systems may comprise of:

- 1) Compressed CO₂
- 2) Compressed nitrogen
- 3) Compressed oxygen
- 4) Auxiliary hydraulic system
- 5) Freefall

The combination regrouping all the correct statements is:

- A) 1,3,4
- B) 1,2,5
- C) 2,3,4
- D) 2,4,5

69- To prevent the landing gear from collapsing when the aircraft is parked on the ground, following device is used:

- A) Locking pins with flags.
- B) Hydraulic pressure.
- C) Chocks.
- D) Torque links.

70- If an aircraft is equipped with a fixed gear, which of the mentioned factors will differ from a retractable landing gear?

- A) Horizontal stability.
- B) Induced drag.
- C) Lift.
- D) Parasite drag.

71- The pressure for the braking system of a modern aircraft originates from:

- A) Bottled gas.
- B) Engine bleeds.
- C) An accumulator.
- D) The main hydraulic system.



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72- A tubeless tire is a tire:

- 1) Which requires solid or branched wheels.
- 2) Whose valve can be sheared in sudden accelerations.
- 3) Whose mounting rim must be flawless.
- 4) Which requires no rim protection between rim flange and tire removing device.
- 5) Which does not burst in the event of a tire puncture.
- 6) Which eliminates internal friction between the tube and the tire.

The combination regrouping all the correct statements is:

- A) 1,5,6
- B) 3,4,5
- C) 1,2,5
- D) 2,3,6

73- An under inflated tire on a dry runway:

- A) Increases wear on the crown.
- B) Increases wear on the shoulder.
- C) Decreases viscous aquaplaning speed.
- D) Will cause the tire temperature to reduce.

74- Aeroplane spoilers are:

- A) Lower wing surface devices, their deflection is symmetrical or asymmetrical.
- B) Upper wing surface devices, their deflection is symmetrical or asymmetrical.
- C) Lower wing surface devices, their deflection is always asymmetrical.
- D) Upper wing surface devices, their deflection is always asymmetrical.

75- How do differential ailerons work?

- A) Increase lift on down-going wing and decrease lift on up-going wing.
- B) Increase drag on up-going wing and decrease drag on down-going wing.
- C) Equalize the drag on up-going and down-going wings.
- D) Equalize the lift on up-going and down-going wings.

76- The range of control surface movements is limited by:

- A) Leaving control cables a little slack.
- B) Tensioning control cables correctly.
- C) Defined limits is the Operations Manual.
- D) Providing control stops.



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77- What is the purpose of inboard ailerons?

- A) To reduce wing bending at high speed.
- B) To reduce wing twist at high speed.
- C) To reduce wing twist at low speed.
- D) To reduce wing bending at low speed.

78- A control surface has its limitations in movement by:

- A) Control cable tension.
- B) Primary stops at the surface.
- C) Primary stops at the control column.
- D) Secondary stops at the control column.

79- A primary stop is mounted on an elevator control system in order to:

- A) Restrict the range of movement of the control column.
- B) Restrict the range of movement of the elevator.
- C) Maintain constant control cable tension.
- D) Prevent overloading of control cables.

80- The function of the rudder limiter on some aircraft is to:

- A) Prevent that heavy gust damages the rudder.
- B) Prevent large rudder deflections on ground.
- C) Prevent excessive loads from acting on the rudder.
- D) Reduce rudder load during takeoff and landing.

81- With which system is differential control associated?

- A) Trim system.
- B) Aileron system.
- C) Rudder system.
- D) Elevator system.

82- Which controls act together in a V-tail aircraft?

- A) The stick in both axis (push, pull and turn).
- B) The stick in one axis and the throttle.
- C) The stick in one axis and the rudder-pedals.
- D) The rudder-pedals and the mixture.



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83- The purpose of a trim tab (device) is to:

- A) Trim the aeroplane during normal flight.
- B) Reduce or to cancel control forces.
- C) Trim the aeroplane at low airspeed.
- D) Lower maneuvering control forces.

84- The trim tab:

- A) Increases hinge moment and reduces control surface efficiency.
- B) Reduces hinge moment and increases control surface efficiency.
- C) Increases hinge moment and control surface efficiency.
- D) Reduces hinge moment and control surface efficiency.

85- The heating facility for the windshield of an aircraft is:

- A) Used only at low altitudes where there is a risk of ice formation.
- B) Harmful to the integrity of the windows in the event of a bird strike.
- C) Only used when hot air demisting is insufficient.
- D) Used on a continual basis as it reduces the thermal gradients which adversely affect the useful life of the components.

86- Generally, for large aeroplanes, electrical heating for ice protection is used on:

- A) Slat leading edges.
- B) Fin leading edges.
- C) Pitot tubes.
- D) Elevator leading edges.



87- The elements specifically protected against icing on transport aircraft are:

- 1) Engine air intake and pod
- 2) Front glass shield
- 3) Radom
- 4) Pitot tubes and waste water exhaust masts
- 5) Leading edge of wing
- 6) Cabin windows
- 7) Trailing edge of wings
- 8) Electronic equipment compartment

The combination regrouping all the correct statements is:

- A) 1,2,5,6
- B) 1,4,5,7
- C) 1,2,4,5
- D) 1,2,3,8

88- The anti-icing or de-icing system which is mostly used for the wings of modern turboprop aeroplanes is:

- A) Fluid de-icing.
- B) Electrical heating.
- C) Thermal anti-icing.
- D) Pneumatic boots.

89- The advantages of thermal anti-icing are:

- 1) Simple and reliable system
- 2) Profiles maintained
- 3) Greater efficiency than that of an electrical resistor
- 4) Direct use of the hot air from the jet engine without substantial reduction in engine thrust

The combination of correct statements is:

- A) 1,2
- B) 3,4
- C) 1,3
- D) 2,4



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90- A pneumatic de-icing system should be operated:

- A) When there is approximately 1.5 cm of ice on leading edges.
- B) When entering areas with icing conditions.
- C) When there are approximately 5 cm of ice on leading edges.
- D) Only at takeoff and during approach.

91- The effect of frost on an aircraft:

- A) Is to cause an increase in boundary layer energy and so delay the onset of the stall.
- B) Can be generally ignored.
- C) Has no significant effect on the aerodynamic contour or lift coefficient.
- D) Causes an increase in the surface roughness which in turn increases skin friction drag.

92- During flight, the wing anti-icing system has to protect:

- A) Leading edges, slats and sometimes the leading edge flaps.
- B) The whole upper wing surface and the flaps.
- C) Slats and the leading edge flaps only.
- D) Leading edges only.

93- With regard to pneumatic mechanical devices that afford ice protection the only correct statement is:

- A) They can only be used as de-icing devices.
- B) They are used extensively on modern aircraft as they are inexpensive and easy to maintain.
- C) They can only be used as anti-icing devices.
- D) They can be used as both de-icing and anti-icing devices.

94- In jet aeroplanes the thermal anti-icing system is primarily supplied by:

- A) Bleed air from the engines.
- B) Turbo compressors.
- C) Ram air, heated via a heat exchanger.
- D) The APU.

95- In flight, the most commonly used anti-icing method for the wings of modern commercial aircraft fitted with turbo-jet units is:

- A) Mechanical (pneumatic source which acts by deforming the profiles of the leading edge).
- B) Physical/chemical (glycol-based liquid).
- C) Electrical (electrical resistances).
- D) Thermal (use of hot air).



96- The ice protection for propellers of modern turboprop aeroplanes works:

- A) With anti-icing fluid.
- B) Pneumatically.
- C) With hot air.
- D) Electrically.

97- The ice protection system currently used for the most modern jet aeroplanes is the:

- A) Liquid de-icing system.
- B) Electrical de-icing system.
- C) Hot air system.
- D) Pneumatic system with expandable boots.

98- Concerning the sequential pneumatic impulses used in certain leading edge de-icing devices, one can affirm that:

- 1) They prevent ice formation.
- 2) They are triggered from the flight deck after icing has become visible.
- 3) A cycle lasts more than ten seconds.
- 4) There are more than ten cycles per second.

The combination which regroups all the correct statements is:

- A) 2,4
- B) 2,3
- C) 1,3
- D) 1,4

99- Concerning electrically powered ice protection devices, the only true statement is:

- A) On modern aeroplanes, electrically powered thermal devices are used to prevent icing on small surfaces (pitot-static, windshield, etc.).
- B) On modern aeroplanes, electrical power supply being available in excess, this system is often used for large surfaces de-icing.
- C) On modern aeroplanes, electrically powered thermal devices are very efficient, therefore they only need little energy.
- D) On modern aeroplanes, electrically powered thermal devices are used as de-icing devices for pitot tubes, static ports, windshield etc.



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100- During flight, the wing anti-icing system has to protect:

- A) The whole upper wing surface and the flaps.
- B) At least a part of the whole leading edge.
- C) Slats and the leading edge flaps only.
- D) The whole leading edge and the whole upper wing surface.

101- Regarding a thermal wing anti-icing system, the correct statement is:

- A) Aerodynamic performances of the wings are maintained and there is a reduction of maximum engine thrust.
- B) Aerodynamic performances of the wings are not maintained and there is no reduction of maximum engine thrust.
- C) Aerodynamic performances of the wings are maintained and there is no reduction of maximum engine thrust.
- D) Aerodynamic performances of the wings are not maintained and there is a reduction of maximum engine thrust.

102- In a bleed air anti-icing system, the areas that are typically heated are:

- A) The leading edge slats and flaps.
- B) The whole surface of the aircraft.
- C) The trailing edge flaps.
- D) The leading edges of the wings and empennage.

103- In the case of a thermal de-icing system over-temperature, this is indicated by:

- A) Temperature gauges.
- B) Warning lights.
- C) Yellow flags.
- D) A buzzer.

104- The accurate method of removing snow and ice that has accumulated on the aircraft during parking, is:

- A) Hot water that melts the contamination.
- B) The aeroplane's own de-icing equipment for five minutes.
- C) Hot air from the engines.
- D) De-ice all surfaces with approved de-icing fluid.



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105- What is the effect of heating flight deck windows?

- A) To demist the interior of the window if normal demist does not function correctly.
- B) To protect the windows against bird strike.
- C) To protect the windows against ice formation.
- D) To protect the windows against bird strike and ice formation.

106- Fire precautions to be observed before refueling are:

- A) All bonding and earthing connections between ground equipment and the aircraft should be made before filler caps are removed.
- B) Ground Power Units (GPU) are not to be operated.
- C) Passengers may be boarded (traversing the refueling zone) provided suitable fire extinguishers are readily available.
- D) Aircraft must be more than 10 meters from radar or HF radio equipment under test.

107- Fuel is pressurized to:

- A) Prevent cavitation.
- B) Prevent vapor lock.
- C) Keep constant fuel flow in negative G.
- D) Prevent fuel icing.

108- The fuel temperature, at which, under standard conditions, the vapor ignites in contact with a flame and extinguishes immediately, is the:

- A) Flash point.
- B) Combustion point.
- C) Fire point.
- D) Self ignition point.

109- Fuel stored in aircraft tanks will accumulate moisture. The most practical way to minimize this when a plane is used every day or so is to:

- A) Keep tanks topped off (full) when plane is not in use.
- B) Drain tanks at end of each day's flight.
- C) Use only high octane gasoline.
- D) Keep tank vents plugged and filler cap tight.



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110- Aircraft fuel tanks should be checked for water at least:

- A) Immediately after every refueling.
- B) Before the first flight of the day.
- C) During refueling.
- D) Always before each flight.

111- On small aircraft the fuel content is typically measured by:

- A) Calculation of the center of gravity of the helicopter.
- B) The volume of fuel in the tank.
- C) The weight of fuel in the tank.
- D) The level of fuel in the tank.

112- Unusable fuel is:

- A) Always the same quantity irrespective of aircraft attitude or flight conditions.
- B) Fuel drained from the aircraft due to water contamination.
- C) Sometimes minimized by the incorporation of tank sump pads.
- D) The amount of fuel not available for use but included on the fuel contents gauge.

113- If a fuel sample is cloudy and clears slowly from the top it is an indication of:

- A) Cold soaked fuel.
- B) Air in the fuel.
- C) Wax in the fuel.
- D) Water in the fuel.

114- Which statement is true concerning the structure and possible advantage of an integral fuel tank?

- A) It is a separate metal container that is relatively light weight.
- B) It is built internally using the aircraft structure, this saves weight and space.
- C) It is constructed of rubber so it can be fitted into any free space within the aircraft.
- D) It is a separate metal container that is relatively cheap to manufacture.

115- What does the expression usable fuel mean?

- A) The remaining fuel in the bottom of the tank when the pump is no longer immersed in fuel.
- B) The total fuel on board the aircraft at start up.
- C) The total fuel remaining at any stage of flight.
- D) The total amount of fuel that can be supplied to the engine.



116- When checking the fuel for possible water content, the presence of water will be indicated by:

- A) Change in the color of the fuel.
- B) Impossible to tell because they will mix.
- C) The water will be on top of the fuel in the fuel strainer because the water is lighter than the fuel.
- D) The water will be found at the bottom of the strainer, because it is heavier than the fuel.

117- Fuel tank booster pumps are typically:

- A) Centrifugal, low pressure.
- B) Centrifugal, high pressure.
- C) Gear type, low pressure.
- D) Gear type, high pressure.

118- The fuel system boost pumps are used to:

- A) Feed the fuel control units, which inject the pressurized fuel into the engine.
- B) Avoid the bubbles accumulation.
- C) Feed the lines with fuel for directing it to the engine at a positive pressure.
- D) Avoid the bubbles accumulation and feed the lines with fuel for directing it to the engine at a positive pressure.

119- The pressurization of tanks is maintained by the fuel:

- A) Vent system.
- B) Tank drains.
- C) Top off unit.
- D) Dump system.

120- The fuel cross-feed system:

- A) Allows feeding of any engine from any fuel tank.
- B) Is only used to feed an engine from the tank of the opposite wing.
- C) Is only used on the ground for fuel transfer from one tank to another.
- D) Is only used in flight for fuel transfer from one tank to another.

121- The high pressure fuel pumps are driven by:

- A) Hydraulic pressure.
- B) Air pressure.
- C) The engine.
- D) The electrical system.



122- During refueling operations:

- A) The aircraft should be bonded to the refueling truck before refueling pipes are coupled.
- B) A refueling zone is to be established to at least 100 m.
- C) Passengers are forbidden to remain on the aircraft regardless of the type of fuel being replenished.
- D) Radio transmissions are not forbidden.

123- On most transport aircraft, the low pressure pumps of the fuel system are:

- A) Electro-mechanical wobble pumps, with self-regulated pressure.
- B) Mechanically driven by the engine's accessory gearbox.
- C) Removable only after the associated tank has been emptied.
- D) Centrifugal pumps, driven by an electric motor.

124- Fuel pressure is measured:

- A) At the outlet from the fuel control unit.
- B) Always at the outlet of the high pressure pump only.
- C) In the line between the booster-pump and the engine or at the outlet of the high pressure filter.
- D) In the line between the high pressure filter and the high pressure pump.

125- In the event of an engine fire:

- A) An automatic shut-off valve is moved to the closed position controlled by the fire sensing system.
- B) The fuel supply is disconnected by a quick release coupling.
- C) The fuel supply is isolated from the engine by a pilot controlled fuel shut-off valve.
- D) The fuel installation is protected by an automatic fire extinguishing system.

126- The ventilation system in a fuel tank:

- A) Prevents low pressure or excessive overpressure in the tank.
- B) Can be used to drain the tanks. for daily checks.
- C) Prevents fuel freezing during flight in icing conditions
- D) Prevents vapor locking in the fuel lines.

127- In order to ensure that all fuel on board is available to any engine on a multi-engined aircraft, it must be fitted with:

- A) A jet pump.
- B) A tank shut-off valve.
- C) Cross-feed.
- D) Booster pumps.



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128- Which fuel tanks are heated?

- A) Wing tanks.
- B) Fuselage tanks.
- C) All tanks.
- D) None.

129- Fuel tanks on large aircraft are located:

- A) Only in the wings.
- B) In the wings and in the center section.
- C) In the wings, the center section and sometimes the fin.
- D) In the wings, the center section and sometimes the fin or part of the hold.

130- On what principle does a fuel flow meter work?

- A) Volume and viscosity.
- B) Quantity of movement.
- C) Capacitive dielectric.
- D) Pressure and temperature.

131- When baffles are fitted to aircraft fuel tanks, the purpose is to:

- A) Separate air from the fuel during fueling operations.
- B) Reduce fire risk when fueling.
- C) Control the fuel flow to the main feed.
- D) Prevent surge of fuel within the tank during flight.

132- The most widely used electrical frequency in aircraft is:

- A) 115 Hz
- B) 200 Hz
- C) 50 Hz
- D) 400 Hz

133- The purpose of static wick dischargers is to:

- A) Dissipate static charge from the aircraft skin after landing.
- B) Dissipate static charge of the aircraft in flight thus avoiding radio interference as a result of static electricity.
- C) Provide a path to ground for static charges when refueling.
- D) Be able to fly higher because of less electrical friction.



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134- A circuit breaker:

- A) Is self-resetting after the fault has been rectified.
- B) May be reset manually after the fault has been rectified.
- C) Can only be reset after major maintenance.
- D) Can be reset on the ground only.

135- When an open circuit occurs in an electrical supply system, the:

- A) Load as indicated by the ammeter will increase.
- B) Fuse or CB should isolate the circuit due to excess current drawn.
- C) Components will operate normally, but will not switch off.
- D) Loss of continuity will prevent its working components from functioning.

136- Fuses are rated to a value by:

- A) Their wattage.
- B) The number of volts they will pass.
- C) The number of amperes they will carry.
- D) Their resistance measured in ohms.

137- Circuit breakers protecting circuits may be:

- A) Reset at any time.
- B) Used only in AC circuits.
- C) Used only in DC circuits.
- D) Used in AC and DC circuits.

138- A diode:

- A) Allows current flow if its lags the voltage by 90° .
- B) Allows current flow if it is in phase with the voltage.
- C) Allows current to flow in one direction only.
- D) Can be used as an inverter.

139- A relay is:

- A) A unit which is used to convert electrical energy into heat energy.
- B) A device which is used to increase electrical power.
- C) A magnetically operated switch.
- D) Another name for a solenoid valve.



140- The purpose of bonding the metallic parts of an aircraft is to:

- 1) Prevent electrolytic corrosion between mating surfaces of similar metals.
- 2) Ensure zero voltage difference between aircraft components.
- 3) Isolate all components electrically.
- 4) Keep all parts of the aircraft at the same potential.

The combination regrouping all the correct statements is:

- A) 2,4
- B) 1,4
- C) 2,3
- D) 1,3

141- Ohm's law states:

- A) $I=R \div V$
- B) $R = I \div V$
- C) $I=V \div R$
- D) $I =V \times R$

142- Electrical potential is measured in:

- A) Watts
- B) Amperes
- C) Ohms
- D) Volts

143- The difference between (i) a fuse and (ii) a circuit breaker, is:

- A) (i) Suitable for high currents, (ii) not suitable for high currents.
- B) (i) Not resettable, (ii) resettable.
- C) (i) Not suitable for high currents, (ii) suitable for high currents.
- D) (i) Not resettable, (ii) not resettable.

144- The most common overload protection device used in aircraft is:

- A) Circuit breakers.
- B) Fuses.
- C) Blow torches.
- D) Relays.



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145- The most common voltage/frequency used in jet transport aircraft is:

- A) 115V AC /400 Hz
- B) 115V DC / 400 Hz
- C) 28V DC
- D) 400V AC /115 Hz

146- Modern aircraft can have many different types of circuit breakers (CB). Generally speaking a CB is an electric component that:

- A) When excessive current flows through it, it will open the circuit. It has to be replaced to regain a closed electrical circuit.
- B) When excessive current flows through it, it will open the circuit, but a closed circuit is regained when it is reset.
- C) Is seldom used in electrical systems.
- D) Prevents high voltage, but cannot handle high values of current.

147- Batteries are rated in:

- A) Amperes / volts.
- B) Amperes x hours.
- C) Watts.
- D) Ohms.

148- If one of the 12 cells of a Lead-acid battery is dead, the battery:

- A) Has 1/12 less capacity, but can still be used.
- B) Has 1/12 less voltage, but can still be used.
- C) Is unserviceable.
- D) Has 1/12 less voltage and less capacity, but can still be used.

149- The connection in parallel of two 12 volt / 40 Ah batteries, will create a unit with the following characteristics:

- A) 24 volt / 40 Ah
- B) 12 volt /40 Ah
- C) 24 volt / 80 Ah
- D) 12 volt /80 Ah



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150- In aeronautics, the most commonly used batteries are NiCd because:

- A) Their output voltage is less constant than lead-acid batteries.
- B) They weigh less than lead-acid batteries.
- C) Their electrolyte is neither corrosive nor dangerous.
- D) They are cheaper than lead-acid batteries.

151- A lead-acid battery is checked for serviceability by:

- A) Using an ammeter.
- B) Measuring the specific gravity of the electrolyte.
- C) Using an ohmmeter.
- D) Measuring the level of the electrolyte.

152- The electrolyte in a Nickel-Cadmium battery is:

- A) Hydrogen peroxide.
- B) Nickel dioxide.
- C) Potassium hydroxide.
- D) Potassium chloride.

153- What are the advantages of NiCd batteries?

- A) Simple charging systems can be used.
- B) Less cells required than in lead-acid battery with the same voltage.
- C) Even voltage before rapid discharge.
- D) Higher voltage than lead acid type.

154- One of the main functions of the battery in large transport aircraft is to:

- A) Provide electric power for heating.
- B) Be an emergency source of electric power.
- C) Provide DC power for certain equipment.
- D) Provide AC power for certain equipment.

155- Obvious disadvantages of using lead-acid batteries in airplanes are:

- A) They only carry 12 volts, and most modern airplanes use 24 volt circuits.
- B) They are expensive compared to other batteries used in airplanes.
- C) They have insufficient capacity and volume and weight are inefficient.
- D) The lead-acid battery is too heavy.



156- The purpose of a voltage regulator is to control the output voltage of the:

- A) Generators at varying speeds and the batteries at varying loads.
- B) Batteries at varying loads.
- C) Generator at varying loads and speeds.
- D) Output of the TRU.

157- On an aeroplane utilizing AC as primary power supplies, the batteries are charged in flight from:

- A) The AC bus via current limiters.
- B) A static inverter.
- C) A DC transformer and rectifier.
- D) A transformer rectifier unit.

158- In an aeroplane equipped with a DC main power system, AC for instrument operation may be obtained from:

- A) A rectifier.
- B) An inverter.
- C) A contactor.
- D) A TRU.

159- The function of the generator breaker is to close when the voltage of the:

- A) Battery is greater than the generator voltage and to open when the opposite is true.
- B) Generator is greater than battery voltage and to open when the opposite is true.
- C) Alternator is greater than the battery voltage and to open when the opposite is true.
- D) Battery is greater than the alternator voltage and to open when the opposite is true.

160- The moving part in an AC generator is usually referred to as the:

- A) Stator.
- B) Rotor.
- C) Oscillator.
- D) Slip ring.



161- The battery cut-out (reverse current relay) cuts out:

- A) When the battery voltage is higher than the generator voltage.
- B) When the battery voltage is lower than the generator voltage.
- C) When the battery and generator voltage are the same.
- D) Whenever the engine is stopped.

162- The primary purpose of the reverse current relay is to:

- A) Prevent the generator from delivering current to the generator.
- B) Prevent the battery from delivering current to the generator.
- C) Prevent the generator from delivering too much current.
- D) Allow the battery to be charged.

163- The output voltage of DC generators used in aircraft is normally regulated by:

- A) Varying the RPM of the generator.
- B) Controlling the current in the armature (Anker) windings.
- C) Controlling the current in the field windings.
- D) Varying the torque applied to the generator.

164- The purpose of the voltage regulator is to:

- A) Keep a constant power output from the generator.
- B) Keep a constant current output from the generator.
- C) Keep a constant frequency.
- D) Keep a constant voltage output from the generator.

165- When AC generators are operated in parallel, they must be of the same:

- A) Voltage and frequency.
- B) Voltage and amperage.
- C) Amperage.
- D) Frequency and amperage.

166- A busbar is:

- A) The stator of a moving coil instrument.
- B) A device which may only be used in DC circuits.
- C) A distribution point for electrical power.
- D) A device permitting operation of two or more switches together.



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167- The services connected to a supply busbar are normally in:

- A) Parallel, so that isolation of loads decreases the busbar voltage.
- B) Series, so that isolation of loads increases the busbar voltage.
- C) Parallel, so that isolating individual loads decreases the busbar current consumption.
- D) Series, so that isolating one load increases the busbar current consumption.

168- In an AC circuit:

- A) The battery is connected in series.
- B) The battery cannot be used because the voltage is low.
- C) A battery is not fitted.
- D) Battery output must be inverted.

169- Generator paralleling through busbar is done to assure that:

- A) The biggest generator gets the highest load.
- B) Different consumers can be fed from different sources.
- C) All consumers receive the same generator voltage.
- D) Wiring is done properly, and so that we can easily detect errors in the system

170- The pitch angle of a constant-speed propeller:

- A) Increases with increasing true air speed.
- B) Only varies with engine RPM.
- C) Decreases with increasing true air speed.
- D) Is independent of the true air speed.

171- On an aeroplane equipped with a constant speed propeller the RPM indicator enables:

- A) Selection of engine RPM.
- B) Control of power.
- C) Control of the propeller regulator and the display of propeller RPM.
- D) On a twin-engine aeroplane, automatic engine synchronization.

172- When in flight, a turbo-prop engine is stopped and the propeller blade pitch angle is near 90°, the propeller is said to be:

- A) At zero drag.
- B) Wind milling.
- C) Transparent.
- D) Feathered.



173- If you pull back the RPM lever of a constant speed propeller during a glide with idle power and constant speed, the propeller pitch will:

- A) Decrease and the rate of descent will increase.
- B) Increase and the rate of descent will increase.
- C) Decrease and the rate of descent will decrease.
- D) Increase and the rate of descent will decrease.

174- Why is a propeller blade twisted from root to tip?

- A) To ensure that the tip produces most thrust.
- B) Because the local angle of attack of a blade segment is dependent on the ratio of that segments speed in the plane of rotation and the angular velocity of the propellers.
- C) To ensure that the root produces most thrust.
- D) Because the local angle of attack of a blade segment is dependent on the ratio of that segments speed in the plane of rotation and the true airspeed of the aeroplane.

175- Which of the following statements about a constant speed propeller is correct?

- A) The blade angle increases with increasing speed.
- B) The propeller system keeps the aeroplane speed constant.
- C) The RPM decreases with increasing aeroplane speed.
- D) The selected RPM is kept constant by the manifold pressure.

176- Why does the blade angle of a propeller change from root to tip?

- A) To compensate for the increased velocity of the blade tip.
- B) Cross-sectional segment increases from tip to root.
- C) To provide increased thrust at root.
- D) To compensate for the change in geometric cross section.

177- If you increase the propeller pitch during a glide with idle power at constant IAS the lift to drag ratio will:

- A) Decrease and the rate of descent will decrease.
- B) Increase and the rate of descent will increase.
- C) Increase and the rate of descent will decrease.
- D) Decrease and the rate of descent will increase.



178- Which of the following definitions of propeller parameters is correct?

- A) Blade angle is the angle between chord line and propeller axis.
- B) Geometric propeller pitch is the theoretical distance travelled forward by the propeller in one rotation.
- C) Critical tip speed is the propeller speed at which there is a risk of the flow separating at some part of the propeller.
- D) Blade angle of attack is the angle between chord line and propeller vertical axis.

179- With a constant speed propeller, which of the following statements is true?

- A) Pitch angle increases with increasing TAS.
- B) Pitch angle decreases with increasing TAS.
- C) RPM decreases with increasing TAS.
- D) RPM increases with increasing TAS.

180- Constant-speed propellers provide a better performance than fixed-pitch propellers because they:

- A) Have a same maximum efficiency in comparison with a fixed-pitch propeller.
- B) Produce an almost maximum efficiency over a wider speed range.
- C) Produce a lower thrust than a fixed-pitch propeller.
- D) Have more blade surface area than a fixed-pitch propeller.

181- The angle of attack for a propeller blade is the angle between blade chord line and:

- A) Aeroplane heading.
- B) Direction of propeller axis.
- C) Local air speed vector.
- D) Principal direction of propeller blade.

182- If you decrease the propeller pitch during a glide with idle-power at constant IAS the lift to drag ratio will:

- A) Decrease and the rate of descent will decrease.
- B) Increase and the rate of descent will increase.
- C) Decrease and the rate of descent will increase.
- D) Increase and the rate of descent will decrease.



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183- A reversible propeller is one that:

- A) Will deliver negative thrust.
- B) Is mounted behind the main wing.
- C) Is a pusher rather than a tractor.
- D) Can be operated in either direction of rotation.

184- Why is a propeller blade twisted from root to tip?

- A) To ensure that the tip produces most thrust.
- B) To ensure the angle of attack is greatest at the tip.
- C) To ensure that the root produces most thrust.
- D) To maintain a constant angle of attack along the whole length of the propeller blade.

185- The blade angle of a propeller is the angle between:

- A) The root chord and the tip chord of the propeller.
- B) The chord and the airflow relative to the propeller.
- C) The chord of the propeller and the longitudinal axis of the aircraft.
- D) The propeller chord and the plane of rotation of the propeller.

186- What is the primary advantage of a constant speed propeller?

- A) To obtain and maintain a selected pitch angle of the blades regardless of the flight situation or power setting.
- B) To maintain a specific engine speed.
- C) To obtain a pitch setting that is suitable for each flight situation and power setting.
- D) To ensure that the propeller RPM is always greater than the manifold pressure.

187- A constant speed propeller is one which:

- A) Rotates at a constant speed by altering the blade angle.
- B) Is most efficient at a constant aircraft speed.
- C) Rotates at a constant speed by maintaining a constant blade angle.
- D) Maintains a constant aircraft speed by altering blade angle.

188- The aerodynamic loads on a propeller ward thrust will tend to:

- A) Increase RPM.
- B) Bend the tips forward.
- C) Increase tip velocity to supersonic speeds.
- D) Bend the tips backwards.



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189- The forces acting on a propeller are:

- A) Thrust only.
- B) Thrust and drag only.
- C) Torque only.
- D) Thrust and torque.

190- The angle of attack of a fixed pitch propeller designed for cruising flight, measured at its reference station is:

- A) Optimum in steady cruising flight only.
- B) Increases with an increase in TAS.
- C) Decreases with an increase in RPM.
- D) Will always be positive in a power off glide.

191- A turbo-prop aircraft with a constant speed propeller is in a gliding descent with the engine idling, what would be the effect of increasing the propeller pitch?

- A) Increased L/D, increased ROD.
- B) Decreased L/D, increased ROD.
- C) Increased L/D, decreased ROD.
- D) Decreased L/D, decreased ROD.

192- Propeller blade angle of attack is the angle between the chord and the:

- A) Direction of axis of the propeller.
- B) Aeroplane heading.
- C) Relative airflow.
- D) Vector of TAS.

193- What speed does the LP compressor run at?

- A) The speed of the LP turbine.
- B) The speed of the HP turbine.
- C) Half the engine speed.
- D) Constant speed.



194- A variable pitch propeller during takeoff will be moved towards:

- A) Coarse pitch to achieve the highest possible thrust.
- B) Fine pitch to ensure that the engine can develop its maximum power.
- C) Coarse pitch to ensure the best angle of attack is achieved.
- D) Fine pitch to ensure minimum aerodynamic drag is generated.

195- What is the purpose of the cabin pressurization system outflow valves?

- A) To minimize the cabin pressure differential up to cruising altitude.
- B) To maximize the cabin pressure differential up to cruising altitude.
- C) To prevent exceeding the maximum positive pressure differential.
- D) To prevent exceeding the maximum negative pressure differential.

196- The pressurization of the cabin is controlled by:

- A) The cabin inlet airflow.
- B) The cabin outflow valve.
- C) The engine's RPM.
- D) The engine's bleed valves.

197- When pressurizing the cabin of an aircraft, the cabin pressure controller operates the:

- A) Discharge valves.
- B) Differential valve.
- C) Outflow valve.
- D) Dump valves.

198- The term "pressure differential" can be defined as the pressure difference between:

- A) The cabin pressure level and it's rate of change.
- B) The pressure of the cabin and the pressure of any non-pressurized zone.
- C) The inside and the outside of the aircraft.
- D) The pressure at sea level and the pressure inside of the aircraft.

199- Cabin pressurization is regulated by the:

- A) Engine's bleed valve(s).
- B) Cabin inlet valve(s).
- C) Engine's RPM.
- D) Cabin outflow valve(s).



200- If the cabin altitude rises (aircraft in level flight), the differential pressure:

- A) May exceed the maximum permitted differential unless immediate preventative action is taken.
- B) Increases.
- C) Remains constant.
- D) Decreases.

201- Assuming cabin differential pressure has reached the required value in normal flight conditions, if flight altitude and air conditioning system setting are maintained:

- A) The mass air flow through the cabin is constant.
- B) The outflow valves will move to the fully open position.
- C) The pressurization system ceases to function until leakage reduces the pressure.
- D) The outflow valves will move to the fully closed position.

202- On most modern airliners the cabin pressure is controlled by regulating the:

- A) Airflow leaving the cabin.
- B) Airflow entering the cabin.
- C) RPM of the engine.
- D) Bleed air valve.

203- If the pressure in the cabin tends to become lower than the outside ambient air pressure the:

- A) Negative pressure relief valve will open.
- B) Negative pressure relief valve will close.
- C) Outflow valve open completely.
- D) Air cycle machine will stop.

204- The cabin rate of descent is:

- A) Always the same as the airplane's rate of descent.
- B) A cabin pressure increase.
- C) A cabin pressure decrease.
- D) Is not possible at constant airplane altitudes.



205- During level flight at a constant cabin pressure altitude (which could be decreased, even at this flight level), the cabin outflow valves are:

- A) At the pre-set position for takeoff.
- B) Fully closed until the cabin climbs to a selected altitude.
- C) Partially open.
- D) Fully closed until the cabin descends to a selected altitude.

206- A warning device alerts the crew in case of an excessive cabin altitude. This warning must be triggered on reaching the following altitude:

- A) 14000 ft (approx. 4200 m)
- B) 10000 ft (approx. 3000 m)
- C) 8000 ft (approx. 2400 m)
- D) 12000 ft (approx. 3600 m)

207- On a modern large pressurized transport aircraft, the maximum cabin differential pressure is approximately:

- A) 22 PSI
- B) 3 - 5 PSI
- C) 13 - 15 PSI
- D) 7 - 9 PSI

208- The maximum cabin differential pressure of a pressurized aeroplane operating at FL370 is approximately:

- A) 15.5 PSI
- B) 3.5 PSI
- C) 13.5 PSI
- D) 9.0 PSI

209- Cabin altitude means the:

- A) Cabin pressure expressed as altitude.
- B) Difference in height between the cabin floor and ceiling.
- C) Flight level the aircraft is flying at.
- D) Flight level altitude at maximum differential pressure.



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210- The main advantage of a constant speed propeller as compared to a fixed pitch propeller is a:

- A) Higher efficiency in almost all operating ranges.
- B) Constant efficiency in all operating ranges.
- C) Lower propeller blade stress.
- D) Higher efficiency in cruising range.

211- The cabin pressure is regulated by the:

- A) Air cycle machine.
- B) Outflow valve.
- C) Air conditioning pack.
- D) Cabin inlet airflow valve.

212- Cabin differential pressure is the pressure difference between:

- A) Local ambient pressure and mean sea level pressure.
- B) ISA conditions and aircraft altitude.
- C) Cabin pressure and ambient pressure.
- D) 8000 ft pressure altitude and cabin pressure.

213- Assuming cabin differential pressure has attained the required value in normal flight conditions, if flight altitude is maintained:

- A) The outflow valves will move to the fully closed position.
- B) The outflow valves will move to the fully open position.
- C) The pressurization system ceases to function until leakage reduces the pressure.
- D) A constant mass air flow is permitted through the cabin.

214- The "cabin differential pressure" is:

- A) The pressure differential between the air entering and leaving the cabin.
- B) Approximately 5 PSI at maximum.
- C) Approximately 15 PSI at maximum.
- D) Cabin pressure minus ambient pressure.

215- The mechanism to change the propeller blade angle of a turbo-prop engine aeroplane in flight is operated:

- A) By aerodynamic forces.
- B) Hydraulically by hydraulic fluid.
- C) Hydraulically by engine oil.
- D) Manually by the pilot.



216- What controls cabin pressurization?

- A) ECS pack mass flow controller.
- B) Outflow valve.
- C) Engine bleed valve.
- D) Inflow valve.

217- Two of the forces acting on a propeller are ATM and CTM. Which one tends to turn the propeller blade in which direction?

- A) ATM to coarse, CTM to coarse.
- B) CTM to fine, ATM to coarse.
- C) CTM to coarse, ATM to fine.
- D) ATM to fine, CTM to fine.

218- Concerning the twisting force acting on a propeller blade:

- A) The centrifugal twisting force tends to increase the blade angle.
- B) The centrifugal twisting force tends to decrease the blade angle.
- C) The aerodynamic twisting force tends to decrease the blade angle.
- D) The aerodynamic twisting force have no effect on the blade pitch.

219- When engine power is increased, the constant-speed propeller tries to function so that it will:

- A) Maintain the RPM, decrease the blade angle.
- B) Increase the RPM, decrease the blade angle.
- C) Maintain the RPM, increase the blade angle.
- D) Increase the RPM, increase the blade angle.

220- Which of the following is identified as the cambered or curved side of a propeller blade, corresponding to the upper surface of a wing airfoil section?

- A) Blade back.
- B) Blade chord.
- C) Blade leading edge.
- D) Blade face.



221- Assuming cabin pressure decreases, the cabin rate of climb indicator should indicate:

- A) A rate of descent dependent upon the cabin differential pressure.
- B) A rate of climb.
- C) A rate of descent of approximately 300 feet per minute.
- D) Zero.

222- If an aircraft suffers a decompression what happens to the indications on a cabin VSI, cabin altimeter and differential pressure gauge?

- A) VSI up, altimeter up, differential pressure gauge down.
- B) VSI, altimeter, differential pressure gauge all unchanged.
- C) VSI down, altimeter up, differential pressure gauge down.
- D) VSI up, altimeter down, differential pressure gauge down.

223- "Conditioned" air is air that has:

- A) Had any moisture removed from it.
- B) Been controlled in respect of temperature and pressure.
- C) Had the oxygen content increased.
- D) Had the oxygen content reduced.

224- Under normal flight conditions, cabin pressure is controlled by:

- A) Pressurization duct relief valve(s).
- B) Regulating the discharge of air through the outflow valve(s).
- C) Engine RPM.
- D) Inward relief valve(s).

225- A cabin pressure controller maintains a preset cabin altitude by regulating the:

- A) Position of the duct relief valve(s).
- B) Mass air flow into the cabin.
- C) Position of the inward relief valve.
- D) Position of the outflow valve(s).



226- If the pressure controller malfunctions and the outflow valve malfunctions (remains fully open), what happens to:

(i) Cabin ROC

(ii) Cabin altitude

(iii) Differential pressure

- A) (i) increase; (ii) increase; (iii) decrease
- B) (i) decrease; (ii) increase; (iii) decrease
- C) (i) increase; (ii) decrease; (iii) decrease
- D) (i) increase; (ii) increase; (iii) increase

227- What is "conditioned air"?

- A) Air adjusted for temperature and pressure.
- B) Air adjusted for temperature.
- C) Air adjusted for pressure.
- D) Air adjusted for mass flow.

228- If the cabin pressure tends to decrease below ambient:

- A) The inward relief valve will close.
- B) The inward relief valve will open.
- C) The outward relief valve will open.
- D) The outward relief valve will close.

229- What defines "cabin altitude"?

- A) The same cabin altitude is maintained as outside.
- B) The pressure altitude in the cabin.
- C) The difference in pressure between the cabin and outside.
- D) The pressure altitude of the aircraft.

230- If during pressurized flight the outflow valve closes fully due to a fault in the pressure controller the:

- A) Skin will be overstressed and could rupture.
- B) Safety valve opens when the differential pressure reaches structural maximum differential.
- C) The inward relief valve will open to prevent excessive negative differential.
- D) ECS packs are automatically closed down.



231- If cabin pressure is decreasing, the cabin VSI will indicate:

- A) Zero.
- B) Climb.
- C) Descent.
- D) Reducing pressure.

232- If the cabin altitude climbs, what is happening to the differential pressure (assuming aircraft is cruising at constant flight level)?

- A) Reduces.
- B) Increases.
- C) Remains constant.
- D) Fluctuates.

233- The normal air conditioning cabin pressure altitude is:

- A) Sea level.
- B) 10000 ft.
- C) 25000 ft.
- D) 8000 ft.

234- Which part of the gas turbine engine limits the temperature?

- A) Combustion chamber.
- B) Turbine.
- C) Compressor.
- D) Exhaust.

235- Both gas turbine and piston engines utilize a cycle of induction, compression, combustion and exhaust. However, in the gas turbine these processes are (i) and combustion occurs at (ii):

- A) (i) Continuous, (ii) constant pressure
- B) (i) Continuous, (ii) constant volume
- C) (i) Intermittent, (ii) constant pressure
- D) (i) Intermittent, (ii) constant volume

236- By-pass ratio in a turbine engine is the ratio of the:

- A) Speed of the combusted air to the speed of the by-pass air.
- B) Cold air mass flow to the hot air mass flow.
- C) Intake air pressure to the turbine delivery air pressure.
- D) Tertiary air mass flow to the primary air mass flow.



237- In the airflow through a single-spool axial flow turbo-jet engine, the axial velocity of the air is greatest:

- A) As it leaves the turbine.
- B) As it leaves the compressor.
- C) Within the combustion chamber.
- D) On exit from the propelling nozzle.

238- The principles underlying the effects of jet propulsion are set out in:

- A) Newton's 1st Law of Motion.
- B) Newton's 2nd Law of Motion.
- C) Newton's 3rd Law of Motion.
- D) Faraday's conservation of energy precepts.

239- A gas turbine engine operates in accordance with the:

- A) Modified Brayton cycle.
- B) Modified Otto cycle.
- C) Brayton cycle.
- D) Otto cycle.

240- What does a diffuser in a gas turbine do?

- A) Expands the air entering the combustion chamber.
- B) Increases the total temperature of the air.
- C) Increases the relative velocity of the air entering the combustion chamber.
- D) Converts kinetic pressure into static pressure.

241- The disadvantages of axial flow compressors compared to centrifugal flow compressors are:

- 1) Expensive to manufacture
- 2) Limited airflow
- 3) Greater vulnerability to foreign object damage
- 4) Lower pressure ratio

The combination regrouping all the correct statements is:

- A) 2,3
- B) 1,2
- C) 1,3
- D) 2,4



242- The diffuser in a centrifugal compressor is a device in which the:

- A) Velocity, pressure and temperature rise.
- B) Pressure rises at a constant velocity.
- C) Pressure rises and velocity falls.
- D) Velocity rises and pressure falls.

243- What happens to pressure, temperature and velocity of the air in the diffuser of a centrifugal compressor?

- A) Velocity increase, pressure and temperature decrease.
- B) Velocity decrease.
- C) Velocity, pressure and temperature increase.
- D) Velocity, pressure and temperature decrease.

244- In a gas turbine engine, compressor blades, which are not rigidly fixed in position when the engine is stationary. take up a rigid position when the engine is running due to:

- A) The resultant of aerodynamic and centrifugal forces.
- B) Oil pressure.
- C) Thermal expansion.
- D) Blade creep.

245- In a centrifugal compressor of gas turbine engine, air enters via the:

- A) Combustion chamber.
- B) Eye of the impeller.
- C) Variable IGV.
- D) Diffuser.

246- A gas turbine blade is usually of the:

- A) Pelton wheel type.
- B) Impulse type.
- C) Reaction type.
- D) Impulse/reaction type.

247- As the gas flows through the turbine:

- A) Pressure, velocity and temperature gradually decrease.
- B) Pressure, velocity and temperature increase.
- C) Pressure decreases, velocity increases and temperature increases.
- D) Pressure decreases, velocity decreases and temperature increases.



248- After air has passed through the compressor of a gas turbine engine the:

- A) Pressure will be the same as the inlet pressure.
- B) Velocity will be higher than the inlet velocity.
- C) Temperature will be higher than the inlet temperature.
- D) Velocity will be the same as the inlet velocity.

249- For a subsonic airflow, in a divergent duct the:

- A) Pressure decreases, velocity increases and temperature increases.
- B) Pressure increases, velocity decreases and temperature increases.
- C) Pressure increases, velocity decreases and temperature decreases.
- D) Pressure decreases, velocity increases and temperature decreases.

250- When a gas turbine engine is fitted with can-type combustion chambers:

- A) Each chamber is fitted with two igniters.
- B) Each chamber has its own igniter.
- C) Each chamber is fitted with one igniter and one glow plug.
- D) A total of only two igniters are usually fitted since the chambers are inter-connected.

251- What is the purpose of the turbine in a turbine engine?

- A) Drive auxiliary devices.
- B) Compress the air coming into the engine.
- C) Exhaust burnt gases.
- D) Drive the compressor using energy from the exhaust gases.

252- Each stage of an axial compressor is made up of:

- A) A rotor and a stator.
- B) A stator and a rotor.
- C) Two rotors followed by a stator.
- D) Two stators followed by a rotor.

253- The usual methods of starting civil aircraft engines are:

- A) AVPIN or compressed air bottles.
- B) Electrical starter motor or AVPIN.
- C) Air starter motor or starter cartridge.
- D) Air starter motor or electrical starter motor.



254- The purpose of a chip detector in the oil system of an engine/gearbox is to indicate that:

- A) The piston rings are worn.
- B) There are metal particles in the oil.
- C) The seals are worn.
- D) The oil temperature is too high.

255- In a gas turbine engine, the power changes are normally made by controlling the amount of:

- A) Air leaving the compressor by opening or closing of bleed valves.
- B) Fuel supplied.
- C) Air entering the compressor.
- D) Air entering the compressor and fuel entering the combustion chambers.

256- On most gas turbine engines, the takeoff power has a time limit of:

- A) 5 minutes only.
- B) 10 minutes.
- C) 15 minutes.
- D) 5 minutes unless an emergency exists which requires this power.

257- The engine pressure ratio (EPR) is the ratio of:

- A) The total turbine inlet pressure to the total compressor inlet pressure.
- B) Total compressor outlet pressure to the total turbine outlet pressure.
- C) Total compressor inlet pressure to the total turbine outlet pressure.
- D) The total turbine outlet pressure to the total compressor inlet pressure.

258- An engine pressure ratio (EPR) can be defined as the ratio of:

- A) Jet pipe total pressure to combustion chamber pressure.
- B) Jet pipe total pressure to compressor inlet total pressure.
- C) Combustion chamber pressure to compressor inlet total pressure.
- D) Compressor outlet pressure to compressor inlet total pressure.

259- EPR is measured by the ratio of:

- A) Turbine pressure to combustion chamber inlet pressure.
- B) High pressure compressor inlet pressure to exhaust pressure.
- C) Low pressure compressor inlet pressure to high pressure compressor outlet pressure.
- D) Exhaust pressure to low pressure compressor inlet pressure.



260- What is the effect of taking bleed air from a gas turbine engine?

- A) Increase EPR, increase EGT.
- B) Increase EPR, decrease EGT.
- C) Decrease EPR, decrease EGT.
- D) Decrease EPR, increase EGT.

261- At constant fuel flow, if engine compressor air is bled off for engine anti-icing or a similar system, the turbine temperature:

- A) May rise or fall depending on which stage of the compressor is used for the bleed and the RPM of the engine at the moment of selection.
- B) Will be unchanged.
- C) Will rise.
- D) Will fall.

262- The output of a turboprop engine is usually indicated by:

- A) Engine RPM as a percentage.
- B) Propeller RPM.
- C) SHP.
- D) Torque.

263- How do you control power in a jet engine?

- A) By controlling the mixture ratio.
- B) By controlling the fuel flow.
- C) By controlling the airflow.
- D) By controlling the bleed valves.

264- A gas turbine engine power change is achieved by:

- A) Adjusting the amount of fuel supplied and the amount of air entering the compressor.
- B) Adjusting the amount of fuel supplied.
- C) Adjusting the amount of air supplied.
- D) Adjusting the amount of fuel supplied and the amount of air entering the turbine.



265- The use of igniter is necessary on a turbo -jet:

- 1) Throughout the operating range of the engine
- 2) For accelerations
- 3) For ground starts
- 4) For in-flight relights
- 5) During turbulence in flight
- 6) Under heavy precipitation or in icing conditions

The combination which regroups all of the correct statements is:

- A) 3, 4, 5, 6
- B) 3
- C) 2, 3, 4
- D) 1

266- The pilot identifies a compressor stall by:

- A) An increase in fuel flow.
- B) An increase in airspeed.
- C) An increase in EGT.
- D) A decrease in EGT.

267- The first stage of an axial compressor:

- A) Has a compression ratio of about 2:1.
- B) Comprises a row of stators and a rotor disc.
- C) Has a compression ratio of about 0:8.
- D) Comprises a rotor disc followed by a row of stators.

268- What is the primary reason for limiting the temperature of the gas flow in a turbine?

- A) To prevent the combustion chamber temperature limit from being exceeded.
- B) To prevent damage to the compressor blades.
- C) To prevent damage to the exhaust jet pipe.
- D) To ensure that turbine blade limiting temperatures are not exceeded.

269- One reason to fit a tip shroud to a turbine blade is to:

- A) Prevent blade creep.
- B) Provide a seal for the cooling airflow.
- C) Increase turbine efficiency.
- D) Reduce turbine temperatures.



270- Creep of turbine blades is caused by:

- A) High blade temperature whilst under centrifugal loading.
- B) Prolonged idling at low RPM.
- C) Bending stresses set up by gas pressure.
- D) Static imbalance of the blades.

271- The function of the nozzle guide vanes is to:

- A) Ensure air velocity is at a maximum and the airflow direction is correct prior to entry to the 1st stage compressor blades.
- B) Increase the gas velocity (and therefore momentum) to as high a speed as possible and guide the stream at the correct angle onto the turbine blades.
- C) Guide the gas stream onto the turbine blades at the best angle possible only.
- D) Increase the velocity of the gas to the highest speed possible only.

272- In a multi-spool turbofan engine, the fan is driven by:

- A) The intermediate turbine.
- B) The rearmost turbine.
- C) The foremost turbine.
- D) All three turbines since they are on a common shaft with the compressor.

273- The accessory units driven by the accessory gearbox of a turbo-jet engine are the:

- 1) Thrust reverser pneumatic motors
- 2) AC generator and its constant speed drive (CSD)
- 3) Oil pumps
- 4) Hydraulic pumps
- 5) High pressure fuel pumps

The combination regrouping all the correct statements is:

- A) 2,3,4
- B) 1,2,3,4,5
- C) 2,3,4,5
- D) 1,2,3,4

274- The type of smoke detection system fitted to aircraft is:

- A) Optical and ionization
- B) Chemical
- C) Electrical
- D) Magnetic



275- Regarding detection systems, ion detectors are used to detect:

- A) Smoke.
- B) Over-temperature.
- C) Fire.
- D) Over-temperature and fire.

276- How do you test a gaseous smoke detector?

- A) Use pressurized gas to test the sensor.
- B) Use the test button.
- C) Use a Lind burgh fire detector.
- D) Apply heat to the detector.

277- The most common extinguishing agent used in gas turbine engine fire protection system is:

- A) Water
- B) Freon
- C) CO₂
- D) Powder

278- On a large transport multi-engine aircraft, a fire detection system includes:

- A) Both a warning light and an alarm bell unique to each engine.
- B) A single warning light but a separate alarm bell for each engine.
- C) A single warning light and a single alarm bell.
- D) A warning light for each engine and a single alarm bell common to all engines.

279- Fire detection systems:

- A) Automatically fire the engine extinguishers.
- B) Can only use AC electricity.
- C) Are connected to the vital busbar.
- D) Can be tested from the flight deck.

280- The engine fire extinguisher system is activated:

- A) After the engine has been shut down.
- B) Automatically when a fire warning is sensed.
- C) By the pilot when required.
- D) Automatically after a time delay to allow the engine to stop.



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281- An automatic toilet fire extinguisher is activated by:

- A) Odour detection.
- B) CO₂.
- C) Heat detection.
- D) Smoke detection.

282- The survival oxygen is:

- A) The oxygen used for protection against smoke and carbon dioxide.
- B) The oxygen supplied to a passenger who needs oxygen for pathological reasons.
- C) The oxygen supplied to the airplane occupants in case of accidental depressurization.
- D) A therapeutically oxygen specifically carried for certain passengers.

283- When quick donning masks are in use, the pilot is:

- A) Not able to do any radio communication.
- B) Only able to receive.
- C) Only able to transmit.
- D) Able to radiotelephone.

284- A passenger emergency mask is:

- A) An on-demand type mask and in principle should not be used if there is smoke in the cabin.
- B) A continuous flow mask and in principle should not be used if there is smoke in the cabin.
- C) A continuous flow mask and must be used if there is smoke in the cabin.
- D) An on-demand type mask and must be used if there is smoke in the cabin.

285- Smoke hoods protect:

- A) Whole head and provide a continuous flow of oxygen.
- B) Mouth and nose and provide a continuous flow of oxygen.
- C) Full face and provide oxygen on demand.
- D) Mouth and nose and provide oxygen on demand.

286- Emergency oxygen is provided by:

- A) One system for both flight deck and cabin.
- B) Two independent systems, one for flight deck, one for cabin.
- C) Two systems each capable of supplying the flight deck and cabin.
- D) Three systems, one for the flight deck, one for the passengers and one for the cabin crew.



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287- The passenger oxygen drop-down mask stowage doors are released:

- A) By a lanyard operated by a barometric capsule.
- B) Mechanically.
- C) Electrically for chemical oxygen generators and pneumatically for gaseous systems.
- D) Manually by the cabin crew.

288- The passenger oxygen mask will supply:

- A) Cabin air and oxygen.
- B) 100% oxygen.
- C) Cabin air and oxygen or 100% oxygen.
- D) A mixture of oxygen and Freon gas.

289- Protective breathing equipment:

- A) Protects crew against fumes and noxious gasses.
- B) Protects crew against accidental depressurization.
- C) Is not required on commercial flights.
- D) Is only available for cockpit crew.

290- In case of smoke in the cockpit, the crew oxygen regulator must be set to:

- A) On demand
- B) Normal
- C) Emergency
- D) 100%

291- The excess cabin altitude alerting system must operate to warn the crew at:

- A) 8000 ft
- B) 10000 ft
- C) 13000 ft
- D) 14000 ft

292- To use passenger's oxygen in case of severe cabin smoke is:

- A) Useless because the oxygen units do not operate under smoke conditions.
- B) Useless because the toxic cabin smoke is mixed with the breathing oxygen.
- C) Useless because breathing oxygen would explode under smoke conditions.
- D) Possible and recommended.



293- The purpose of the first aid oxygen is to:

- A) Provide some passengers with additional respirator assistance after an emergency descent following a depressurization.
- B) Provide the cabin attendants with respiratory protection.
- C) Supply all the passengers in case of depressurization.
- D) Provide the flight crew with respiratory assistance after depressurization.

294- A diluter-demand type oxygen regulator:

- A) Supplies oxygen when the recipient inhales.
- B) Delivers a continuous supply of oxygen.
- C) Mixes oxygen and air in a passenger mask.
- D) Supplies oxygen only above FL150.

295- Passenger oxygen chemical generators will supply oxygen for a minimum of:

- A) 2 hours
- B) 15 minutes
- C) 110 minutes
- D) 30 minutes

296- Oxygen which is used in the cockpit of large transport aeroplanes is stored on the aircraft:

- A) In liquid form.
- B) As a gas.
- C) As a chemical compound.
- D) As a gas or chemical compound.

297- A substance which may never be used in the vicinity or on parts of an oxygen installation is:

- A) Halon
- B) Water
- C) Grease
- D) Nitrogen

298- The purpose of the "pressure relief valve" in a high pressure oxygen system is to:

- A) Act as a manual shut-off valve.
- B) Reduce pressure in the oxygen reservoir to a suitable manifold pressure for the regulator.
- C) Relieve overpressure if the pressure reducing valve malfunctions.
- D) Maximize the charging pressure of the system.



299- Transport category airplanes frequently are equipped with oxygen systems. It can be said that:

- A) With setting on "NORMAL", the crew breathes a mixture of oxygen/cabin air.
- B) The same circuit is used by the crew and the passengers.
- C) The seals must be carefully greased to avoid sparks.
- D) The passenger circuit never uses chemically generated oxygen.

300- The oxygen masks have dropped down from the passenger's service units. The oxygen flow starts:

- A) Immediately.
- B) After pulling the oxygen mask downwards.
- C) Only above FL200.
- D) After the system has been switched on by a crew member.



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QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	A	26	D	51	A	76	D
2	C	27	B	52	C	77	B
3	B	28	B	53	C	78	B
4	D	29	A	54	B	79	B
5	A	30	D	55	D	80	C
6	B	31	C	56	C	81	B
7	A	32	C	57	B	82	C
8	D	33	B	58	B	83	B
9	A	34	B	59	D	84	D
10	D	35	B	60	B	85	D
11	C	36	C	61	C	86	C
12	D	37	B	62	C	87	C
13	B	38	A	63	C	88	D
14	A	39	D	64	A	89	A
15	A	40	B	65	A	90	A
16	B	41	D	66	A	91	D
17	A	42	D	67	D	92	A
18	B	43	C	68	D	93	A
19	A	44	A	69	A	94	A
20	B	45	C	70	D	95	D
21	C	46	C	71	D	96	D
22	A	47	C	72	A	97	C
23	A	48	B	73	B	98	B
24	A	49	B	74	B	99	A
25	A	50	A	75	C	100	B

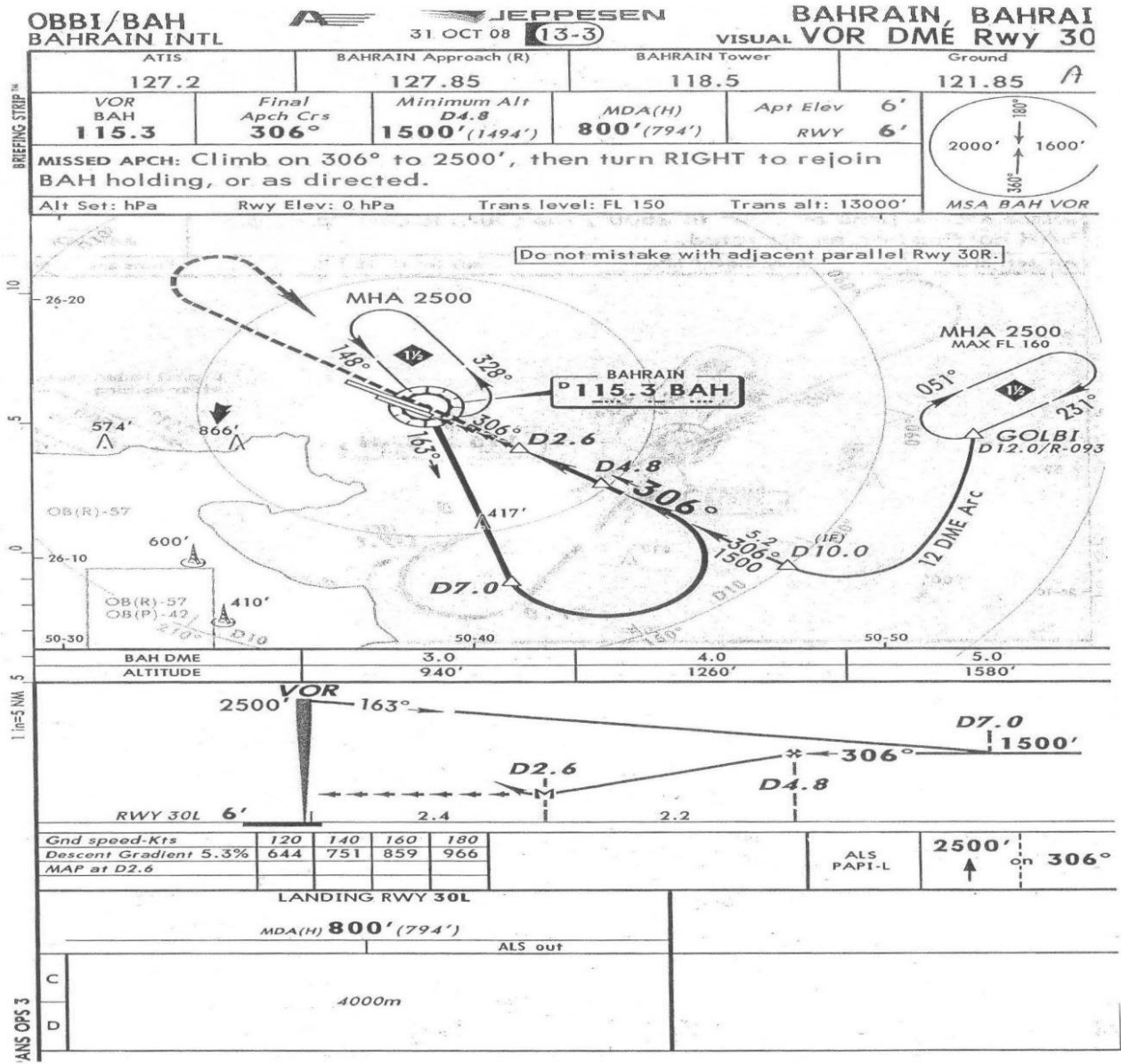


QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	A	126	A	151	B	176	A
102	D	127	C	152	C	177	C
103	B	128	D	153	C	178	B
104	D	129	D	154	B	179	A
105	D	130	B	155	C	180	B
106	A	131	D	156	C	181	C
107	B	132	D	157	D	182	C
108	A	133	B	158	B	183	A
109	A	134	B	159	B	184	D
110	B	135	D	160	A	185	D
111	D	136	C	161	A	186	C
112	C	137	D	162	B	187	A
113	D	138	C	163	C	188	B
114	B	139	C	164	D	189	D
115	D	140	A	165	A	190	A
116	D	141	C	166	C	191	C
117	A	142	D	167	C	192	C
118	D	143	B	168	C	193	A
119	A	144	A	169	B	194	B
120	A	145	A	170	A	195	C
121	C	146	B	171	C	196	B
122	A	147	B	172	D	197	C
123	D	148	C	173	D	198	C
124	D	149	D	174	D	199	D
125	C	150	B	175	A	200	D



QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	A	226	A	251	D	276	B
202	A	227	A	252	A	277	B
203	A	228	B	253	D	278	D
204	B	229	B	254	B	279	D
205	C	230	B	255	B	280	C
206	B	231	B	256	D	281	C
207	D	232	A	257	D	282	C
208	D	233	D	258	B	283	D
209	A	234	B	259	D	284	B
210	A	235	A	260	D	285	A
211	B	236	B	261	C	286	B
212	C	237	D	262	D	287	C
213	D	238	C	263	B	288	A
214	D	239	C	264	D	289	A
215	C	240	D	265	A	290	D
216	B	241	C	266	C	291	B
217	B	242	C	267	D	292	B
218	B	243	B	268	D	293	A
219	C	244	A	269	C	294	A
220	A	245	B	270	A	295	B
221	B	246	D	271	B	296	B
222	A	247	A	272	B	297	C
223	B	248	C	273	C	298	C
224	B	249	B	274	A	299	A
225	D	250	D	275	A	300	B

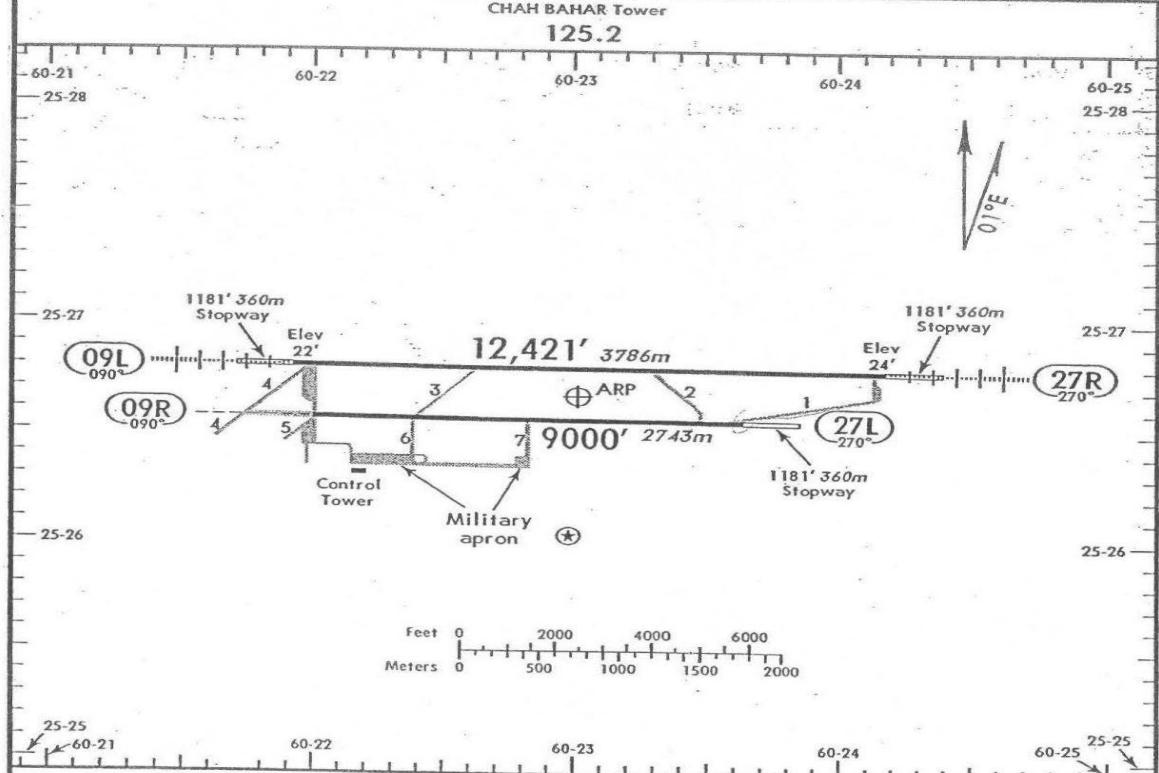
FIGURES



OIZC
Apt. Elev 24'
266.2°/2.0 from CBH-116.9

JEPPESSEN
31 MAR 00: (13-1)

CHAH BAHAR, IRAN
KONARAK AB
N25 26.7 E060 23.0



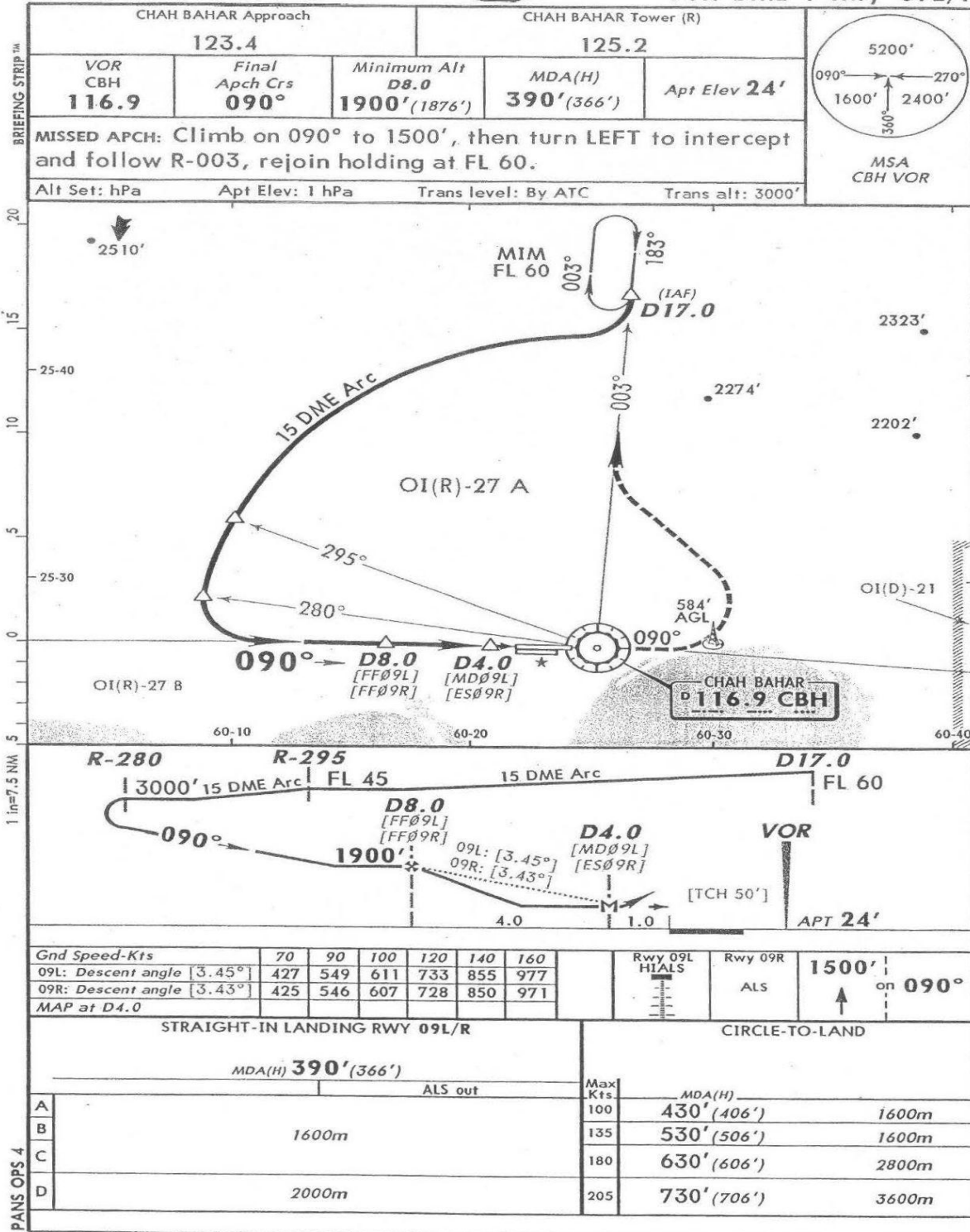
ADDITIONAL RUNWAY INFORMATION

RWY		USABLE LENGTHS			WIDTH
		LANDING BEYOND		TAKE-OFF	
		Threshold	Glide Slope		
09L	HIRL HIALS				150' 46m
27R					
09R	RL ALS (configuration unknown)				150' 46m
27L					
TAKE-OFF AIR CARRIER All Rwys					
A					
B					
C	400m				

OIZC/ZBR
KONARAK

JEPPESEN
23 JAN 09 (13-1)

CHAH BAHAR, IRAN
VOR DME-1 Rwy 09L/R

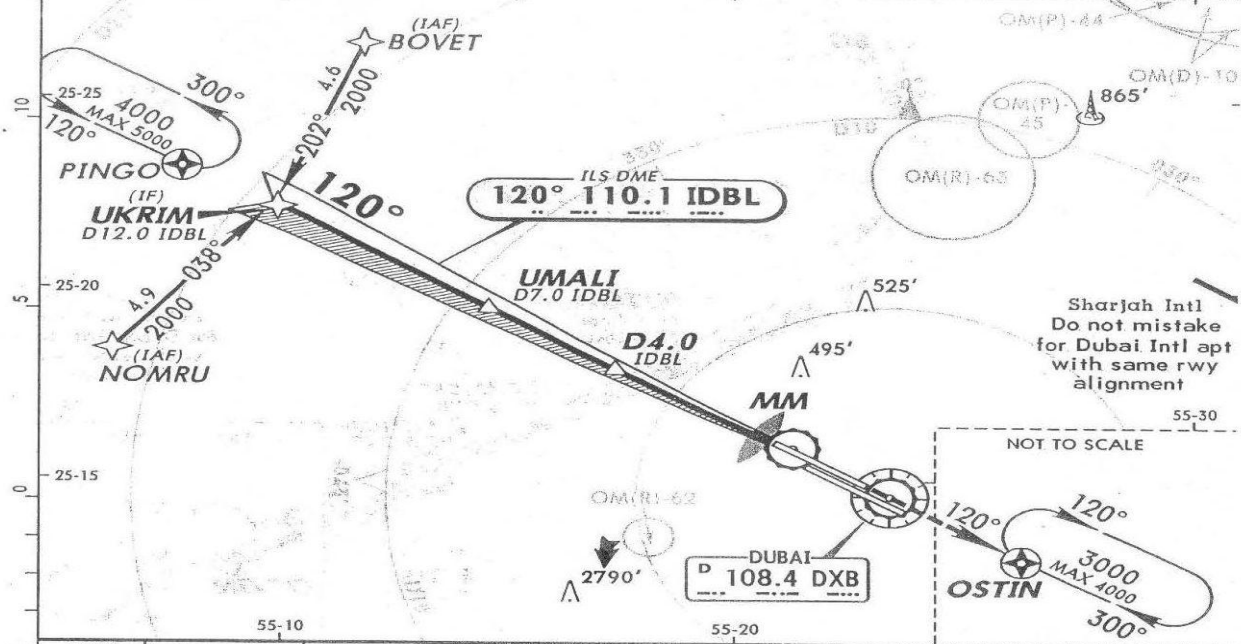
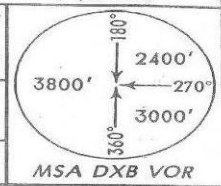


OMDB/DXB
DUBAI INTL

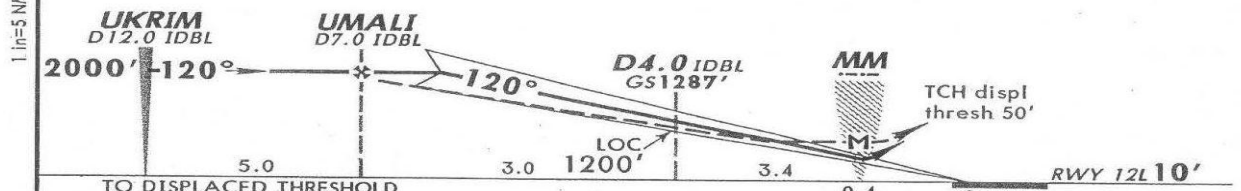
JEPPESEN
10 APR 09 **(11-1)**

DUBAI, UAE
ILS Rwy 12L

D-ATIS 131.7	DUBAI Arrivals (APP/R) 124.9	DUBAI Director (APP/R) 127.9	DUBAI Tower 118.75 119.55	Ground 118.35
LOC IDBL 110.1	Final Apch Crs 120°	GS D4.0 IDBL 1287' (1277')	CAT IIIA ILS DH 50'	CAT I & II ILS Refer to Minimums
Apt Elev 59'				RWY 10'
MISSED APCH: Climb to 3000' direct to OSTIN and hold.				
Alt Set: MB		Rwy Elev: 0 MB	Trans level: FL 150	Trans alt: 13000'
1. RNAV/RNP5 required. 2. ILS DME reads zero at TDZ.				



LOC (GS out)	IDBL DME ALTITUDE	6.0 1860'	5.0 1550'	4.0 1240'	3.0 930'	2.0 620'	1.0 310'
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TO DISPLACED THRESHOLD	120	140	160	180	HEALS-II	3000'	OSTIN
Gnd speed-Kts	120	140	160	180	PAPI		
ILS GS	3.00°	647	755	862	PAPI		
LOC Descent Gradient	4.7%	571	666	762	856		
MAP at MM							

STRAIGHT-IN LANDING RWY 12L					LOC (GS out)		CIRCLE-TO-LANE
CAT IIIA DH 50'	CAT II RA 100' DA(H) 110' (100')	CAT I DA(H) 210' (200')			MDA(H) 590' (580')		
		FULL	TDZ or CL out	ALS out	MM out	ALS out	
C	RVR 200m	RVR 550m VIS 800m	RVR 720m VIS 800m	1200m	RVR 1500m VIS 1600m	2400m	NOT AUTHORIZED
D	RVR 350m				2000m	2800m	

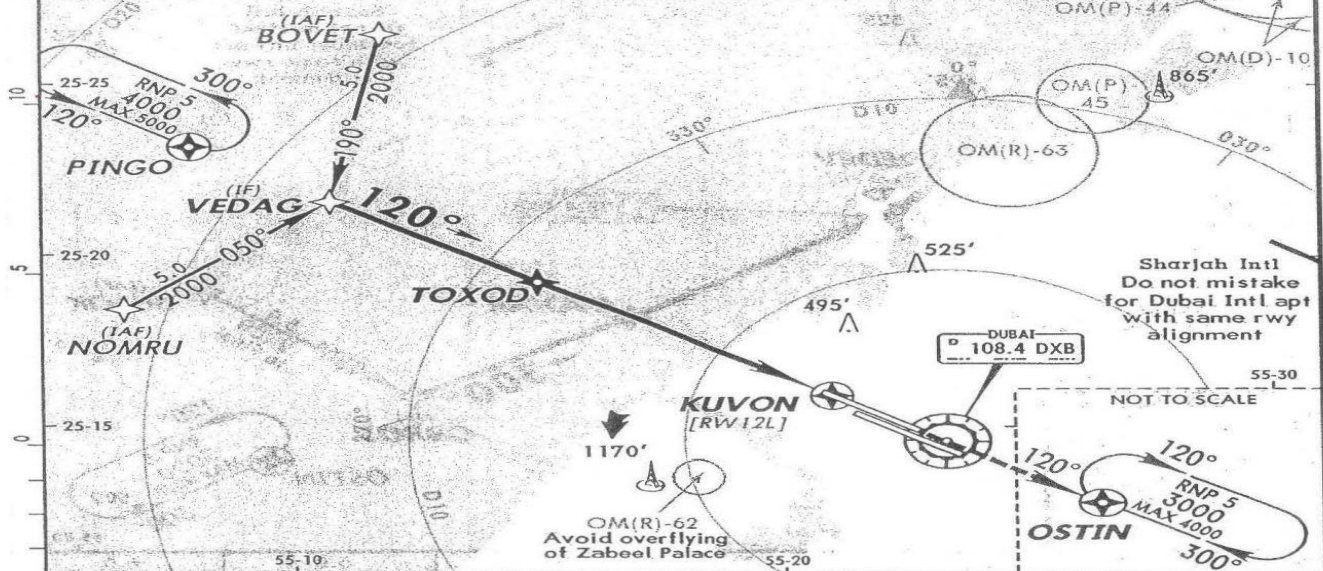
ANS OPS 3 CAT III: Min RVR 50m

OMDB/DXB DUBAI INTL **JEPPESSEN** **DUBAI, UAE**
 6 JUN 08 **(12:1)** **RNAV (GNSS) Rwy 12L**

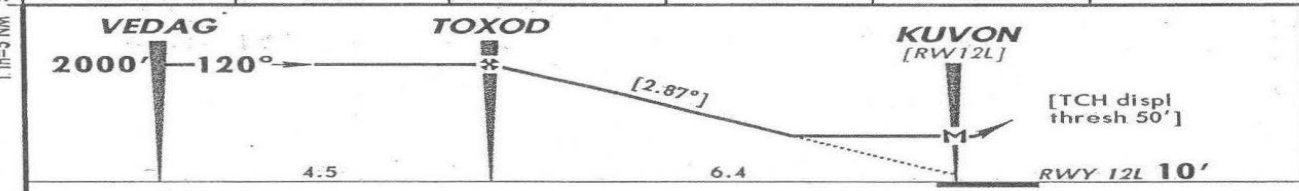
D-ATIS 131.7	DUBAI Arrivals (APP/R) 124.9	DUBAI Director (APP/R) 127.9	DUBAI Tower 118.75	Ground 118.35
RNAV	Final Apch Crs 120°	Minimum Alt TOXOD 2000' (1990')	MDA(H) 590' (580')	Apt Elev 62' RWY 10'

MISSED APCH: Climb to 3000' direct to OSTIN and hold.

Alt Set: MB Rwy Elev: 0 MB Trans level: FL 150 Trans alt: 13000' MSA ARP



DIST to KUVON	6.0	5.0	4.0	3.0	2.0
ALTITUDE	1880'	1580'	1280'	970'	670'



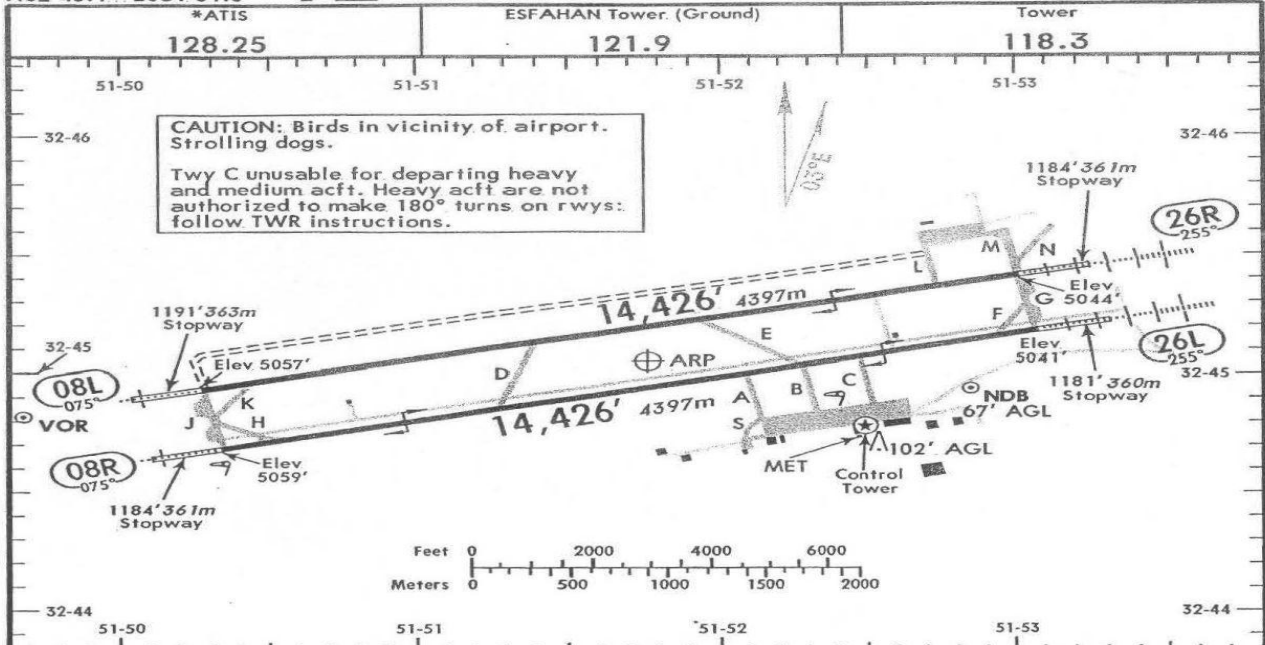
Gnd speed-Kts	120	140	160	180	HTALS-II REIL PAPI 3000' -D- OSTIN
Descent angle	[2.87°]	609	711	812	

STRAIGHT-IN LANDING RWY 12L		CIRCLE-TO-LAND	
MDA(H) 590' (580')			
ALS out		ALS out	
C	RVR 1500m VIS 1600m	2400m	NOT AUTHORIZED
D	2000m	2800m	

OIFM/IFN
Apt Elev 5059'
N32 45.1 E051 51.8

JEPPESEN
7 DEC 07 (11-1)

ESFAHAN, IRAN
SHAHID BEHESHTI INTL



ADDITIONAL RUNWAY INFORMATION

RWY		USABLE LENGTHS		TAKE-OFF	WIDTH
		Threshold	Glide Slope		
08L	HIRL(60m) ALS HST-1 PAPI-L(angle 3.00°)				148'
26R	HIRL(60m) HIALS HST PAPI-L(angle 2.65°)		13,211' 4027m		45m
08R	HIRL(60m) ALS PAPI-L(angle 3.00°)				148'
26L	HIRL(60m) HIALS PAPI-L(angle 3.02°)				45m

① Rwy 08R/26L primarily used as taxiway.

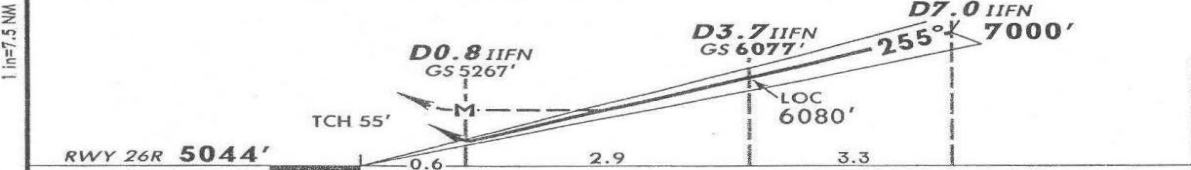
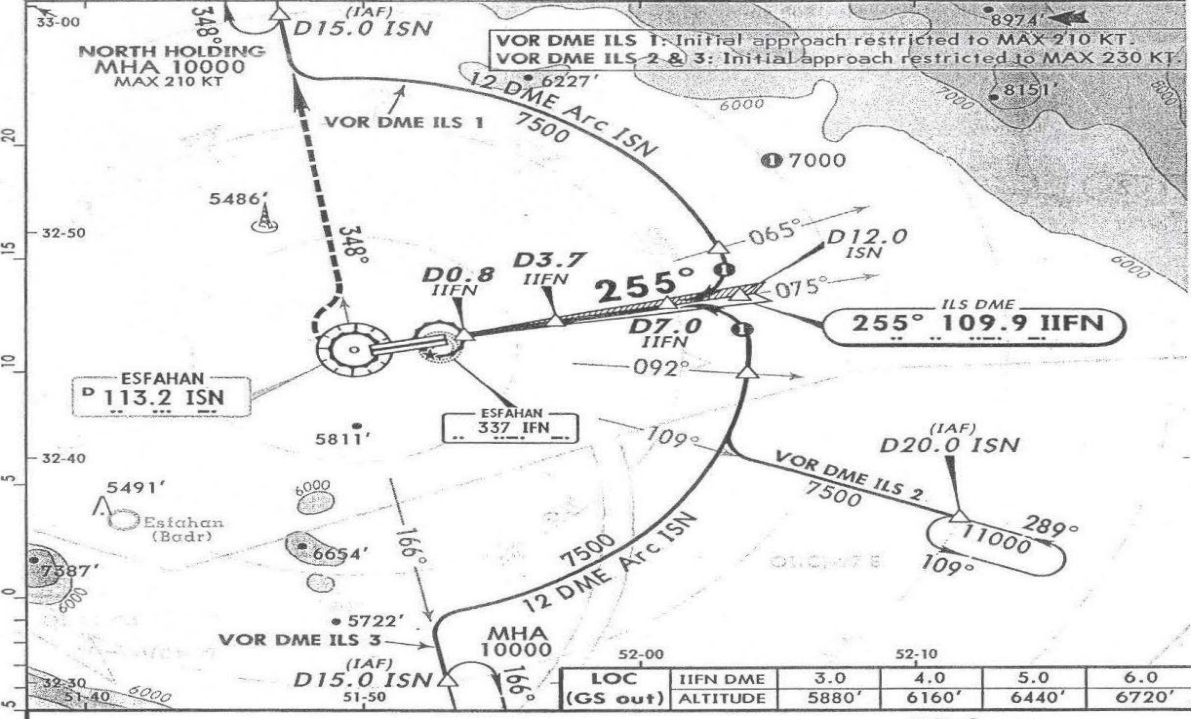
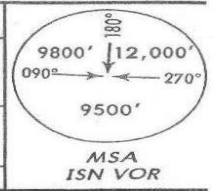
	TAKE-OFF AIR CARRIER (JAA) All Rwys	
	RL & RCLM	NIL (DAY only)
C		
D	400m	500m

CHANGES: None.

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OIFM/IFN **JEPPESEN** **ESFAHAN, IRAI**
SHAHID BEHESHTI INTL 7 DEC 07 **(11-1) VOR DME ILS 1, 2 & 3 Rwy 26R**

*ATIS 128.25	ESFAHAN Approach 124.6	ESFAHAN Tower 118.3	Ground 121.9
LOC IIFN 109.9	Final Apch Crs 255°	GS D3.7 IIFN 6077' (1033')	ILS DA(H) 5277' (233')
MISSED APCH: Climb STRAIGHT AHEAD to VOR, then turn RIGHT to intercept R-348 and rejoin NORTH holding at 10000'.			Apt Elev 5059' RWY 5044'
Alt Set: hPa	Rwy Elev: 172 hPa	Trans level: By ATC	Trans alt: 13000'



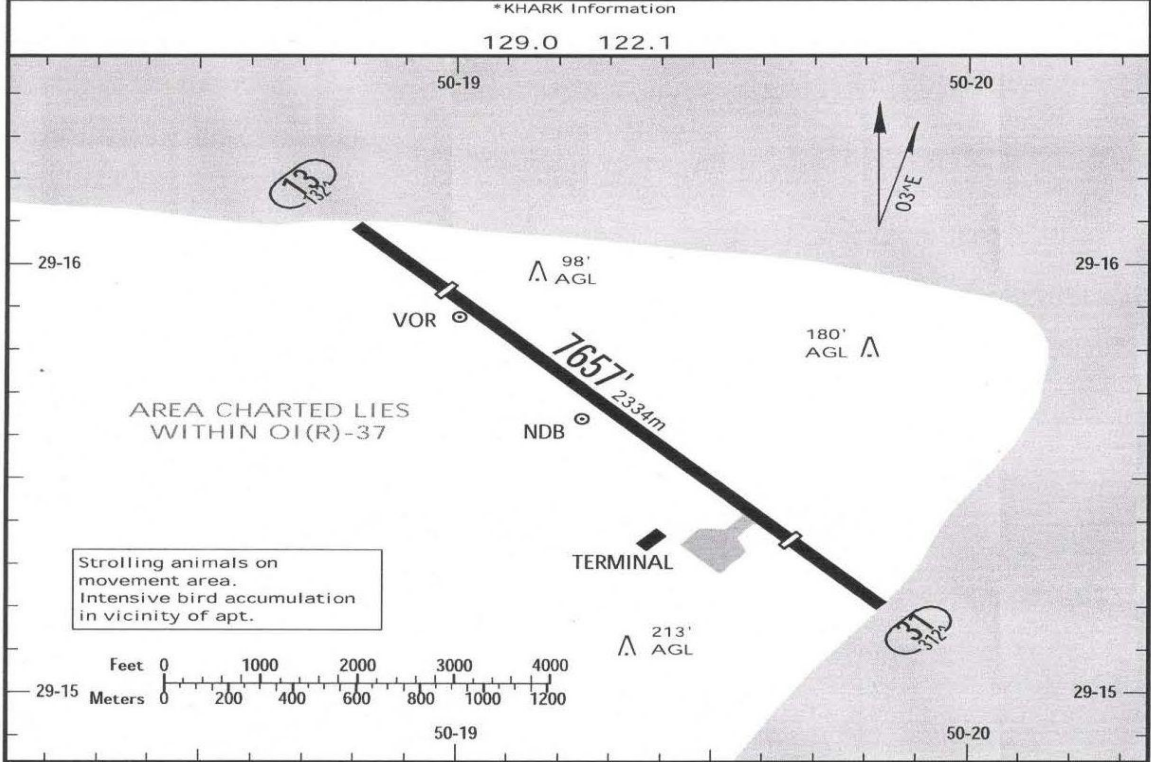
Gnd speed-Kts	120	140	160	180	HIALS	ISN 10000'	ISN on R-348
ILS GS 2.63° or LOC Descent Gradient 4.6%	568	663	758	852			
MAP at D0.8 IIFN					PAPI	↑	RT
STRAIGHT-IN LANDING RWY 26R ILS				CIRCLE-TO-LAND			
DA(H) 5277' (233')		MDA(H) 5710' (666')		Not authorized South of airport			
FULL		ALS out		Max Kts	MDA(H)		
C	800m	1200m		180	5760' (701')	3200m	
D				205	5780' (721')	3600m	

CHANGES: Trans alt. © JEPPESEN SANDERSON, INC., 1998, 2007. ALL RIGHTS RESERVED.

OIBQ/KHK
Apt Elev **29'**
N29 15.6 E050 19.4

JEPPESEN
9 SEP 11 (10-9)

KHARK ISLAND, IRAN
KHARK



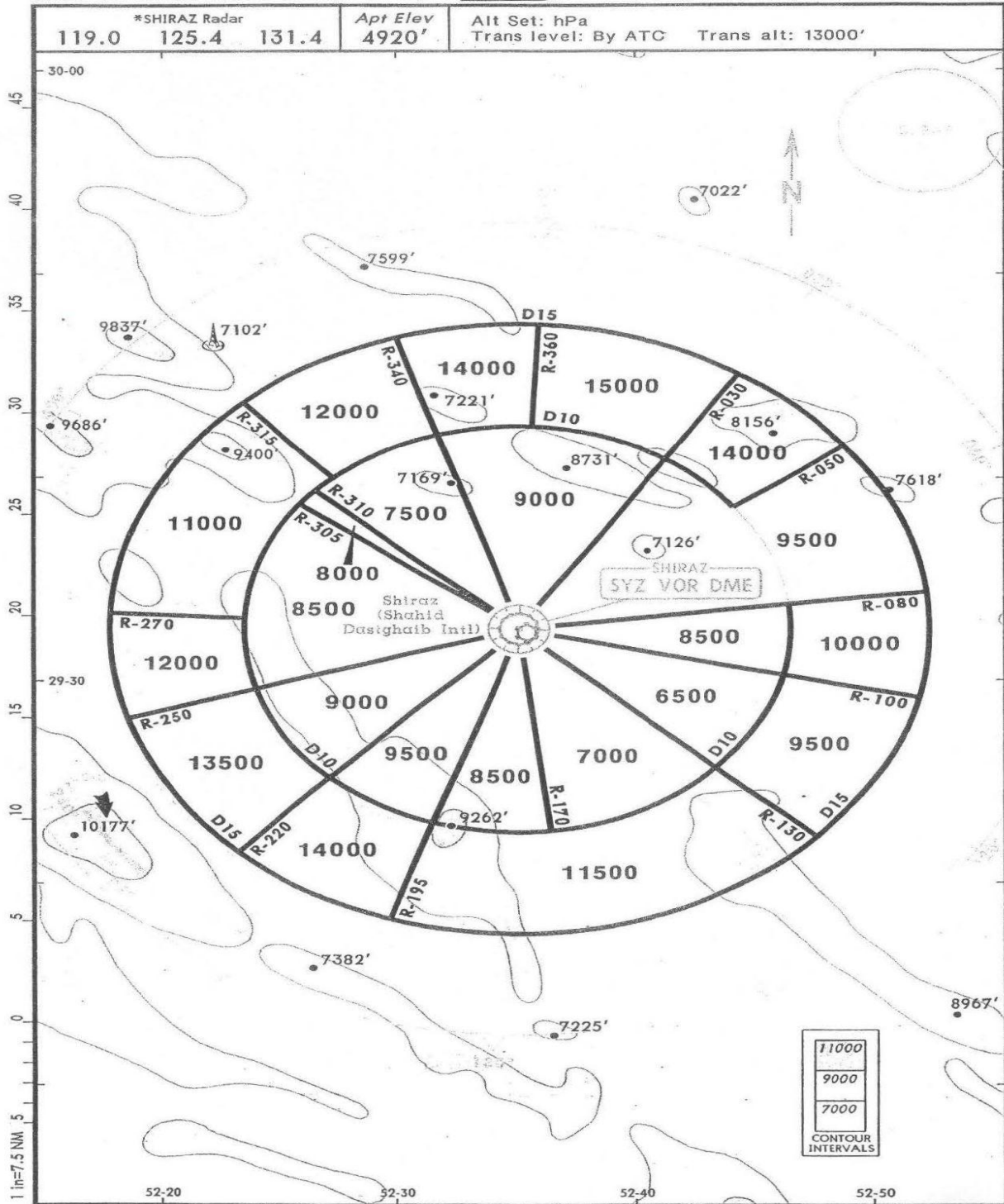
RWY			USABLE LENGTHS			WIDTH
			Threshold	Landing Beyond Glide Slope	TAKE-OFF	
13	HIRL (60m)	PAPI-L (angle 3.0°)	6345' 1934m		6332' 1930m	148'
31			6332' 1930m		6345' 1934m	45m

TAKE-OFF		
AIR CARRIER (JAA) All Rwys		
RL & RCLM	NIL (DAY only)	
A B C D	400m	500m
NOT APPLICABLE		

CHANGES: Runway designator, Lights, Minimums.

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OISS/SYZ **JEPPESEN** SHIRAZ, IRAN
 SHAHID DASTGHAIB INTL 11 APR 08 (10-1R) **RADAR MINIMUM ALTITUDES**



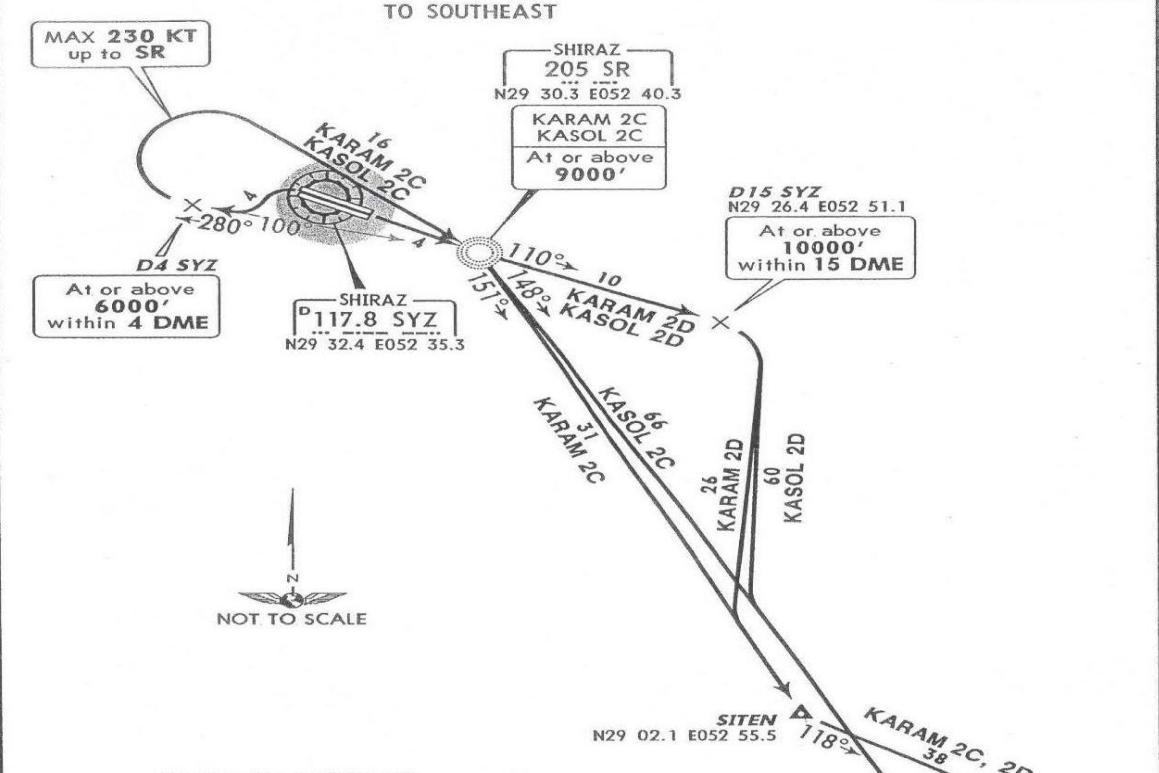
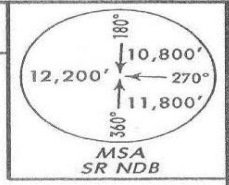
CHANGES: New chart.

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OISS/SYZ **JEPPESSEN** SHIRAZ, IRAN **SID**
 SHAHID DASTGHAIB INTL 21 APR 06 (10-3E)

Apt Elev 4920' Trans level: By ATC Trans alt: 13000'

**KARAM 2C [KARA2C], KARAM 2D [KARA2D]
 KASOL 2C [KASO2C], KASOL 2D [KASO2D]
 RWYS 29L/R, 11R/L DEPARTURES**
 BASED ON SR
 TO SOUTHEAST



KARAM 2C, KASOL 2C
 These SIDs require a minimum climb gradient of 350' per NM up to FL120.

Gnd speed-KT	75	100	150	200	250	300
350' per NM	437	583	875	1167	1458	1750

SID	RWY	ROUTING
KARAM 2C	29L/R	Turn LEFT, intercept 280° bearing from SR climbing to 6000' or above within SYZ 4 DME, at D4 SYZ turn RIGHT to SR, turn RIGHT, 151° bearing to SITEN, turn LEFT, 118° track to KARAM, climb to cleared FL.
KARAM 2D	11R/L	To SR, 110° bearing climbing to 10000' or above within SYZ 15 DME, at D15 SYZ turn RIGHT, intercept 151° bearing from SR to SITEN, turn LEFT, 118° track to KARAM, climb to cleared FL.
KASOL 2C	29L/R	Turn LEFT, intercept 280° bearing from SR climbing to 6000' or above within SYZ 4 DME, at D4 SYZ turn RIGHT to SR, turn RIGHT, 148° bearing to KASOL, climb to cleared FL.
KASOL 2D	11R/L	To SR, 110° bearing climbing to 10000' or above within SYZ 15 DME, at D15 SYZ turn RIGHT, intercept 148° bearing from SR to KASOL, climb to cleared FL.

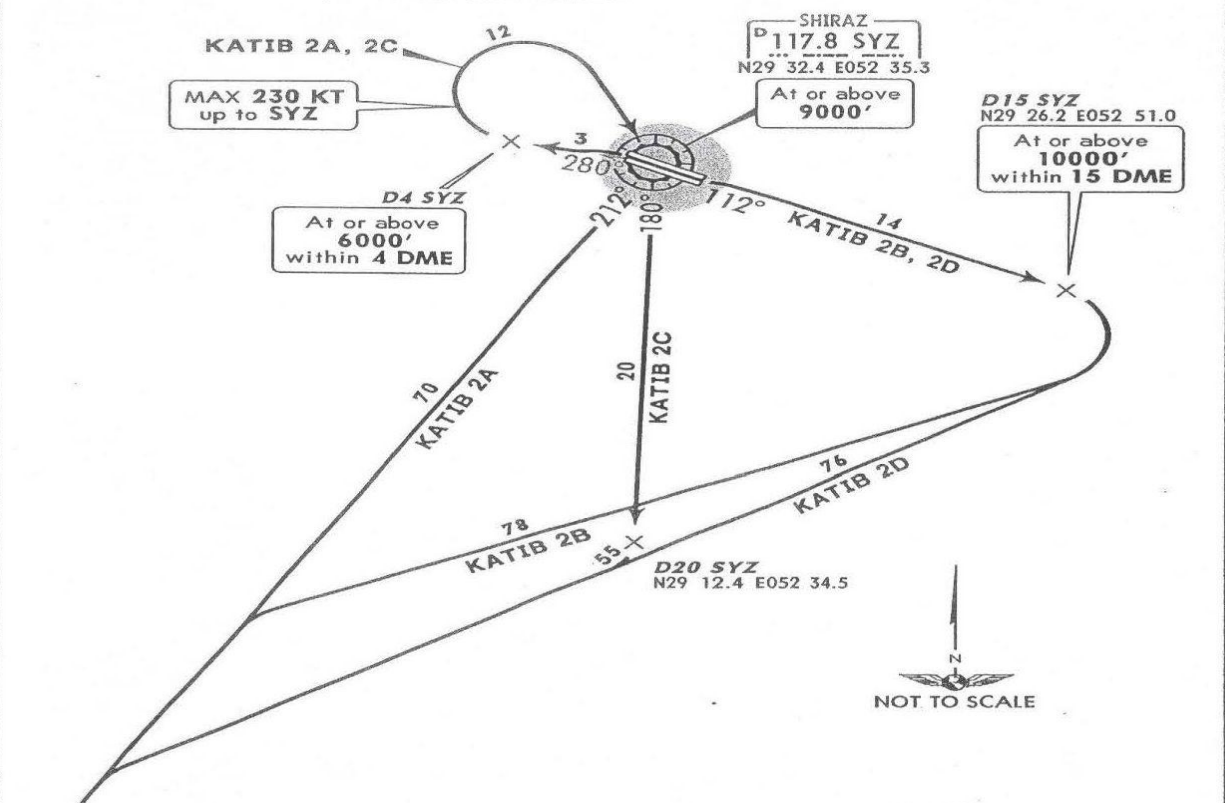
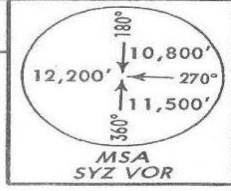
CHANGES: Trans. altitude raised. © JEPPESSEN SANDERSON, INC., 2002, 2006. ALL RIGHTS RESERVED.

OISS/SYZ
SHAHID DASTGHAIB INTL 21 APR 06 (10-3H)

SHIRAZ, IRAN
SID

Apt Elev 4920' Trans level: By ATC Trans alt: 13000'

**KATIB 2A [KATI2A], KATIB 2B [KATI2B]
KATIB 2C [KATI2C], KATIB 2D [KATI2D]
RWYS 29L/R, 11R/L DEPARTURES
BASED ON SYZ
TO SOUTHSOUTHWEST**



KATIB 2A, 2C
These SIDs require a minimum climb gradient of 350' per NM up to FL120.

Gnd speed-KT	75	100	150	200	250	300
350' per NM	437	583	875	1167	1458	1750

SID	RWY	ROUTING
KATIB 2A	29L/R	Turn LEFT, intercept SYZ R-280 climbing to 6000' or above within SYZ 4 DME, at D4 SYZ turn RIGHT to SYZ, turn RIGHT, SYZ R-212 to KATIB, climb to cleared FL.
KATIB 2B	11R/L	Intercept SYZ R-112 climbing to 10000' or above within SYZ 15 DME, at D15 SYZ turn RIGHT, intercept SYZ R-212 to KATIB, climb to cleared FL.
KATIB 2C	29L/R	Turn LEFT, intercept SYZ R-280 climbing to 6000' or above within SYZ 4 DME, at D4 SYZ turn RIGHT to SYZ, turn RIGHT, SYZ R-180, at D20 SYZ turn RIGHT, intercept SYZ R-212 to KATIB, climb to cleared FL.
KATIB 2D	11R/L	Intercept SYZ R-112 climbing to 10000' or above within SYZ 15 DME, at D15 SYZ turn RIGHT, pass SYZ R-180 beyond SYZ 20 DME, intercept SYZ R-212 to KATIB, climb to cleared FL.

CHANGES: Trans altitude raised.

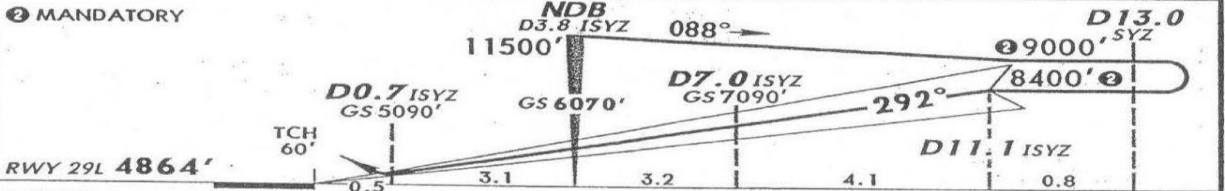
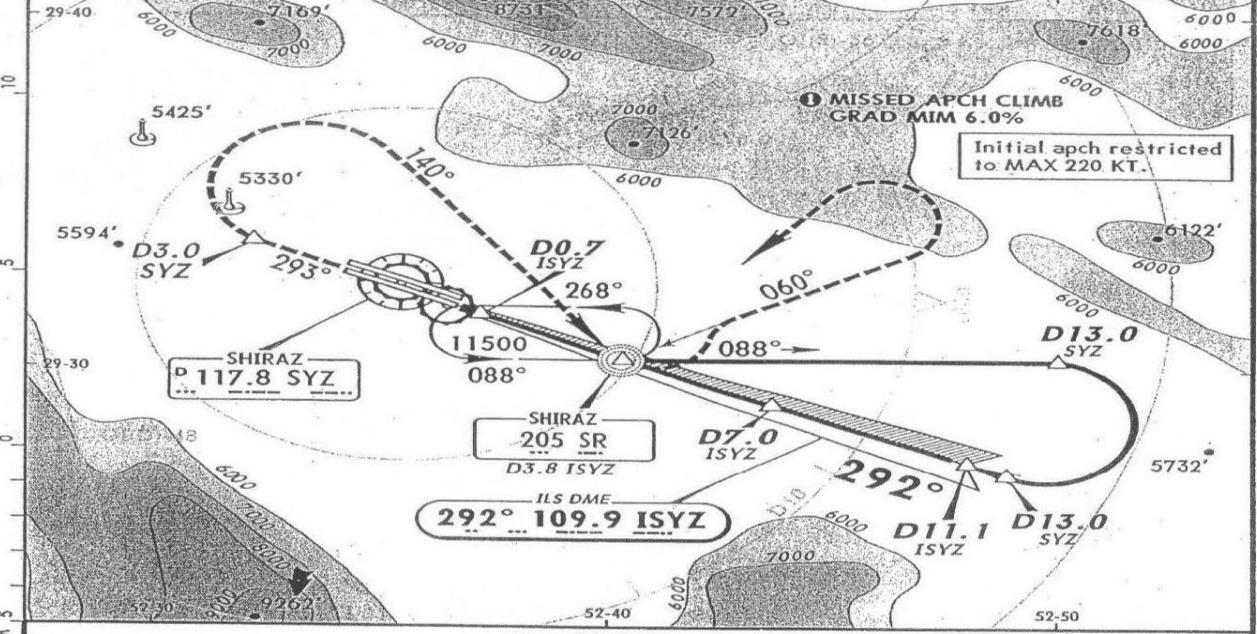
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OISS/SYZ **A** **JEPPESSEN** SHIRAZ, IRAN
 SHAHID DASTGHAIB INTL 25 AUG 06 Eff 31 Aug **(11-5)** NDB DME ILS-2 Rwy 29L

BRIEFING STRIP™		ATIS		SHIRAZ Approach (R)			SHIRAZ Tower	
127.0		119.0		125.4	131.4	134.1	118.1 121.9	
LOC ISYZ	Final Apch Crs	GS NDB	ILS DA(H)	Apt Elev		RWY		
109.9	292°	6070' (1206')	5090' (226')	4920'		4864'		

MISSED APCH: Climb on 293° from NDB to 7000' within D3.0 SYZ, then climbing turn RIGHT onto 140° to NDB. After passing NDB turn LEFT and climb onto 060° to 10000', then turn LEFT to rejoin holding at 11500'.

Alt Set: hPa Rwy Elev: 166 hPa Trans level: By ATC Trans alt: 13000' MSA SR NDB



RWY 29L 4864'				TCH 60'		D0.7 ISYZ GS 5090'		D7.0 ISYZ GS 7090'		D11.1 ISYZ		D13.0 SYZ	
Gnd speed-Kts	120	140	160	180	HIALS PAPI-L		7000'		293° on from within SR 205		D3.0 SYZ		
Gs	3.00°	646	753	861									

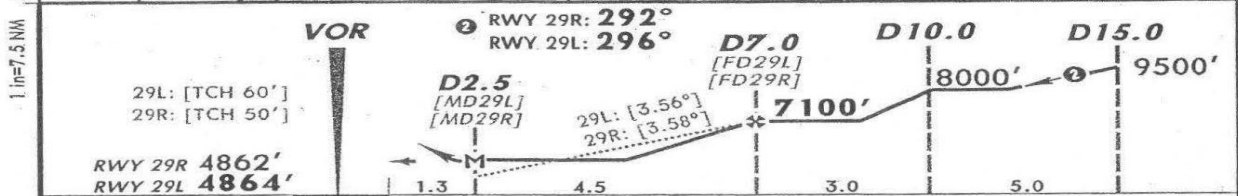
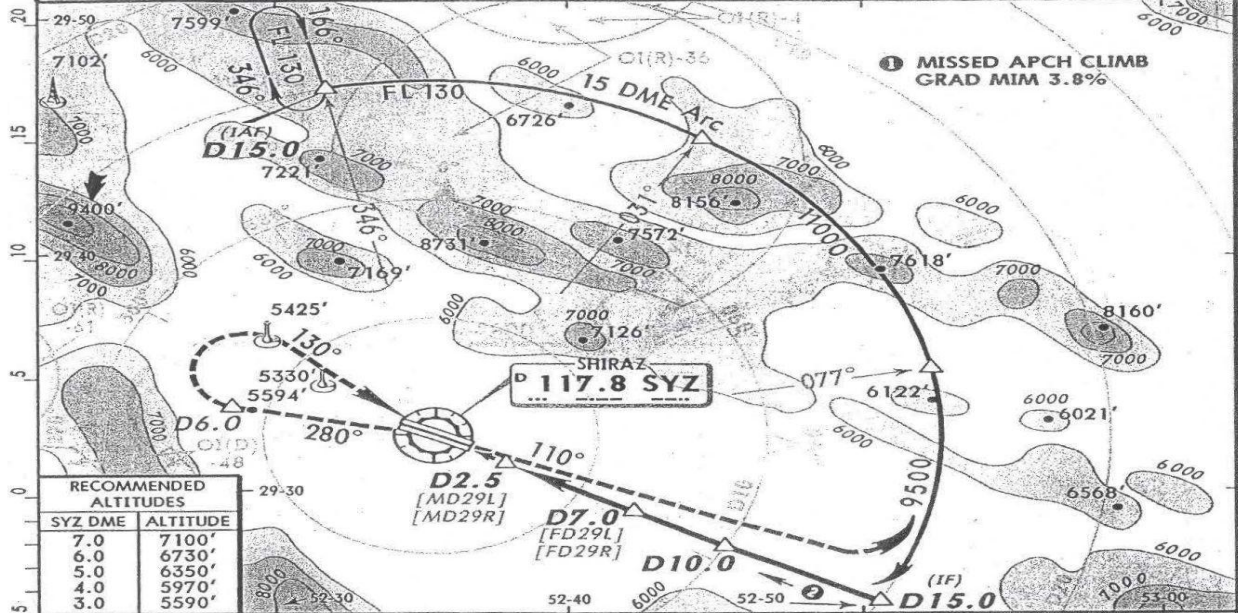
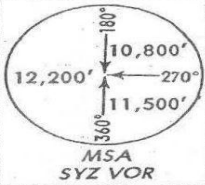
STRAIGHT-IN LANDING RWY 29L Missed apch climb gradient mim 6.0%				CIRCLE-TO-LAND			
ILS DA(H) 5087' (223')				LOC (GS out)			
FULL		ALS out		Max Kts		MDA(H)	
800m		1200m		180		6380' (1460')	
NOT APPLICABLE		NOT APPLICABLE		205		4800m	

CHANGES: Procedure. Chart reindexed.

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OISS/SYZ **SHAHID DASTGHAIB INTL** **25 AUG 06** **JEPPESSEN** **SHIRAZ, IRAN**
13-1 **VOR DME-1 Rwy 29L/R**

ATIS 127.0		SHIRAZ Approach (R) 119.0 125.4 131.4 134.1			SHIRAZ Tower 118.1 121.9	
VOR SYZ 117.8	Final Apch Crs RWY 29L 296° RWY 29R 292°	Minimum Alt D7.0 7100' (2236')	MDA(H) Refer to Minimums	Apt Elev 4920' RWY 29L 4864' RWY 29R 4862'		
MISSED APCH: Climb STRAIGHT AHEAD to VOR, then turn LEFT to continue climb on R-280 to 7400' within D6.0. Turn RIGHT and proceed on 130° to overhead VOR, then proceed on R-110. Turn LEFT to maintain 15 DME Arc to rejoin holding at FL 130. MAX 185 KT until overhead VOR.						
Alt Set: hPa		Rwy Elev: 166 hPa		Trans level: By ATC		Trans alt: 13000'



Gnd Speed-Kts 29L: Descent angle [3.56°] 120 140 160 180 29R: Descent angle [3.58°] 756 882 1008 1134 29R: Descent angle [3.58°] 760 887 1014 1140				HIALS PAPI-L 185 KT MAX	SYZ 117.8
--	--	--	--	--	----------------------------

STRAIGHT-IN LANDING RWY 29L/R
 Missed apch climb gradient mim 3.8%
 MDA(H) RWY 29L: **5510'** (646')
 RWY 29R: **5510'** (648')

		ALS out	Max Kts
C	2000m	2800m	180
D	2400m	3200m	205

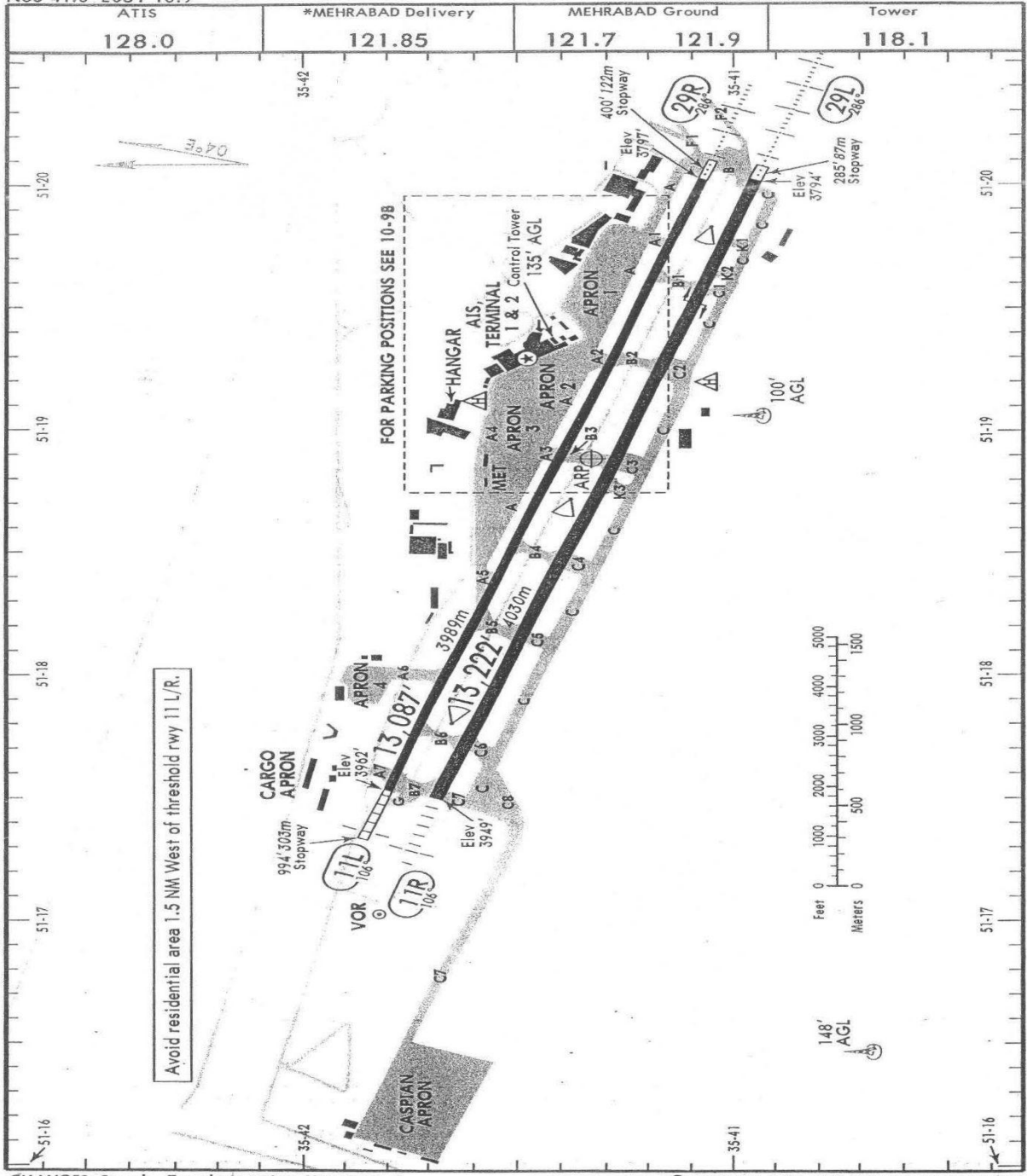
CIRCLE-TO-LAND
 Not authorized North of airport
 MDA(H) **6380'** (1460') **4800m**

CHANGES: None. © JEPPESSEN SANDERSON, INC., 2001, 2006. ALL RIGHTS RESERVED.

OIII/THR
Apt Elev 3962'
N35 41.3 E051 18.9

JEPPESSEN
31 JUL 09 **(10-9)**

TEHRAN, IRAN
MEHRABAD INTL



OIII/THR



JEPPESSEN
16 MAR 07 (10-9A)

TEHRAN, IRAN
MEHRABAD INTL

INS COORDINATES					
STAND No.	COORDINATES		STAND No.	COORDINATES	
1, 2	N35 41.5	E051 19.0	23	N35 41.3	E051 19.7
3	N35 41.5	E051 19.1	24	N35 41.3	E051 19.6
4, 5	N35 41.5	E051 19.0	25	N35 41.3	E051 19.7
6, 7	N35 41.5	E051 19.1	26	N35 41.3	E051 19.6
8, 9	N35 41.5	E051 19.2	27	N35 41.3	E051 19.8
13	N35 41.4	E051 19.3	28	N35 41.3	E051 19.7
14	N35 41.3	E051 19.4	29	N35 41.3	E051 19.8
15	N35 41.4	E051 19.5	30, 32	N35 41.2	E051 19.7
16	N35 41.3	E051 19.5	J1	N35 41.5	E051 19.2
17	N35 41.4	E051 19.6	J2, J3	N35 41.4	E051 19.3
18	N35 41.3	E051 19.5			
19	N35 41.3	E051 19.6			
20	N35 41.3	E051 19.5			
21	N35 41.3	E051 19.7			
22	N35 41.3	E051 19.6			

GENERAL

Birds and stray dogs in vicinity of airport.
RWY 11L/R right-hand circuit.

ADDITIONAL RUNWAY INFORMATION

RWY		USABLE LENGTHS		TAKE-OFF	WIDTH
		Threshold	Glide Slope		
11L	HIRL(60m) ALS PAPI-L (angle 3.22°)				148'
29R	HIRL(60m) HIALS PAPI-L (angle 3.22°)			①	45m
① MIL jet barrier 100' West of RWY 11L height 12' AGL is in up psn and can be lowered on request.					
11R	HIRL(60m) ALS PAPI-L (angle 3.36°)				197'
29L	HIRL(60m) HIALS SFL PAPI-L (angle 3.30°)	②	12,397' 3779m	②	60m
② Single engine aircraft should use portion of runway West of arrester gear which is installed 2598'/792m inwards from threshold 29L.					

TAKE-OFF & DEPARTURE PROCEDURE

AIR CARRIER (JAA)

All Rwys

	RL & RCLM	NIL (DAY only)
C	400m	500m
D		

Departure rwy 11 L/R: Rwy 11 not used for T/O during 1730 - 0430 except tail wind component of rwy 29 is 10 KT or more.

Departure rwy 29 L/R: To avoid residential area 1.5 NM West of rwy 11 all JET acft are to make a LEFT turn as soon as practicable after passing end of rwy and follow assigned SID.

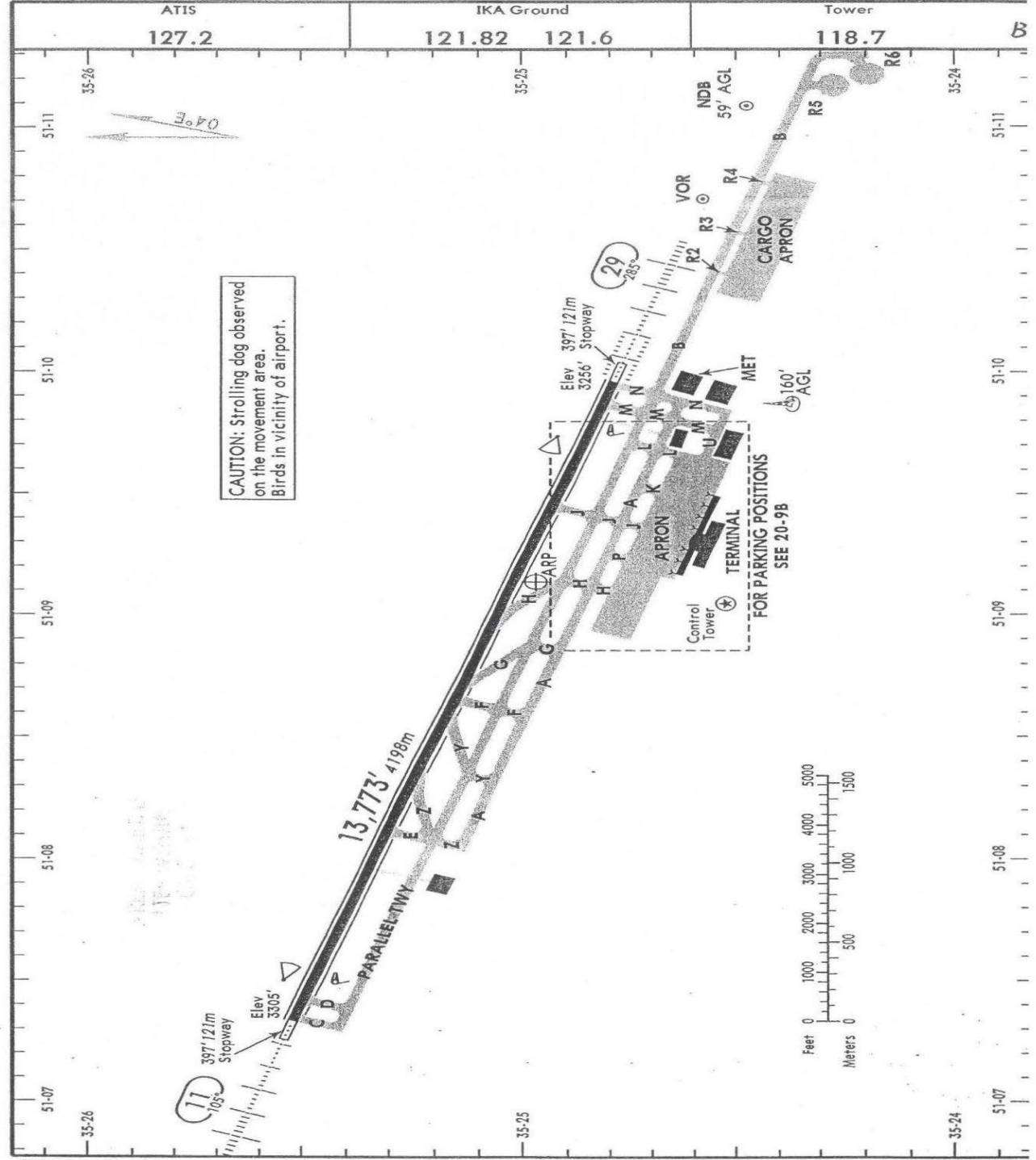
CHANGES: Minimums.

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OIIE/IKA
Apt Elev **3305'**
N35 25.0 E051 09.1

JEPPESSEN
5 DEC 08 **20-9** Eff: 18 Dec

TEHRAN, IRAN
IMAM KHOMAINI INTL



CHANGES: None.

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OIIE/IKA



JEPPESEN
5 DEC 08 **20-9A**

Eff: 18 Dec

TEHRAN, IRAN
IMAM KHOMAINI INTL

RWY	ADDITIONAL RUNWAY INFORMATION					USABLE LENGTHS		TAKE-OFF	WIDTH
	LANDING BEYOND					Threshold	Glide Slope		
11	HIRL (60m)	CL (30m)	HIALS	PAPI-L (3.0°)	RVR				148'
29	HIRL (60m)	CL (30m)	HIALS-II	SFL TDZ ①	RVR		12,801' 3902m		45m

① PAPI-L (angle 3.0°).

MINIMUM RUNWAY OCCUPANCY TIME

ARRIVALS:

In order to minimize the occurrence of "go-around", lessen the runway occupancy time and, therefore, get the maximum runway utilization, pilots shall exit the rwy as soon as possible and this will not affect the acft safety and standard operation.

DEPARTURES:

Pilots, when the corresponding clearance is issued, shall be able to taxi to the take-off position in the rwy as soon as the preceding departure acft had began the take-off or the preceding arrival acft had passed their holding position.

Acft shall be able to initiate the take-off immediately after clearance is issued.

Pilots unable to comply with this requirement shall notify to ATC as soon as possible and once in contact with Tower.

Acft not ready to initiate take-off run immediately when cleared for take-off, will have take-off clearance cancelled and will receive instructions to vacate the rwy at the first available twy.

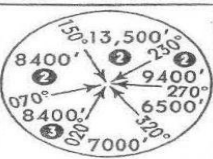
	TAKE-OFF		
	AIR CARRIER (JAA) All Rwys		
	LVP must be in force		NIL (DAY only)
	RL & CL & RCLM	RL & RCLM	
C	300m	400m	500m
D			

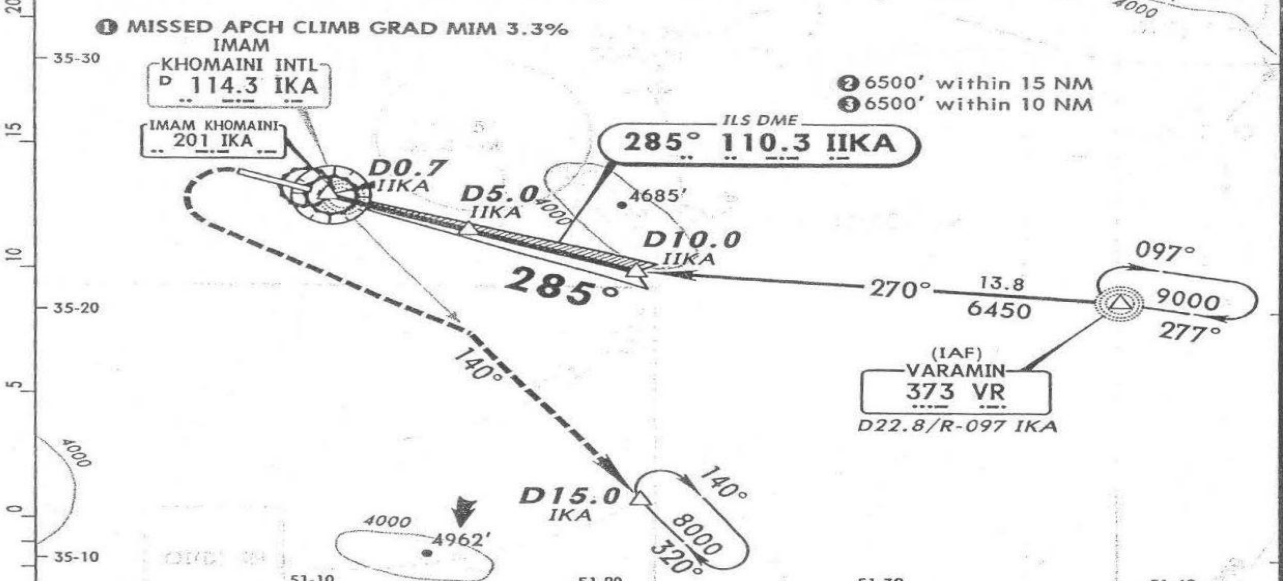
CHANGES: Usable lengths.

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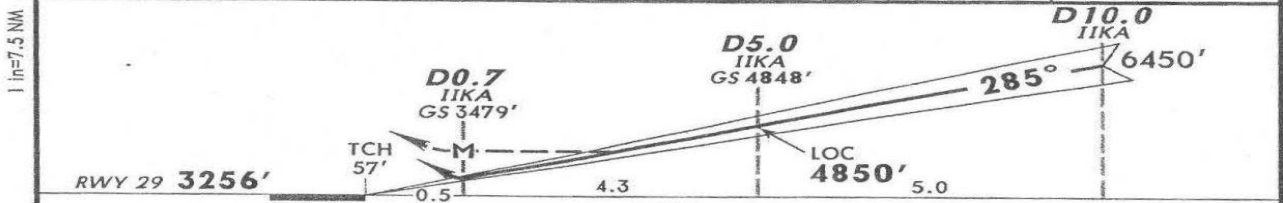
OIIIE/IKA
IMAM KHOMAINI INTL

JEPPESSEN
20 MAR 09 **(21-1)** **VOR DME ILS-1 Rwy 29**

ATIS 127.2	MEHRABAD Approach (R) 119.7 125.1 124.45			IKA Tower 118.7	Ground 121.82 121.6
LOC IKA 110.3	Final Apch Crs 285°	GS D5.0 IKA 4848' (1592')	ILS DA(H) 3479' (223')	Apt Elev 3305' RWY 3256'	 <p>MSA IKA VOR</p>
MISSED APCH: Climb on R-285 to 4300', then turn LEFT to intercept R-140 to join D15.0 IKA holding at 8000'.					
Alt Set: hPa Rwy Elev: 114 hPa Trans level: By ATC Trans alt: 9000' Procedure restricted to MAX 220 KT.					



LOC (GS out)	IKA DME	2.0	3.0	4.0	5.0
	ALTITUDE	3880'	4200'	4510'	4850'



Gnd speed-Kts	120	140	160	180	HIALS-II PAP 4300' IKA ↑ on 114.3 R-285
ILS GS 3.00° or LOC Desc Grad 5.2%	646	753	861	968	
MAP at D0.7 IKA					

STRAIGHT-IN LANDING RWY 29 Missed apch climb gradient mim 3.3%					CIRCLE-TO-LAND	
ILS DA(H) 3479' (223')			LOC (GS out) MDA(H) 3690' (434')		Max Kts	MDA(H)
FULL	TDZ or CL out	ALS out	ALS out			
C	RVR 550m VIS 800m	RVR 720m VIS 800m	1200m	2000m	180	3900'(595') 2400m
D		1200m	RVR 1500m VIS 1600m	2400m	205	4010'(705') 3600m

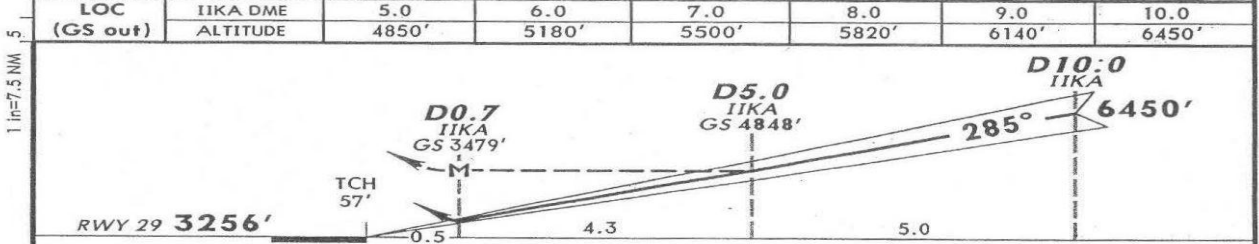
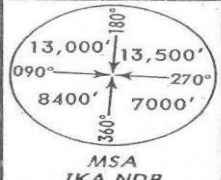
CHANGES: Minimums. © JEPPESSEN, 2004, 2009. ALL RIGHTS RESERVED.

OIIIE/IKA **JEPPESEN** **TEHRAN, IRAN**
IMAM KHOMAINI INTL 20 MAR 09 **21-7** **MISSED APCH CLIMB** **NDB ILS-1 Rwy 29**
GRAD MIM 3.3%

ATIS		MEHRABAD Approach (R)			IKA Tower		Ground	
127.2		119.7	125.1	124.45	118.7		121.82	121.6
LOC IKA	Final Apch Crs	GS D5.0 IKA	ILS DA(H)		Apt Elev 3305'		RWY 3256'	
110.3	285°	4848' (1592')	3479' (223')					

MISSED APCH: Climb on 285° to 4300', then turn RIGHT onto 079° to KAZ NDB and join holding at 6000'. MAX 185 KT.

Alt Set: hPa Rwy Elev: 114 hPa Trans level: By ATC Trans alt: 9000'



Gnd speed-Kts	120	140	160	180	HIALS-II PAPI	185 KT MAX	4300'	on 285°
ILS GS 3.00° or LOC Desc Grad 5.2%	646	753	861	968				
MAP at D0.7 IKA								

STRAIGHT-IN LANDING RWY 29					CIRCLE-TO-LAND		
Missed apch climb gradient mim 3.3%							
ILS		LOC (GS out)					
DA(H) 3479' (223')		MDA(H) 4840' (1584')					
FULL	TDZ or CL out	ALS out	ALS out	Max Kts	MDA(H)		
C	RVR 550m VIS 800m	RVR 720m VIS 800m	1200m	180	4840' (1584') 4800m		
D				205			

■ Circling height based on rwy 29 thresh elev of 3256'

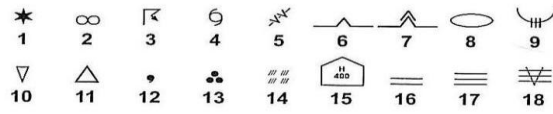


Figure I-01

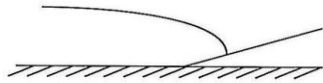


Figure I-02

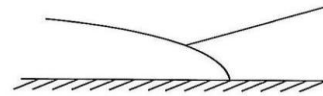


Figure I-03

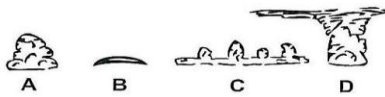


Figure I-04

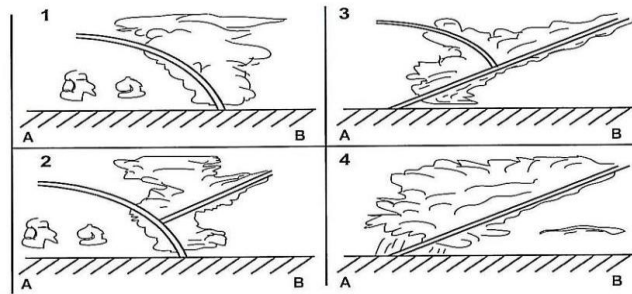


Figure I-05

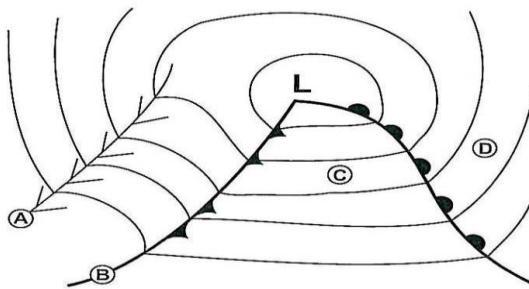
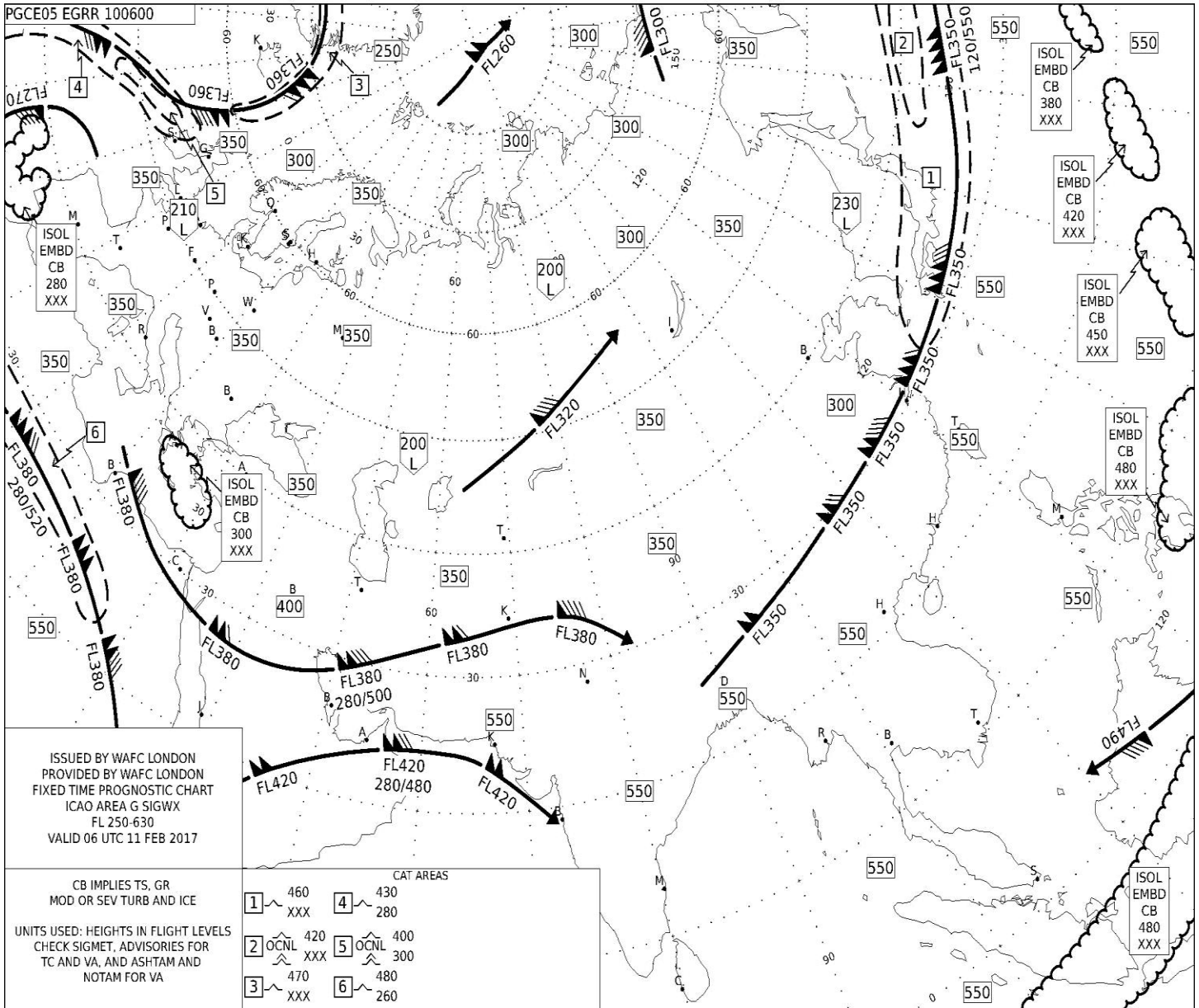


Figure I-06

IRANBOOKLET



Figure I-07



I.R. of IRAN Met. Org.(IRIMO)
TEHRAN FORECASTING CENTER
GFS's GPs

FLT340
Wind(KT)& Temperature(degC)

DT: 00UTC Sat 11 feb 2017
PROG CHART: 250 UGR&VGR&TMPprs +24
VT: 00UTC Sun 12 feb 2017

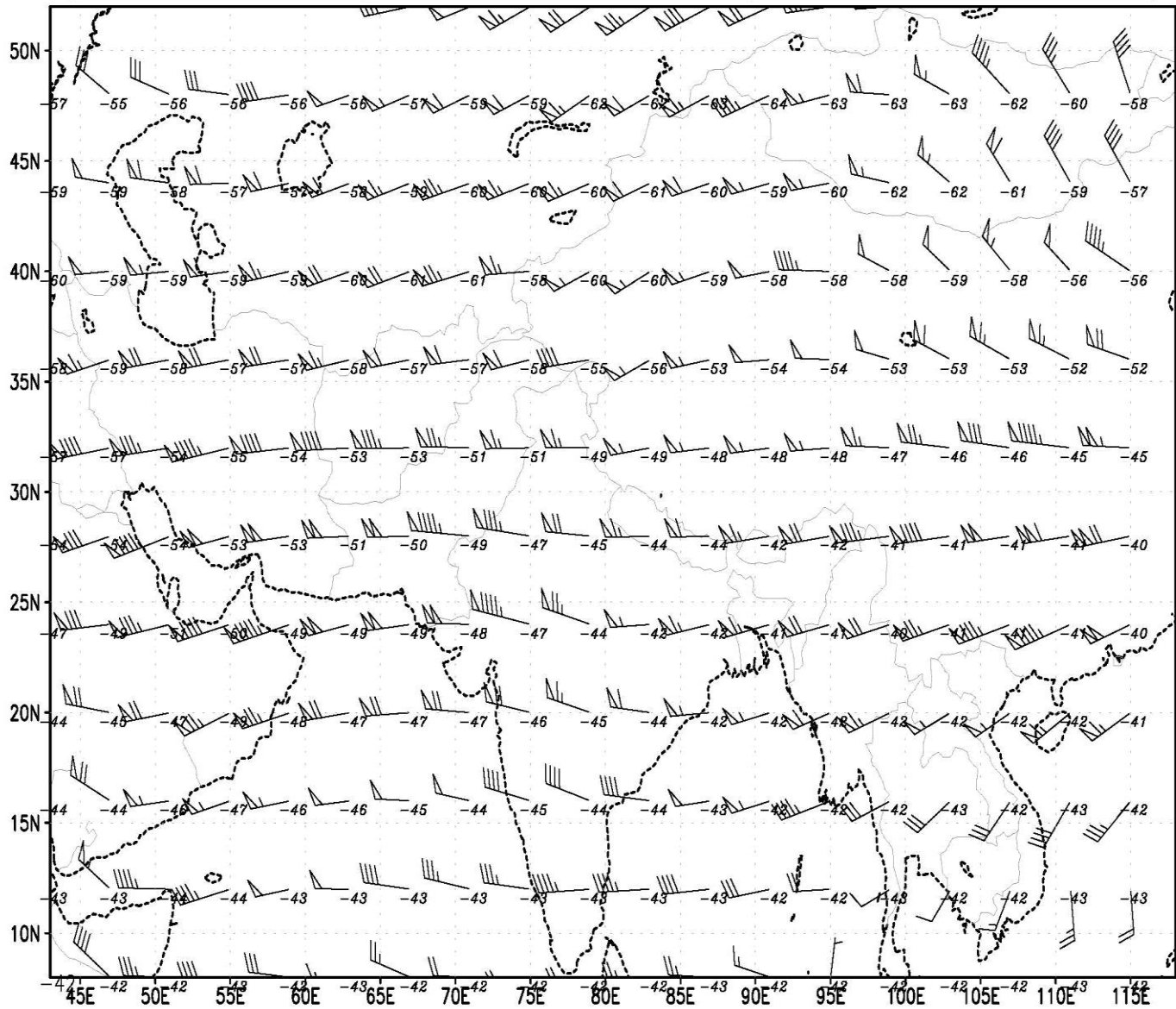


Figure 1-08

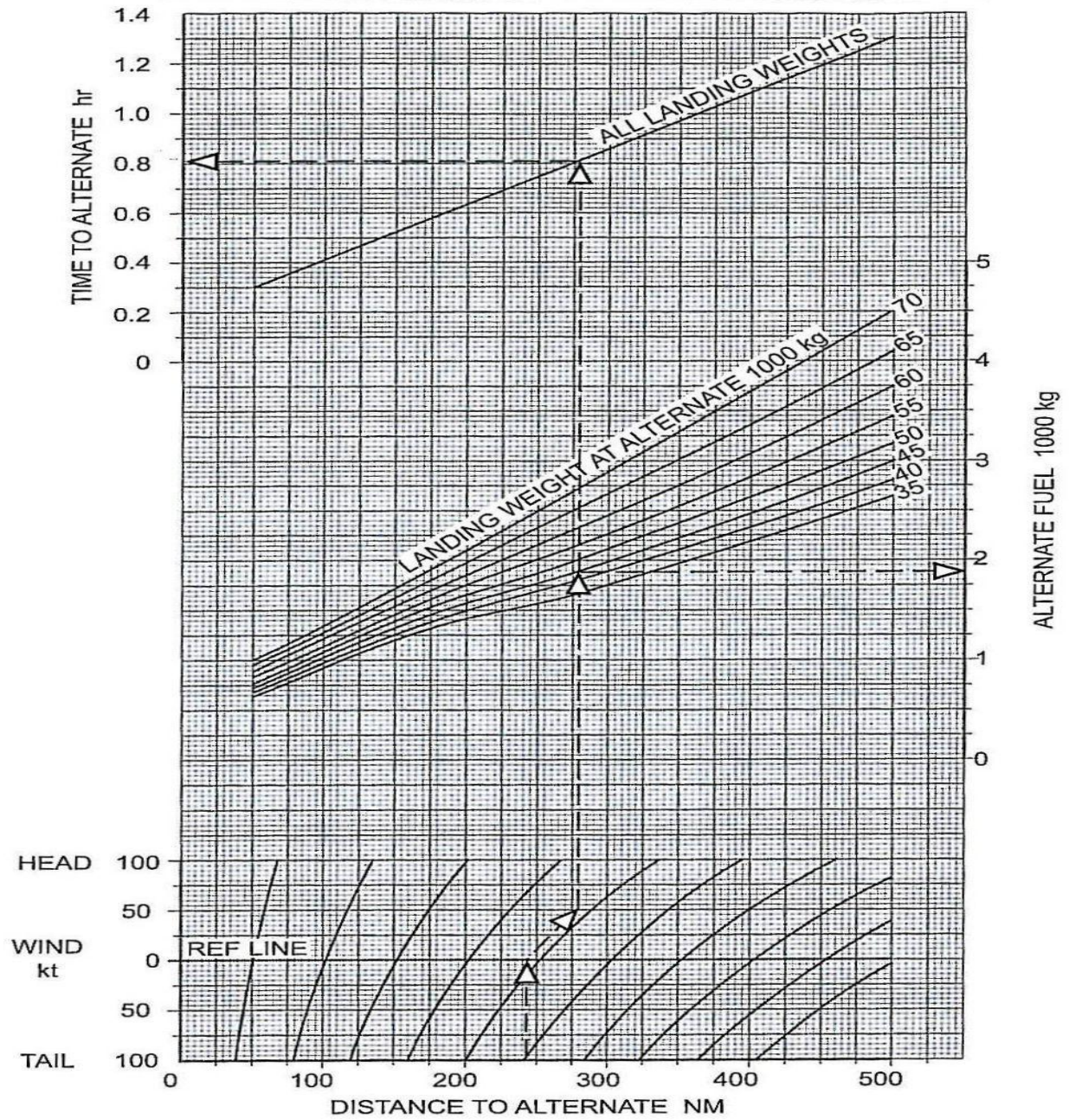
Figure I-09

ZCZC
TAF OKBK 110445Z 1106/1212 35010KT 7000 NSC BECMG 1114/1116 VRB03KT SCT040 BKN080
=
TAF OBBI 110500Z 1106/1212 33008KT 5000 SCT020 BKN080 TEMPO 1106/1212 3000 SHRA
PROB30 TEMPO 1106/1113 33020G30KT -TSRA FEW040CB BECMG 1203/1205 14010KT=
TAF OMDB 110502Z 1106/1212 12005KT 8000 NSC BECMG 1109/1111 33013KT
BECMG 1115/1117 08007KT BECMG 1204/1206 17010KT BECMG 1209/1211 34010KT=
TAF OMRK 110502Z 1106/1212 VRB02KT 8000 NSC BECMG 1109/1111 34014KT
BECMG 1115/1117 11005KT BECMG 1209/1211 35010KT=
TAF OMSJ 110502Z 1106/1212 12005KT 8000 NSC BECMG 1109/1111 34014KT
BECMG 1115/1117 08007KT BECMG 1204/1206 17010KT BECMG 1209/1211 34010KT=
TAF OEJN 110500Z 1106/1212 33006G16KT 8000 FEW035 SCT100
TEMPO 1106/1112 SCT035 BECMG 1017/1019 36010KT=
TAF OEMA 110500Z 1106/1212 26006G16KT 8000 FEW045 SCT100
TEMPO 1111/1114 4000 DU/BLDU BECMG 1118/1120 28006KT=
TAF OERK 110500Z 1106/1212 10006G16KT 7000 FEW040 SCT100
TEMPO 1106/1112 3500 TS/BLDU FEW035CB SCT040 BECMG 1120/1122 14012KT=
TAF COR OERY 102300Z 1100/1206 06008G18KT 7000 SCT040 BKN080
TEMPO 1100/1112 3000 DU/ST FEW030CB BKN040=
TAF OEDF 110400Z 1106/1212 01010KT CAVOK TEMPO 1106/1112 -TSRA FEW030CB BKN090
PROB30 TEMPO 1200/1212 VRB30KT 2000 TSRA FEW030CB OVC090=
TAF OETF 110500Z 1106/1224 24010G20KT 7000 FEW030 SCT100 TEMPO 1108/1118 SCT030=
TAF OSDI 1100/1206 VRB03KT 9999 FEW030 SCT100
TEMPO 1109/1206 22010G20KT 8000 SHRA FEW025 CB SCT030 BKN100=
TAF UDYZ 110506Z 1106/1206 VRB04KT 0800 FZFG OVC007 TEMPO 1106/1118 0200 SN FZFG
VV001=
TAF LTBA 110440Z 1106/1212 04015G30KT 9999 SCT016 BKN030
TEMPO 1106/1110 -RASN SCT010 BKN025 BECMG 1114/1118 -RASN SCT010 BKN025=
TAF LTAC 110440Z 1106/1206 VRB02KT 2500 BR BKN004 TEMPO 1106/1108 0500 FZFG VV001

BECMG 1108/1110 8000 SCT040 BECMG 1116/1118 CAVOK
BECMG 1118/1121 4000 BR PROB30 1203/1206 1200 BCFG BKN005=
TAF OPKC 110400Z 1106/1212 26010KT 7000 NSC FM111600 02007KT 6000 NSC
TEMPO 1200/1204 05005KT 5000 HZ NSC FM120400 05005G15KT 7000 NSC=
NNNN

Figure I-10

ALTERNATE PLANNING LONG RANGE CRUISE



Simplified Flight Planning – Alternate Distances to 500 NM

Figure I-11

		All Engines					Maximum Cruise Thrust Limits					A/C Auto				
PRESSURE ALTITUDE		35,000 ft					LONG RANGE CRUISE									
GROSS		0	100	200	300	400	500	600	700	800	900					
WT. kg	TAS	CRUISE DISTANCE NAUTICAL AIR MILES														
35000	410	0	23	47	71	95	119	143	167	191	214					
36000	414	238	262	285	309	333	356	380	403	427	450					
37000	417	474	497	521	544	567	590	614	637	660	683					
38000	420	707	730	753	776	798	821	844	867	890	913					
39000	422	936	959	982	1004	1027	1050	1072	1095	1117	1140					
40000	425	1163	1185	1207	1230	1252	1275	1297	1319	1342	1364					
41000	426	1386	1408	1430	1452	1474	1496	1519	1541	1563	1585					
42000	428	1607	1628	1650	1672	1694	1715	1737	1759	1781	1802					
43000	429	1824	1845	1867	1888	1910	1931	1953	1974	1996	2017					
44000	429	2039	2060	2081	2102	2123	2144	2165	2187	2208	2229					
45000	429	2250	2271	2292	2313	2334	2355	2375	2396	2417	2438					
46000	429	2459	2480	2500	2521	2541	2562	2582	2603	2624	2644					
47000	429	2665	2685	2705	2726	2746	2766	2787	2807	2827	2848					
48000	429	2868	2888	2908	2928	2948	2968	2988	3008	3028	3048					
49000	429	3068	3088	3107	3127	3147	3166	3186	3206	3226	3245					
50000	429	3265	3284	3304	3323	3343	3362	3381	3401	3420	3440					
51000	429	3459	3478	3497	3516	3536	3555	3574	3593	3612	3631					
52000	429	3650	3669	3688	3707	3726	3744	3763	3782	3801	3820					
53000	429	3838	3857	3875	3894	3913	3931	3950	3968	3987	4005					
54000	429	4024	4042	4060	4078	4097	4115	4133	4151	4170	4188					
55000	430	4206	4224	4242	4260	4278	4296	4314	4331	4349	4367					
56000	430	4385	4403	4420	4438	4456	4473	4491	4509	4526	4544					
57000	430	4561	4579	4596	4613	4631	4648	4665	4682	4700	4717					
58000	429	4734	4751	4768	4785	4802	4819	4836	4853	4870	4887					
59000	429	4904	4921	4937	4954	4971	4987	5004	5021	5037	5054					
60000	429	5070	5087	5103	5119	5136	5152	5168	5184	5201	5217					
61000	429	5233	5249	5265	5281	5297	5313	5329	5345	5361	5377					
62000	429	5393	5408	5424	5439	5455	5470	5486	5501	5517	5532					
63000	428	5548	5563	5578	5593	5608	5623	5638	5654	5669	5684					
64000	428	5699	5714	5728	5743	5758	5772	5787	5802	5817	5831					
65000	427	5846	5860	5874	5889	5903	5917	5932	5946	5960	5974					

NOTE 1: OPTIMUM WEIGHT FOR PRESSURE ALTITUDE IS 53,000 kg
A) THRUST LIMITED WEIGHT FOR ISA +10 AND COLDER IS 64,500 kg
B) THRUST LIMITED WEIGHT FOR ISA +15 IS 63,100 kg
C) THRUST LIMITED WEIGHT FOR ISA +20 IS 61,600 kg

NOTE 2: ADJUSTMENTS FOR OPERATION AT NON-STANDARD TEMPERATURES
A) INCREASE FUEL REQUIRED BY 0.6 PERCENT PER 10 DEGREES C ABOVE ISA
B) DECREASE FUEL REQUIRED BY 0.6 PERCENT PER 10 DEGREES C BELOW ISA
C) INCREASE TAS BY 1 KNOT PER DEGREE C ABOVE ISA
D) DECREASE TAS BY 1 KNOT PER DEGREE C BELOW ISA

Long Range Cruise – Pressure Altitude 35,000 ft

Figure I-12

GROUND DIST (NM)	AIR DISTANCE (NM)						
	TAIL WIND		WIND COMPONENT (KTS)			HEAD WIND	
	+150	+100	+50	0	-50	-100	-150
10	8	8	9	10	11	13	15
20	15	16	18	20	22	25	29
30	23	25	27	30	34	38	44
40	30	33	36	40	45	51	59
50	38	41	45	50	56	64	74
100	76	82	90	100	112	127	147
200	151	165	181	200	224	254	295
300	227	247	271	300	336	382	442
400	303	330	361	400	448	509	589
500	379	412	452	500	560	636	736
1000	757	824	903	1000	1120	1272	1473
1500	1136	1236	1355	1500	1680	1908	2209
2000	1514	1648	1807	2000	2240	2544	2945
2500	1893	2059	2258	2500	2799	3180	3681
3000	2271	2471	2710	3000	3359	3817	4418
3500	2650	2883	3162	3500	3919	4453	5154
4000	3028	3295	3613	4000	4479	5089	5890
4500	3407	3707	4065	4500	5039	5725	6627
5000	3785	4119	4517	5000	5599	6361	7363
5500	4164	4531	4968	5500	6159	6997	8099
6000	4542	4943	5420	6000	6719	7633	8836
6500	4921	5354	5872	6500	7279	8269	9572
7000	5299	5766	6324	7000	7839	8905	10308
7500	5678	6178	6775	7500	8398	9541	11044
8000	6056	6590	7227	8000	8958	10177	11781
8500	6435	7002	7679	8500	9518	10814	12517
9000	6813	7414	8130	9000	10078	11450	13253
9500	7192	7826	8582	9500	10638	12086	13990
10000	7570	8238	9043	10000	11198	12722	14726

LONG RANGE CRUISE ABOVE FL250

Figure I-13

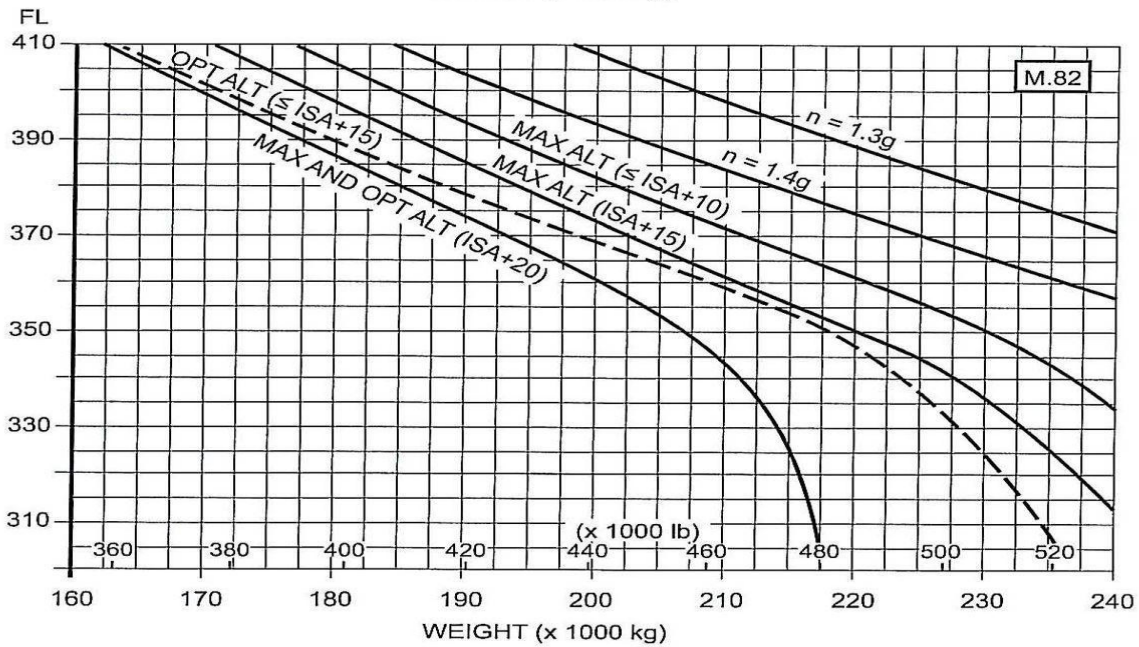
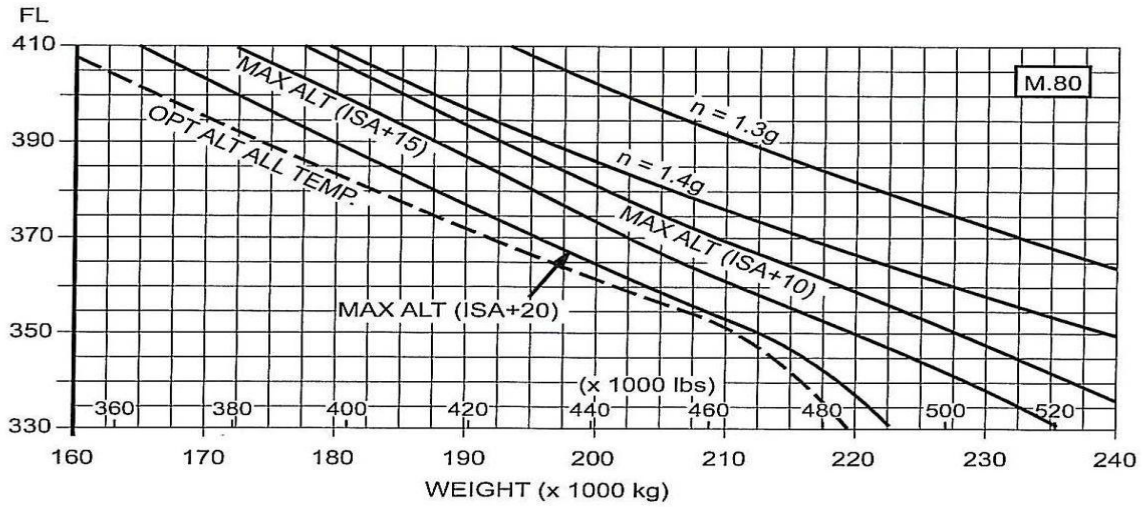
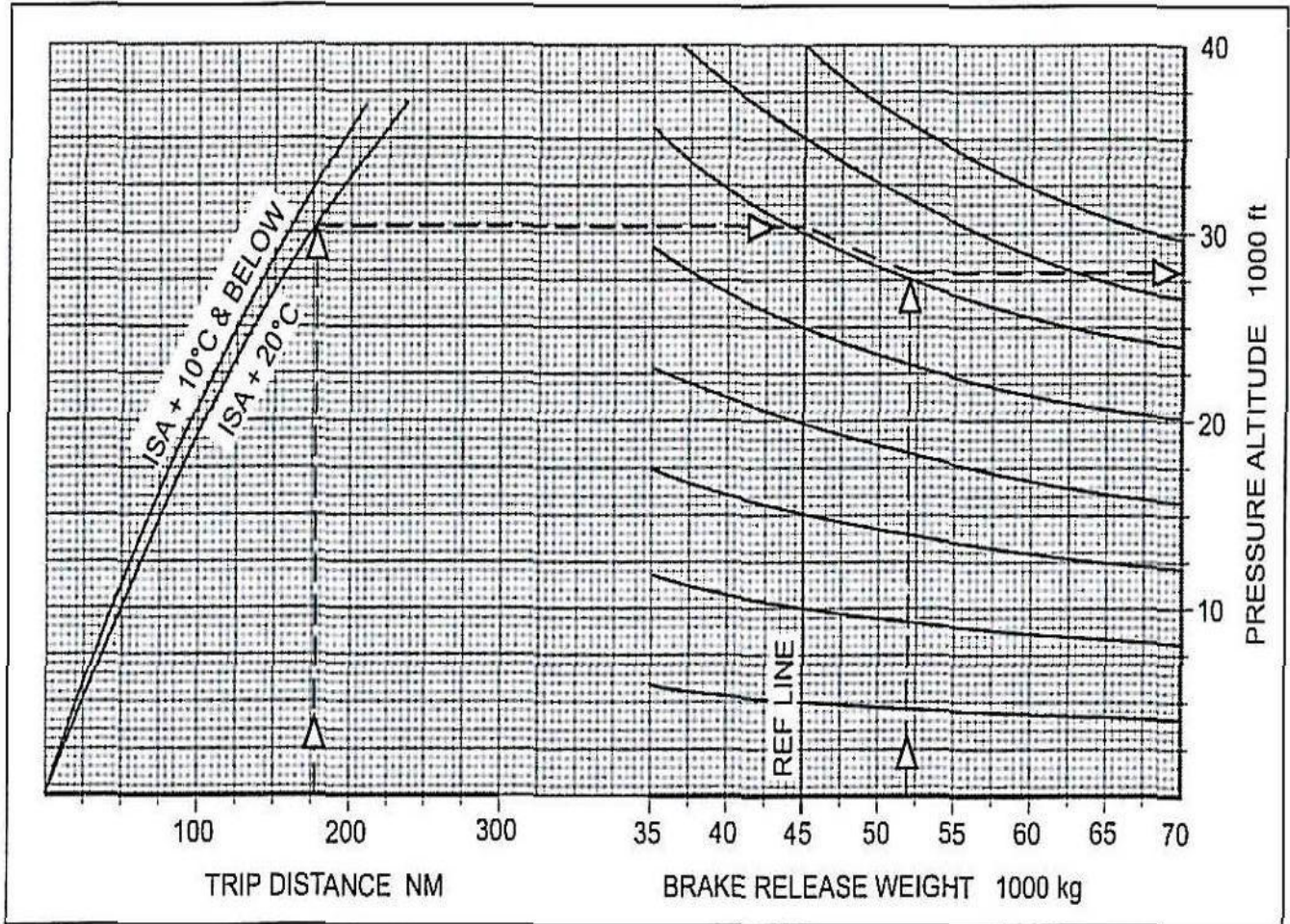


Figure I-14



Short Distance Cruise Altitude

Figure I-15

All Engines		Maximum Cruise Thrust Limits									A/C Auto
PRESSURE ALTITUDE 31,000 ft MACH 0.74 CRUISE TAS 434 kt											
GROSS WT. kg	0	100	200	300	400	500	600	700	800	900	
	CRUISE DISTANCE NAUTICAL AIR MILES										
35000	0	21	42	63	84	105	126	147	168	189	
36000	210	231	252	273	294	315	336	357	378	399	
37000	420	440	461	482	503	524	544	565	586	607	
38000	628	648	669	689	710	731	751	772	793	813	
39000	834	854	875	895	916	936	957	977	998	1018	
40000	1039	1059	1079	1100	1120	1140	1161	1181	1201	1222	
41000	1242	1262	1282	1303	1323	1343	1363	1383	1403	1423	
42000	1444	1464	1484	1504	1524	1544	1564	1584	1604	1624	
43000	1644	1663	1683	1703	1723	1743	1763	1782	1802	1822	
44000	1842	1862	1881	1901	1921	1940	1960	1979	1999	2019	
45000	2038	2058	2077	2097	2116	2136	2155	2175	2194	2214	
46000	2233	2252	2272	2291	2310	2330	2349	2368	2388	2407	
47000	2426	2445	2464	2483	2503	2522	2541	2560	2579	2598	
48000	2617	2636	2655	2674	2693	2712	2731	2750	2769	2788	
49000	2807	2825	2844	2863	2882	2900	2919	2938	2956	2975	
50000	2994	3013	3031	3050	3068	3087	3105	3124	3142	3161	
51000	3179	3198	3216	3235	3253	3271	3290	3308	3326	3345	
52000	3363	3381	3399	3417	3436	3454	3472	3490	3508	3526	
53000	3545	3563	3580	3598	3616	3634	3652	3670	3688	3706	
54000	3724	3742	3760	3777	3795	3813	3831	3848	3866	3884	
55000	3902	3919	3937	3954	3972	3989	4007	4024	4042	4060	
56000	4077	4094	4112	4129	4146	4164	4181	4198	4216	4233	
57000	4251	4268	4285	4302	4319	4336	4353	4370	4388	4405	
58000	4422	4439	4456	4473	4490	4507	4523	4540	4557	4574	
59000	4591	4608	4625	4641	4658	4675	4691	4708	4725	4742	
60000	4758	4775	4791	4808	4824	4841	4857	4874	4890	4907	
61000	4923	4940	4956	4972	4989	5005	5021	5038	5054	5070	
62000	5086	5103	5119	5135	5151	5167	5183	5199	5215	5231	
63000	5247	5263	5279	5295	5311	5327	5343	5358	5374	5390	
64000	5406	5422	5437	5453	5469	5484	5500	5516	5531	5547	
65000	5563	5578	5594	5609	5624	5640	5655	5671	5686	5702	
66000	5717	5732	5748	5763	5778	5793	5809	5824	5839	5854	
67000	5870	5885	5900	5915	5930	5945	5960	5975	5990	6005	

NOTE 1: OPTIMUM WEIGHT FOR PRESSURE ALTITUDE IS 63,500 kg
 A) THRUST LIMITED WEIGHT FOR ISA +10 AND COLDER EXCEEDS STRUCTURAL LIMIT
 B) THRUST LIMITED WEIGHT FOR ISA +15 EXCEEDS STRUCTURAL LIMIT
 C) THRUST LIMITED WEIGHT FOR ISA +20 EXCEEDS STRUCTURAL LIMIT

NOTE 2: ADJUSTMENTS FOR OPERATION AT NON-STANDARD TEMPERATURES
 A) INCREASE FUEL REQUIRED BY 0.6 PERCENT PER 10 DEGREES C ABOVE ISA
 B) DECREASE FUEL REQUIRED BY 0.6 PERCENT PER 10 DEGREES C BELOW ISA
 C) INCREASE TAS BY 1 KNOT PER DEGREE C ABOVE ISA
 D) DECREASE TAS BY 1 KNOT PER DEGREE C BELOW ISA

Mach 0.74 Cruise – Pressure Altitude 31,000 ft

Figure I-16

0.74 M/250 KIAS (Economy) Descent

PRESS. ALT. ft	TIME min	FUEL kg	AIR DISTANCE TRAVELLED NM				
			LANDING WEIGHT kg				
			35,000	45,000	55,000	65,000	75,000
37,000	23	295	98	109	114	114	110
35,000	22	290	94	105	110	110	106
33,000	21	285	89	99	103	103	101
31,000	20	280	83	93	97	98	95
29,000	19	275	78	87	91	91	89
27,000	19	270	73	81	85	85	83
25,000	18	260	68	75	79	79	77
23,000	16	255	63	69	72	73	71
21,000	15	245	58	64	66	67	66
19,000	14	235	53	58	60	61	60
17,000	13	225	48	52	54	55	54
15,000	12	215	43	46	48	49	48
10,000	9	185	30	32	33	34	33
5,000	6	140	18	18	18	18	18
3,700	5	130	14	14	14	14	14

Economy Descent

0.70 M/280/250 KIAS (Turbulence Penetration) Descent

PRESS. ALT. ft	TIME min	FUEL kg	AIR DISTANCE TRAVELLED NM				
			LANDING WEIGHT kg				
			35,000	45,000	55,000	65,000	75,000
37,000	21	280	88	100	107	110	109
35,000	20	275	84	96	102	105	105
33,000	20	275	80	91	98	101	101
31,000	19	270	76	86	93	96	96
29,000	18	265	72	82	88	91	92
27,000	17	260	69	78	84	87	87
25,000	17	255	64	73	78	80	81
23,000	16	250	60	67	72	74	74
21,000	15	240	55	62	66	68	68
19,000	14	230	51	57	60	62	62
17,000	13	225	46	52	55	56	56
15,000	12	215	42	46	49	50	50
10,000	9	185	30	32	33	34	33
5,000	6	140	18	18	18	18	18
3,700	5	130	14	14	14	14	14

Turbulence Penetration Descent

Figure I-17

ISA +6°C TO +15°C

Press. Alt. ft	Units Min/kg. NAM/Kt	BRAKE RELEASE WEIGHT KG										
		68000	66000	64000	62000	60000	58000	56000	52000	48000	44000	40000
37000	Time/Fuel				33/2350	27/2000	24/1850	22/1700	18/1500	16/1300	14/1150	12/1000
	Dist/TAS				212/409	169/404	147/402	132/400	111/397	95/396	82/394	72/393
36000	Time/Fuel			30/2250	26/2000	23/1650	21/1700	20/1600	17/1400	15/1250	13/1100	12/1000
	Dist/TAS			189/405	161/402	143/400	130/398	119/397	102/395	89/393	77/392	68/391
35000	Time/Fuel	35/2600	29/2250	26/2050	23/1900	21/1750	20/1650	19/1550	16/1350	14/1200	13/1100	11/950
	Dist/TAS	224/407	180/402	157/399	141/397	129/396	119/395	110/394	95/392	83/391	73/390	64/389
34000	Time/Fuel	28/2250	25/2050	23/1900	21/1800	20/1650	19/1550	18/1500	16/1300	14/1200	12/1050	11/950
	Dist/TAS	173/400	154/397	140/395	128/394	118/393	110/392	102/391	89/389	78/388	69/387	61/386
33000	Time/Fuel	25/2100	23/1950	21/1800	20/1700	19/1600	18/1500	17/1450	15/1300	13/1150	12/1050	10/900
	Dist/TAS	151/394	138/393	127/391	118/390	109/389	102/388	95/388	84/386	74/385	65/385	58/384
32000	Time/Fuel	23/1950	21/1850	20/1750	19/1650	18/1550	17/1450	16/1400	14/1250	13/1100	11/1000	10/900
	Dist/TAS	136/390	126/389	117/388	109/387	102/386	95/385	89/384	79/383	70/383	62/382	55/381
31000	Time/Fuel	22/1850	20/1750	19/1650	18/1550	17/1500	16/1400	15/1350	13/1200	12/1100	11/1000	10/900
	Dist/TAS	125/386	116/385	108/384	101/383	95/382	89/382	84/381	74/380	66/380	59/379	52/378
30000	Time/Fuel	20/1800	19/1700	18/1600	17/1500	16/1450	15/1350	14/1300	13/1150	12/1050	10/950	9/850
	Dist/TAS	115/382	108/381	101/380	95/379	89/379	84/378	77/378	70/377	62/376	56/376	49/375
29000	Time/Fuel	19/1700	18/1600	17/1550	16/1450	15/1400	14/1300	14/1250	12/1150	11/1000	10/900	9/850
	Dist/TAS	105/376	98/376	92/375	87/374	82/374	77/374	73/373	65/373	58/372	52/372	46/371
28000	Time/Fuel	17/1600	17/1550	16/1450	15/1400	14/1300	13/1250	13/1200	12/1100	10/1000	9/900	8/800
	Dist/TAS	95/371	90/371	84/370	80/370	75/369	71/369	67/369	60/368	54/368	48/367	42/367
27000	Time/Fuel	16/1550	15/1450	15/1400	14/1350	13/1250	13/1200	12/1150	11/1050	10/950	9/850	8/750
	Dist/TAS	87/366	82/366	77/366	73/365	69/365	66/365	62/364	56/364	50/363	44/363	39/363
26000	Time/Fuel	15/1450	15/1400	14/1350	13/1250	13/1200	12/1150	11/1100	10/1000	9/900	8/800	8/750
	Dist/TAS	80/362	75/362	71/361	67/361	64/361	60/360	57/360	51/360	46/359	41/359	37/359
25000	Time/Fuel	14/1400	14/1350	13/1250	12/1200	12/1150	11/1100	11/1050	10/950	9/850	8/800	7/700
	Dist/TAS	73/356	69/357	65/357	62/357	59/367	56/356	53/356	47/356	43/356	38/355	34/355
24000	Time/Fuel	13/1350	13/1250	12/1200	12/1150	11/1100	11/1050	10/1000	9/900	8/850	8/750	7/700
	Dist/TAS	67/354	63/353	60/353	57/353	54/353	51/353	49/352	44/352	39/352	35/352	32/351
23000	Time/Fuel	13/1250	12/1200	11/1150	11/1100	10/1050	10/1000	10/950	9/900	8/800	7/750	7/650
	Dist/TAS	61/350	58/350	55/349	53/349	50/349	47/349	45/349	41/348	37/348	33/348	29/348
22000	Time/Fuel	12/1200	11/1150	11/1100	10/1050	10/1000	9/950	9/950	8/850	8/750	7/700	6/650
	Dist/TAS	56/346	54/346	51/346	48/346	46/345	44/345	42/345	37/345	34/345	30/345	27/344
21000	Time/Fuel	11/1150	11/1100	10/1050	10/1000	9/950	9/950	8/800	8/800	7/750	6/700	6/600
	Dist/TAS	52/343	49/342	47/342	44/342	42/342	40/342	38/342	35/342	31/341	28/341	25/341
20000	Time/Fuel	10/1100	10/1050	10/1000	9/950	9/950	8/900	8/850	7/800	7/700	6/650	6/600
	Dist/TAS	47/339	45/339	43/339	41/339	39/339	37/338	35/338	32/338	29/338	26/338	23/338
19000	Time/Fuel	10/1050	9/1000	9/950	9/950	8/900	8/850	8/800	7/750	6/700	6/600	5/550
	Dist/TAS	43/336	41/336	39/335	37/335	36/335	34/335	32/335	29/335	26/335	24/335	21/335
18000	Time/Fuel	9/1000	9/950	8/900	8/900	8/850	7/800	7/800	7/700	6/650	6/600	5/550
	Dist/TAS	39/332	38/332	36/332	34/332	33/332	31/332	30/332	27/332	24/332	22/332	19/332
17000	Time/Fuel	9/950	8/900	8/900	8/850	7/800	7/750	7/750	6/700	6/600	5/550	5/500
	Dist/TAS	36/329	34/329	33/329	31/329	30/329	28/329	27/329	24/329	22/329	20/329	18/329
16000	Time/Fuel	8/900	8/850	7/850	7/800	7/750	7/750	6/700	6/650	5/600	5/550	4/500
	Dist/TAS	33/326	31/326	30/326	28/326	27/326	26/326	25/326	22/326	20/326	18/326	16/326
15000	Time/Fuel	8/850	7/800	7/800	7/750	6/750	6/700	6/650	5/600	5/550	5/500	4/450
	Dist/TAS	29/323	28/323	27/323	26/323	24/323	23/323	22/323	20/323	18/323	16/323	15/323
14000	Time/Fuel	7/800	7/800	7/750	6/700	6/700	6/650	6/650	5/600	5/550	4/500	4/450
	Dist/TAS	26/321	25/321	24/321	23/320	22/320	21/320	20/320	18/320	17/320	15/320	13/320
13000	Time/Fuel	7/750	6/750	6/700	6/700	6/650	5/650	5/600	5/550	4/500	4/450	4/450
	Dist/TAS	24/318	23/318	22/318	21/318	20/318	19/318	18/318	16/318	15/318	13/318	12/318
12000	Time/Fuel	6/700	6/700	6/650	5/650	5/600	5/600	5/550	5/500	4/500	4/450	4/400
	Dist/TAS	21/315	20/315	19/315	18/315	18/315	17/315	16/315	15/315	13/315	12/315	11/315
11000	Time/Fuel	6/650	5/650	5/600	5/600	5/550	5/550	5/500	4/500	4/450	4/400	3/400
	Dist/TAS	19/313	18/313	17/313	16/313	16/313	15/312	14/312	13/312	12/312	11/312	9/312
10000	Time/Fuel	5/600	5/600	5/600	5/550	5/550	4/500	4/500	4/450	4/450	3/400	3/350
	Dist/TAS	16/310	16/310	15/310	14/310	14/310	13/310	12/310	11/310	10/310	9/310	8/310
8000	Time/Fuel	4/550	4/500	4/500	4/500	4/450	4/450	4/450	3/400	3/350	3/350	3/300
	Dist/TAS	12/305	11/305	11/305	10/305	10/305	10/305	9/305	8/305	8/305	7/305	6/305
6000	Time/Fuel	4/450	4/450	3/400	3/400	3/400	3/400	3/350	3/350	3/300	2/300	2/250
	Dist/TAS	8/301	8/301	7/301	7/301	7/301	6/301	6/301	6/301	5/301	5/301	4/301
1500	Time/Fuel	2/250	2/250	2/250	2/250	2/250	2/250	2/250	2/200	2/200	2/200	1/150

Fuel Adjustment for high elevation airports	Airport Elevation	2000	4000	6000	8000	10000	12000
Effect on time and distance is negligible	Fuel Adjustment	-50	-100	-200	-250	-300	-400

En-route Climb 280/.74

Figure I-18

		All Engines Maximum Cruise Thrust Limits A/C Auto									
PRESSURE ALTITUDE		34,000 ft					LONG RANGE CRUISE				
GROSS		0	100	200	300	400	500	600	700	800	900
WT. kg	TAS	CRUISE DISTANCE NAUTICAL AIR MILES									
35000	405	0	23	46	70	93	117	140	164	187	210
36000	409	234	257	280	303	326	350	373	396	419	442
37000	413	465	488	511	534	557	579	602	625	648	671
38000	416	694	716	739	761	784	806	829	851	874	896
39000	419	919	941	963	986	1008	1030	1053	1075	1097	1119
40000	422	1142	1164	1186	1207	1229	1251	1273	1295	1317	1339
41000	424	1361	1383	1405	1426	1448	1470	1492	1513	1535	1557
42000	427	1578	1600	1621	1643	1664	1685	1707	1728	1750	1771
43000	428	1792	1814	1835	1856	1877	1898	1919	1940	1961	1983
44000	430	2004	2025	2045	2066	2087	2108	2129	2150	2171	2191
45000	431	2212	2233	2253	2274	2295	2315	2336	2356	2377	2398
46000	431	2418	2438	2459	2479	2499	2520	2540	2560	2581	2601
47000	431	2621	2641	2661	2682	2702	2722	2742	2762	2782	2802
48000	431	2822	2842	2862	2881	2901	2921	2941	2960	2980	3000
49000	431	3020	3039	3059	3078	3098	3118	3137	3157	3176	3196
50000	431	3215	3234	3254	3273	3292	3311	3331	3350	3369	3389
51000	431	3408	3427	3446	3465	3484	3503	3522	3541	3560	3579
52000	431	3598	3616	3635	3654	3673	3691	3710	3729	3747	3766
53000	431	3785	3803	3822	3840	3859	3877	3896	3914	3932	3951
54000	431	3969	3987	4006	4024	4042	4060	4078	4096	4115	4133
55000	431	4151	4169	4187	4205	4223	4240	4258	4276	4294	4312
56000	431	4330	4348	4365	4383	4400	4418	4436	4453	4471	4489
57000	431	4506	4524	4541	4558	4576	4593	4610	4628	4645	4662
58000	431	4680	4697	4714	4731	4748	4765	4782	4799	4816	4833
59000	431	4851	4867	4884	4901	4918	4934	4951	4968	4985	5002
60000	431	5018	5035	5051	5068	5084	5101	5117	5134	5150	5167
61000	431	5183	5200	5216	5232	5248	5264	5281	5297	5313	5329
62000	431	5345	5361	5377	5393	5409	5425	5441	5457	5472	5488
63000	431	5504	5520	5535	5551	5566	5582	5598	5613	5629	5644
64000	431	5660	5675	5690	5706	5721	5736	5751	5766	5782	5797
65000	430	5812	5827	5842	5857	5872	5886	5901	5916	5931	5946
66000	430	5961	5975	5990	6004	6019	6033	6048	6062	6077	6091
67000	430	6106	6120	6134	6148	6162	6176	6190	6204	6219	6233

NOTE 1: OPTIMUM WEIGHT FOR PRESSURE ALTITUDE IS 55,500 kg
A) THRUST LIMITED WEIGHT FOR ISA +10 AND COLDER IS 67,100 kg
B) THRUST LIMITED WEIGHT FOR ISA +15 IS 65,700 kg
C) THRUST LIMITED WEIGHT FOR ISA +20 IS 64,000 kg

NOTE 2: ADJUSTMENTS FOR OPERATION AT NON-STANDARD TEMPERATURES
A) INCREASE FUEL REQUIRED BY 0.6 PERCENT PER 10 DEGREES C ABOVE ISA
B) DECREASE FUEL REQUIRED BY 0.6 PERCENT PER 10 DEGREES C BELOW ISA
C) INCREASE TAS BY 1 KNOT PER DEGREE C ABOVE ISA
D) DECREASE TAS BY 1 KNOT PER DEGREE C BELOW ISA

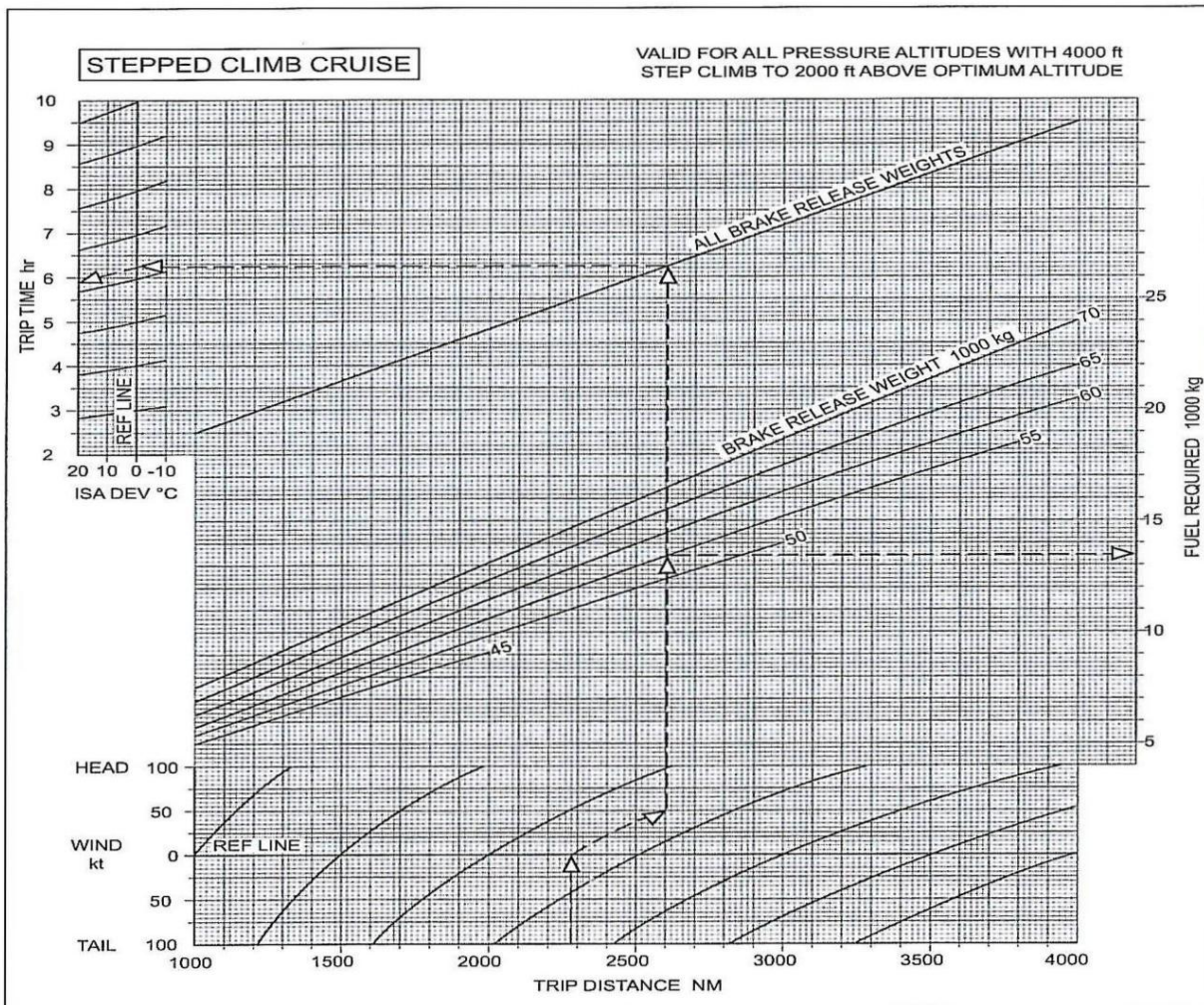
Long Range Cruise – Pressure Altitude 34,000 ft

Figure I-19

Step Climb Simplified Fuel Planning

This chart allows the planner to optimise aeroplane performance by increasing the cruise altitude in 4000 ft steps in order to allow for the increase in optimum altitude as aeroplane weight decreases.

The graph is valid for altitudes with 'Step Climb' of 4,000 ft to 2,000 ft above optimum altitude. The graph provides trip fuel and time, at LRC or 0.74 M, from brake release to touchdown. The method of use is the same as that for the constant altitude charts except that the argument of 'Brake Release Weight' is used in place of 'Cruise Pressure Altitude' - see example on chart.



Simplified Flight Planning – Trip Distances 1,000 NM to 4,000 NM

Figure I-20

ISA -6°C TO -15°C

Press. Alt. ft	Units Min/kg. NAM/Kt	BRAKE RELEASE WEIGHT KG										
		68000	66000	64000	62000	60000	58000	56000	52000	48000	44000	40000
37000	Time/Fuel				30/2100	25/1800	22/1650	20/1550	17/1350	15/1200	13/1050	12/950
	Dist/TAS				184/391	148/387	130/385	117/383	98/381	85/379	73/378	64/377
36000	Time/Fuel			28/2050	24/1800	22/1650	20/1550	19/1450	16/1300	14/1150	13/1100	11/900
	Dist/TAS			166/388	142/385	127/383	115/381	106/380	91/378	79/377	69/376	60/375
35000	Time/Fuel	32/2350	27/2000	24/1850	22/1700	20/1600	19/1500	17/1400	15/1250	13/1100	12/1000	11/900
	Dist/TAS	195/390	156/385	139/383	125/381	114/380	105/378	97/377	85/376	74/375	65/374	57/373
34000	Time/Fuel	26/2000	23/1850	21/1700	20/1600	19/1500	17/1400	16/1350	14/1200	13/1100	11/950	10/850
	Dist/TAS	152/383	136/381	123/379	113/378	105/376	97/375	90/375	79/373	70/372	61/371	54/371
33000	Time/Fuel	23/1850	21/1750	20/1650	19/1550	17/1450	16/1350	15/1300	14/1150	12/1050	11/950	10/850
	Dist/TAS	133/378	121/376	112/375	104/374	97/373	90/372	84/372	74/371	66/370	58/369	51/368
32000	Time/Fuel	21/1750	20/1650	19/1550	17/1500	16/1400	16/1300	15/1250	13/1150	12/1000	11/900	9/800
	Dist/TAS	120/374	111/373	103/372	96/371	90/370	84/369	79/369	70/368	62/367	55/366	48/366
31000	Time/Fuel	20/1700	19/1600	18/1500	17/1400	16/1350	15/1300	14/1200	13/1100	11/1000	10/900	9/800
	Dist/TAS	110/370	102/369	95/368	89/367	84/367	79/366	74/366	66/365	58/364	52/364	46/363
30000	Time/Fuel	19/1600	18/1550	17/1450	16/1350	15/1300	14/1250	13/1200	12/1050	11/950	10/850	9/800
	Dist/TAS	101/366	95/365	89/364	83/364	78/363	74/363	70/362	62/362	55/361	49/361	43/360
29000	Time/Fuel	17/1550	16/1450	16/1400	15/1300	14/1250	13/1200	13/1150	11/1050	10/950	9/850	8/750
	Dist/TAS	92/361	87/360	81/360	77/359	72/359	68/358	64/358	57/357	51/357	46/357	41/356
28000	Time/Fuel	16/1450	15/1400	15/1300	14/1250	13/1200	13/1150	12/1100	11/1000	10/900	9/800	8/750
	Dist/TAS	84/356	79/356	75/355	70/355	67/355	63/354	59/354	53/353	48/353	42/353	38/352
27000	Time/Fuel	15/1400	14/1350	14/1250	13/1200	12/1150	12/1100	11/1050	10/950	9/850	8/800	8/700
	Dist/TAS	77/352	73/351	69/351	65/351	61/350	58/350	55/350	49/349	44/349	39/349	35/348
26000	Time/Fuel	14/1350	14/1250	13/1200	12/1150	12/1100	11/1050	11/1000	10/900	9/850	8/750	7/700
	Dist/TAS	71/348	67/347	63/347	60/347	57/347	54/346	51/346	46/346	41/345	37/345	33/345
25000	Time/Fuel	13/1300	13/1200	12/1150	12/1100	11/1050	11/1000	10/950	9/900	8/800	8/750	7/650
	Dist/TAS	65/344	61/343	58/343	55/343	52/343	50/343	47/342	42/342	38/342	34/342	30/341
24000	Time/Fuel	13/1200	12/1150	11/1100	11/1050	10/1000	10/950	10/900	9/850	8/750	7/700	6/650
	Dist/TAS	60/340	56/340	54/340	51/339	48/339	46/339	43/339	39/339	35/338	32/338	28/338
23000	Time/Fuel	12/1150	11/1100	11/1050	10/1000	10/1000	9/950	9/900	8/800	7/750	7/700	6/600
	Dist/TAS	55/336	52/336	49/336	47/336	44/336	42/335	40/335	36/335	33/335	29/335	26/335
22000	Time/Fuel	11/1100	11/1050	10/1000	10/1000	9/950	9/900	9/850	8/800	7/700	6/650	6/600
	Dist/TAS	50/333	48/333	45/333	43/332	41/332	39/332	37/332	33/332	30/332	27/332	24/331
21000	Time/Fuel	10/1050	10/1000	10/1000	9/950	9/900	8/850	8/800	7/750	7/700	6/650	6/550
	Dist/TAS	46/330	44/329	42/329	40/329	38/329	36/329	34/329	31/329	28/328	25/328	22/328
20000	Time/Fuel	10/1000	9/950	9/950	9/900	8/850	8/800	8/800	7/700	6/650	6/600	5/550
	Dist/TAS	42/326	40/326	38/326	36/326	35/326	33/326	31/326	28/326	26/325	23/325	21/325
19000	Time/fuel	9/950	9/950	8/900	8/850	8/800	7/800	7/750	7/700	6/650	6/600	5/500
	Dist/TAS	39/323	37/323	35/323	33/323	32/323	30/323	29/323	26/323	24/322	21/322	19/322
18000	Time/Fuel	9/900	8/900	8/850	8/800	7/800	7/750	7/700	6/650	6/600	5/550	5/500
	Dist/TAS	35/320	34/320	32/320	31/320	29/320	28/320	26/320	24/320	22/320	19/319	17/319
17000	Time/Fuel	8/900	8/850	8/800	7/800	7/750	7/700	6/700	6/650	5/600	5/550	5/500
	Dist/TAS	32/317	31/317	29/317	28/317	27/317	25/317	24/317	22/317	20/317	18/317	16/317
16000	Time/Fuel	8/850	7/800	7/750	7/700	7/700	6/700	6/650	6/600	5/550	5/500	4/450
	Dist/TAS	29/314	28/314	27/314	25/314	24/314	23/314	22/314	20/314	18/314	16/314	15/314
15000	Time/Fuel	7/800	7/750	7/700	6/700	6/700	6/650	6/600	5/550	5/500	4/500	4/450
	Dist/TAS	26/312	25/312	24/312	23/311	22/311	21/311	20/311	18/311	16/311	15/311	13/311
14000	Time/Fuel	7/750	6/700	6/700	6/650	6/600	6/600	5/600	5/550	5/500	4/450	4/400
	Dist/TAS	24/309	23/309	22/309	21/309	20/309	19/309	18/309	16/309	15/309	13/309	12/309
13000	Time/Fuel	6/700	6/700	6/650	6/600	5/600	5/600	5/550	5/500	4/500	4/450	4/400
	Dist/TAS	21/306	20/306	19/306	19/306	18/306	17/306	16/306	15/306	13/306	12/306	11/306
12000	Time/Fuel	6/650	6/600	5/600	5/600	5/600	5/550	5/550	4/500	4/450	4/400	3/400
	Dist/TAS	19/304	18/304	17/304	17/304	16/304	15/304	14/304	13/304	12/304	11/304	10/304
11000	Time/Fuel	5/650	5/600	5/600	5/550	5/550	5/500	4/500	4/450	4/450	3/400	3/350
	Dist/TAS	17/301	16/301	15/301	15/301	14/301	13/301	13/301	12/301	11/301	10/301	9/301
10000	Time/Fuel	5/600	5/550	5/550	5/500	4/500	4/500	4/500	4/450	4/400	3/350	3/350
	Dist/TAS	15/299	14/299	13/299	13/299	12/299	12/299	11/299	10/299	9/299	8/299	7/299
8000	Time/Fuel	4/500	4/500	4/500	4/450	4/450	4/450	3/400	3/400	3/350	3/350	3/300
	Dist/TAS	11/294	10/294	10/294	9/294	9/294	8/294	8/294	7/294	7/294	6/294	6/294
6000	Time/Fuel	4/450	3/400	3/400	3/400	3/400	3/350	3/350	3/350	3/300	2/300	2/250
	Dist/TAS	7/290	7/290	6/290	6/290	6/290	6/290	5/290	5/290	5/290	4/290	4/290
1500	Time/Fuel	2/250	2/250	2/250	2/250	2/250	2/250	2/250	2/200	2/200	2/200	1/150

Fuel Adjustment for high elevation airports	Airport Elevation	2000	4000	6000	8000	10000	12000
Effect on time and distance is negligible	Fuel Adjustment	-50	-100	-150	-250	-300	-350

En-route Climb 280/.74

Figure I-21

ISA +16°C TO +25°C

Press. Alt. ft	Units Min/kg. NAM/Kt	BRAKE RELEASE WEIGHT KG										
		68000	66000	64000	62000	60000	58000	56000	52000	48000	44000	40000
37000	Time/Fuel					37/2550	31/2150	27/1950	22/1650	19/1450	17/1300	15/1150
	Dist/TAS					246/417	198/413	172/410	140/407	118/405	101/403	88/402
36000	Time/Fuel				35/2450	30/2200	27/2000	24/1850	21/1600	18/1400	16/1250	14/1100
	Dist/TAS				227/414	192/411	170/408	153/406	128/404	110/402	95/400	82/399
35000	Time/Fuel		42/2950	34/2500	30/2200	27/2050	25/1900	23/1750	20/1550	17/1350	15/1200	13/1050
	Dist/TAS		281/418	220/412	190/409	169/406	153/405	140/403	119/401	103/399	90/398	78/397
34000	Time/Fuel	40/2850	34/2500	30/2250	27/2100	25/1950	23/1800	21/1700	19/1500	16/1300	14/1150	13/1050
	Dist/TAS	260/414	215/409	188/406	169/404	153/403	141/401	130/400	112/398	97/397	85/396	74/395
33000	Time/Fuel	33/2500	30/2300	27/2100	25/1950	23/1850	21/1700	20/1600	18/1450	16/1300	14/1150	12/1000
	Dist/TAS	210/407	186/404	168/402	153/400	141/399	130/398	121/397	105/395	92/394	80/393	70/392
32000	Time/Fuel	30/2350	27/2150	25/2000	23/1900	22/1750	20/1650	19/1550	17/1400	15/1250	13/1100	12/1000
	Dist/TAS	185/401	167/399	153/398	141/396	130/395	121/394	113/394	98/392	86/391	76/390	67/389
31000	Time/Fuel	27/2200	25/2050	23/1900	22/1800	20/1700	19/1600	18/1500	16/1350	14/1200	13/1100	11/950
	Dist/TAS	166/396	152/395	141/394	130/393	121/392	113/391	106/390	93/389	82/388	72/387	63/387
30000	Time/Fuel	25/2100	24/1950	22/1850	21/1750	19/1650	18/1550	17/1450	15/1300	14/1150	12/1050	11/950
	Dist/TAS	152/392	140/391	130/389	121/389	113/388	106/387	99/387	87/385	77/385	68/384	60/383
29000	Time/Fuel	23/1950	22/1850	20/1750	19/1650	18/1550	17/1450	16/1400	14/1250	13/1100	12/1000	10/900
	Dist/TAS	136/386	126/385	118/384	110/383	106/383	97/382	91/382	80/381	71/380	63/379	56/379
28000	Time/Fuel	21/1850	20/1750	19/1650	18/1550	17/1500	16/1400	15/1350	14/1200	12/1100	11/950	10/850
	Dist/TAS	123/380	114/379	107/379	100/378	94/378	89/377	83/377	74/376	66/375	58/375	52/375
27000	Time/Fuel	20/1750	19/1650	18/1550	17/1500	16/1400	15/1350	14/1250	13/1150	11/1050	10/950	9/850
	Dist/TAS	111/375	104/374	98/374	92/373	86/373	81/372	77/372	68/371	61/371	54/371	48/370
26000	Time/Fuel	18/1650	17/1550	16/1500	16/1400	15/1350	14/1300	13/1200	12/1100	11/1000	10/900	9/800
	Dist/TAS	101/370	95/370	89/369	84/369	79/368	75/368	70/368	63/367	56/367	50/366	44/366
25000	Time/Fuel	17/1550	16/1500	15/1400	15/1350	14/1300	13/1200	13/1150	11/1050	10/950	9/850	8/750
	Dist/TAS	92/365	86/365	81/365	77/364	73/364	69/364	65/363	58/363	52/363	46/362	41/362
24000	Time/Fuel	16/1500	15/1400	14/1350	14/1300	13/1200	12/1150	12/1100	11/1000	10/900	9/850	8/750
	Dist/TAS	84/361	79/361	75/360	70/360	67/360	63/360	60/359	53/359	48/359	43/358	38/358
23000	Time/Fuel	15/1400	14/1350	13/1300	13/1250	12/1150	12/1100	11/1050	10/950	9/900	8/800	7/700
	Dist/TAS	77/357	72/357	68/356	65/356	61/356	58/356	55/356	49/355	44/355	39/355	35/355
22000	Time/Fuel	14/1350	13/1300	13/1250	12/1150	11/1100	11/1050	10/1000	9/900	8/850	7/750	7/700
	Dist/TAS	70/353	66/353	63/352	59/352	56/352	53/352	50/352	45/351	41/351	36/351	32/351
21000	Time/Fuel	13/1300	12/1200	12/1150	11/1100	11/1050	10/1000	10/950	9/900	8/800	7/750	7/650
	Dist/TAS	64/349	60/349	57/349	54/349	52/348	49/348	46/348	42/348	37/348	34/348	30/347
20000	Time/Fuel	12/1200	12/1150	11/1100	11/1050	10/1000	10/950	9/950	8/850	8/750	7/700	6/650
	Dist/TAS	58/345	55/345	52/345	50/345	47/345	45/345	43/345	38/344	34/344	31/344	28/344
19000	Time/Fuel	11/1150	11/1100	10/1050	10/1000	9/950	9/900	9/900	8/800	7/750	7/650	6/600
	Dist/TAS	53/342	50/342	48/342	45/342	43/342	41/341	39/341	35/341	32/341	28/341	25/341
18000	Time/Fuel	11/1100	10/1050	10/1000	9/950	9/900	9/900	8/850	7/750	7/700	6/650	6/600
	Dist/TAS	48/339	46/339	44/338	42/338	39/338	38/338	36/338	32/338	29/338	26/338	23/338
17000	Time/Fuel	10/1050	10/1000	9/950	9/900	8/850	8/850	8/800	7/750	6/650	6/600	5/550
	Dist/TAS	44/335	42/335	40/335	38/335	36/335	34/335	33/335	29/335	27/335	24/335	21/335
16000	Time/Fuel	9/1000	9/950	9/900	8/850	8/850	7/800	7/750	7/700	6/650	5/600	5/550
	Dist/TAS	40/332	38/332	36/332	34/332	33/332	31/332	30/332	27/332	24/332	22/332	19/332
15000	Time/Fuel	9/950	8/900	8/850	8/800	7/800	7/750	7/700	6/650	6/600	5/550	5/500
	Dist/TAS	36/329	34/329	33/329	31/329	30/329	28/329	27/329	24/329	22/329	20/329	18/329
14000	Time/Fuel	8/850	8/650	7/800	7/750	7/700	6/700	6/650	5/550	5/500	5/500	4/500
	Dist/TAS	32/326	31/326	29/326	28/326	27/326	25/326	24/326	22/326	20/326	18/326	16/326
13000	Time/Fuel	7/800	7/800	7/750	7/750	6/700	6/650	6/650	5/600	5/550	5/500	4/450
	Dist/TAS	29/323	28/323	26/323	25/323	24/323	23/323	22/323	20/323	18/323	16/323	14/323
12000	Time/Fuel	7/750	7/750	6/700	6/700	6/650	6/650	5/600	5/550	5/500	4/450	4/450
	Dist/TAS	26/321	25/321	23/321	22/321	21/321	20/321	19/321	18/321	16/320	14/320	13/320
11000	Time/Fuel	6/700	6/700	6/650	6/650	5/600	5/600	5/550	5/500	4/500	4/450	4/400
	Dist/TAS	23/318	22/318	21/318	20/318	19/318	18/318	17/318	16/318	14/318	13/318	11/318
10000	Time/Fuel	6/650	6/650	5/600	5/600	5/550	5/550	5/550	4/500	4/450	4/400	3/400
	Dist/TAS	20/315	19/315	18/315	17/315	16/315	16/315	15/315	14/315	12/315	11/315	10/315
8000	Time/Fuel	5/550	5/550	5/550	4/500	4/500	4/500	4/450	4/400	3/400	3/350	3/350
	Dist/TAS	14/310	14/310	13/310	13/310	12/310	11/310	11/310	10/310	9/310	8/310	7/310
6000	Time/Fuel	4/450	4/450	4/450	4/450	3/400	3/400	3/400	3/350	3/350	3/300	2/300
	Dist/TAS	10/306	9/306	9/306	8/306	8/306	8/306	7/306	7/306	6/306	5/306	5/306
1500	Time/Fuel	2/250	2/250	2/250	2/250	2/250	2/250	2/250	2/200	2/200	1/150	1/150

Fuel Adjustment for high elevation airports	Airport Elevation	2000	4000	6000	8000	10000	12000
Effect on time and distance is negligible	Fuel Adjustment	-50	-150	-200	-300	-350	-400

En-route Climb 280/.74

Figure I-22

Holding Fuel Planning

The table below provides fuel flow values for various hold entry weights and holding pressure altitudes to facilitate the calculation of the holding reserve fuel requirements for flight planning.

Calculation Procedure

- Enter Figure 4.4 with the Pressure Altitude at which the hold is planned and the weight at the start of the hold, interpolating as required.
- Extract the holding fuel flow in kg per hour.
- The fuel flow is based on a racetrack pattern at the minimum drag KIAS. The minimum speed that is permitted to be flown is 210 KIAS.
- If the hold is to be conducted in straight and level flight, reduce the fuel flow by 5%.

Press Alt. ft	Weight x 1,000 kg														
	66	64	62	60	58	56	54	52	50	48	46	44	42	40	38
FUEL FLOW in kg per hour															
37,000					2,740	2,540	2,400	2,260	2,160	2,080	1,980	1,900	1,800	1,740	1,680
35,000		3,020	2,820	2,660	2,520	2,420	2,320	2,220	2,140	2,060	1,960	1,880	1,800	1,720	1,660
30,000	2,840	2,740	2,660	2,560	2,480	2,400	2,300	2,220	2,140	2,060	1,960	1,880	1,800	1,740	1,680
25,000	2,840	2,760	2,660	2,580	2,500	2,420	2,320	2,240	2,160	2,080	2,000	1,920	1,840	1,780	1,720
20,000	2,840	2,760	2,680	2,580	2,500	2,420	2,340	2,260	2,180	2,100	2,020	1,940	1,860	1,800	1,760
15,000	2,880	2,800	2,700	2,620	2,540	2,460	2,380	2,300	2,220	2,140	2,060	1,980	1,920	1,860	1,800
10,000	2,920	2,820	2,740	2,660	2,580	2,500	2,420	2,340	2,260	2,180	2,100	2,020	1,980	1,920	1,880
5,000	2,960	2,860	2,780	2,700	2,620	2,540	2,460	2,380	2,300	2,220	2,140	2,080	2,020	1,960	1,920
1,500	3,000	2,900	2,820	2,740	2,660	2,580	2,520	2,440	2,360	2,280	2,220	2,140	2,080	2,020	1,980

Holding Fuel Flow – Flaps Retracted

Figure I-23

All Engines		Maximum Cruise Thrust Limits										A/C Auto
PRESSURE ALTITUDE		28,000 ft					LONG RANGE CRUISE					
GROSS WT. kg	TAS	0	100	200	300	400	500	600	700	800	900	
	CRUISE DISTANCE NAUTICAL AIR MILES											
35000	376	0	20	41	62	83	104	125	145	166	187	
36000	380	208	229	249	270	290	311	332	352	373	393	
37000	384	414	434	455	475	495	516	536	557	577	597	
38000	388	618	638	658	678	698	718	738	759	779	799	
39000	392	819	839	859	879	898	918	938	958	978	998	
40000	396	1018	1037	1057	1077	1096	1116	1136	1155	1175	1195	
41000	399	1214	1234	1253	1273	1292	1312	1331	1350	1370	1389	
42000	403	1409	1428	1447	1466	1486	1505	1524	1543	1563	1582	
43000	406	1601	1620	1639	1658	1677	1696	1715	1734	1753	1772	
44000	409	1791	1810	1829	1848	1866	1885	1904	1923	1942	1960	
45000	413	1979	1998	2016	2035	2054	2072	2091	2109	2128	2147	
46000	416	2165	2184	2202	2220	2239	2257	2275	2294	2312	2331	
47000	419	2349	2367	2385	2404	2422	2440	2458	2476	2495	2513	
48000	422	2531	2549	2567	2585	2603	2621	2639	2657	2675	2693	
49000	425	2711	2729	2747	2764	2782	2800	2818	2836	2853	2871	
50000	427	2889	2907	2924	2942	2960	2977	2995	3013	3030	3048	
51000	429	3065	3083	3100	3118	3135	3153	3170	3188	3205	3222	
52000	432	3240	3257	3274	3292	3309	3326	3344	3361	3378	3395	
53000	434	3413	3430	3447	3464	3481	3498	3515	3532	3549	3567	
54000	436	3584	3601	3617	3634	3651	3668	3685	3702	3719	3736	
55000	437	3753	3770	3786	3803	3820	3837	3853	3870	3887	3904	
56000	439	3920	3937	3953	3970	3987	4003	4020	4036	4053	4069	
57000	440	4086	4102	4119	4135	4152	4168	4184	4201	4217	4234	
58000	441	4250	4266	4282	4299	4315	4331	4347	4364	4380	4396	
59000	442	4412	4428	4444	4460	4476	4492	4509	4525	4541	4557	
60000	442	4573	4589	4605	4620	4636	4652	4668	4684	4700	4716	
61000	442	4732	4747	4763	4779	4795	4810	4826	4842	4858	4873	
62000	442	4889	4905	4920	4936	4951	4967	4983	4998	5014	5029	
63000	443	5045	5060	5076	5091	5106	5122	5137	5153	5168	5184	
64000	443	5199	5214	5229	5245	5260	5275	5290	5306	5321	5336	
65000	443	5351	5367	5382	5397	5412	5427	5442	5457	5472	5487	
66000	443	5502	5517	5532	5547	5562	5577	5592	5607	5622	5637	
67000	443	5652	5666	5681	5696	5711	5725	5740	5755	5770	5784	

NOTE 1: OPTIMUM WEIGHT FOR PRESSURE ALTITUDE EXCEEDS STRUCTURAL LIMIT
A) THRUST LIMITED WEIGHT FOR ISA +10 AND COLDER EXCEEDS STRUCTURAL LIMIT
B) THRUST LIMITED WEIGHT FOR ISA +15 EXCEEDS STRUCTURAL LIMIT
C) THRUST LIMITED WEIGHT FOR ISA +20 EXCEEDS STRUCTURAL LIMIT

NOTE 2: ADJUSTMENTS FOR OPERATION AT NON-STANDARD TEMPERATURES
A) INCREASE FUEL REQUIRED BY 0.6 PERCENT PER 10 DEGREES C ABOVE ISA
B) DECREASE FUEL REQUIRED BY 0.6 PERCENT PER 10 DEGREES C BELOW ISA
C) INCREASE TAS BY 1 KNOT PER DEGREE C ABOVE ISA
D) DECREASE TAS BY 1 KNOT PER DEGREE C BELOW ISA

Long Range Cruise – Pressure Altitude 28,000 ft

Figure I-24

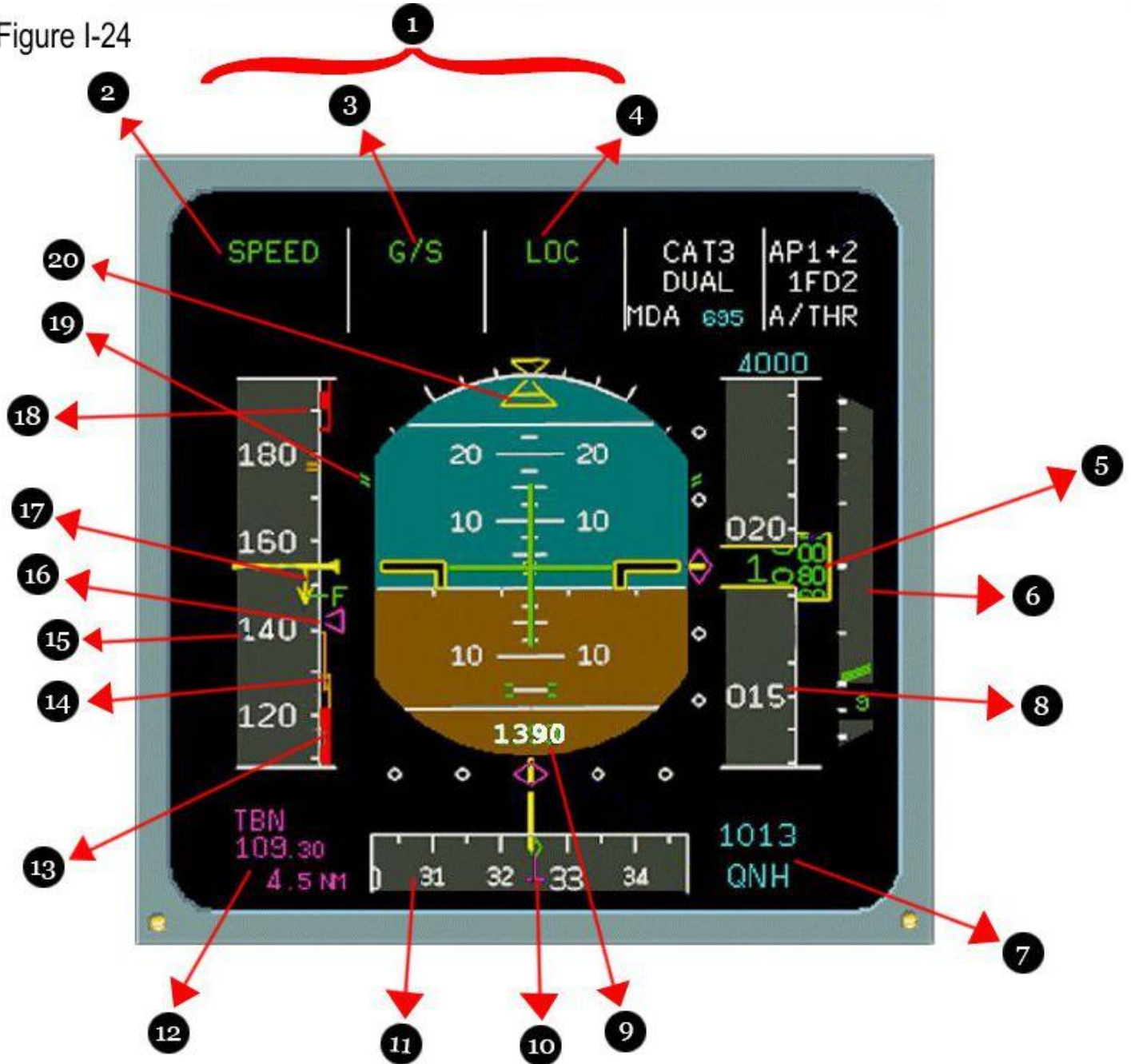
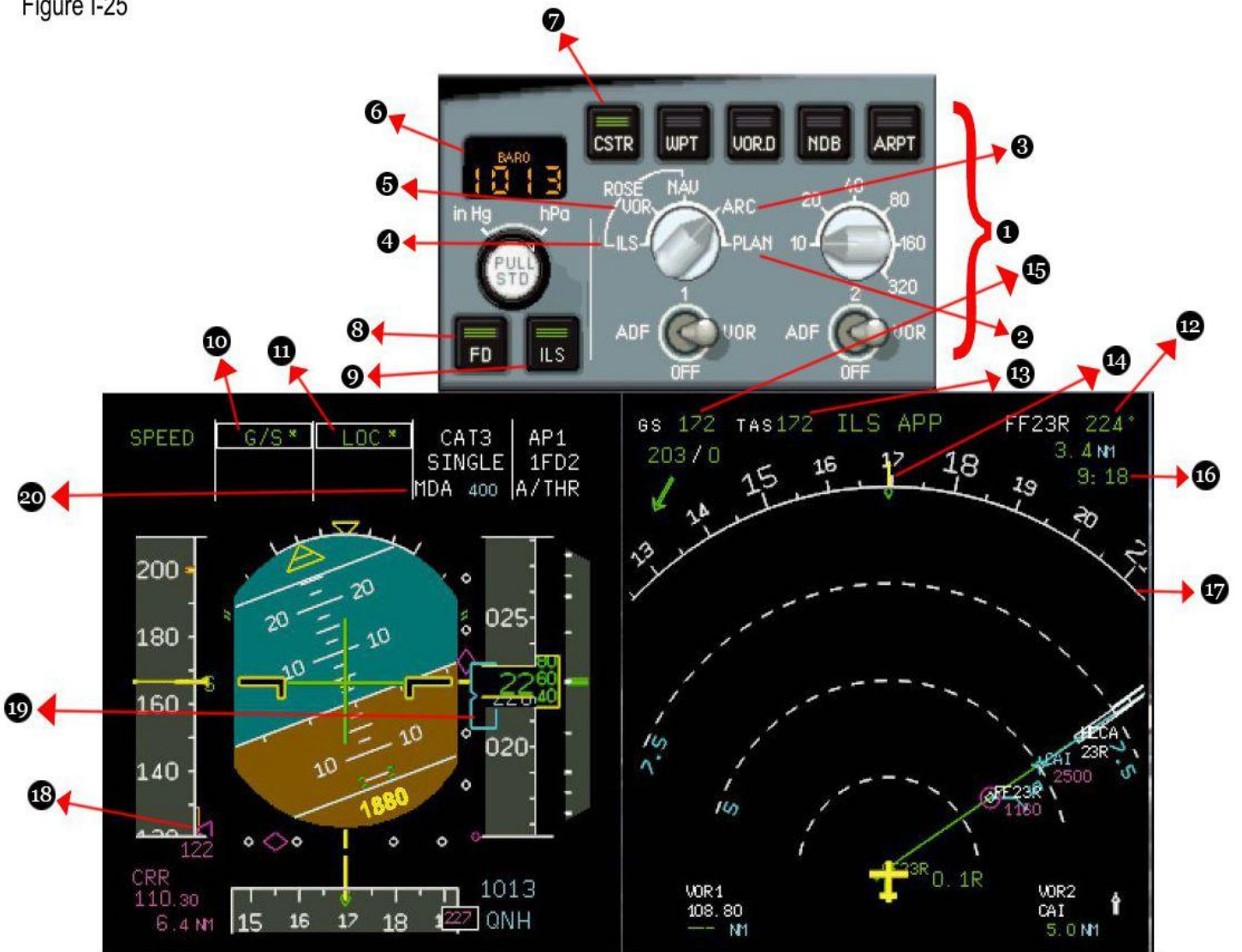
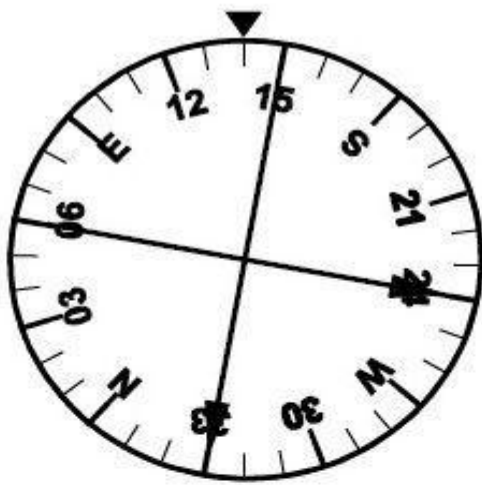
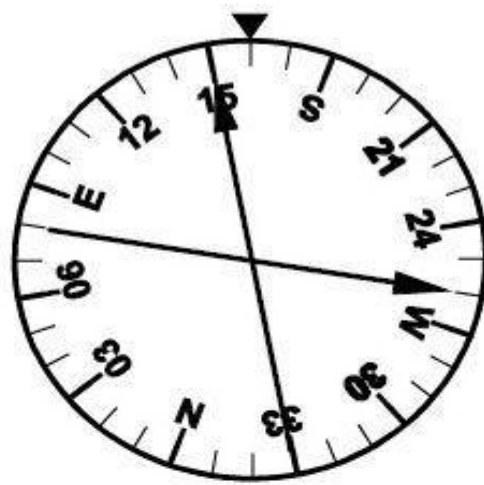


Figure I-25

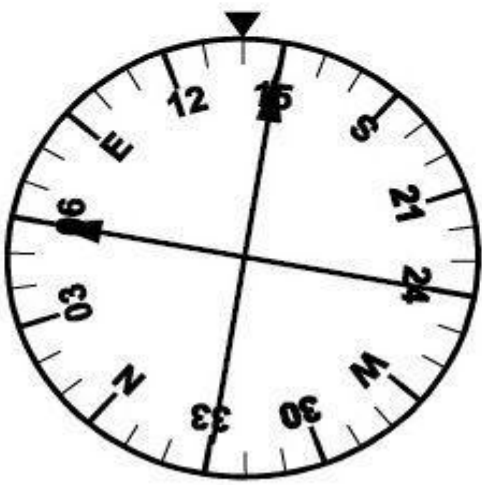




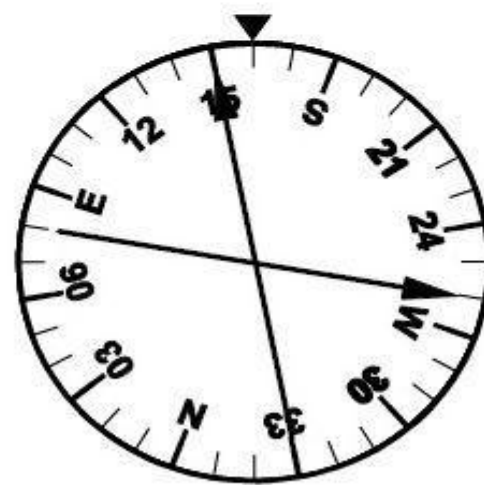
a



b



c



d

Figure I-26

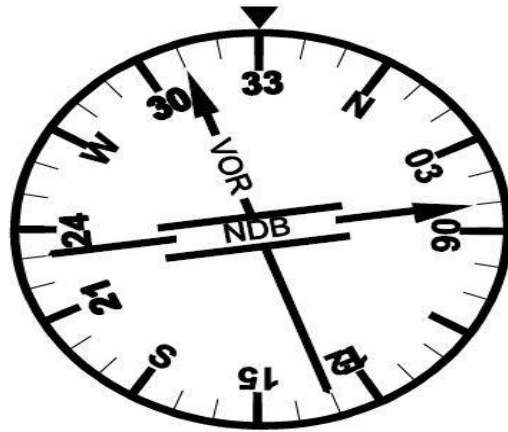
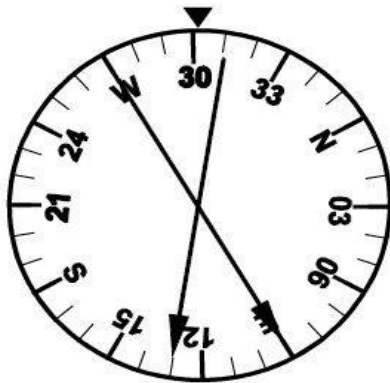
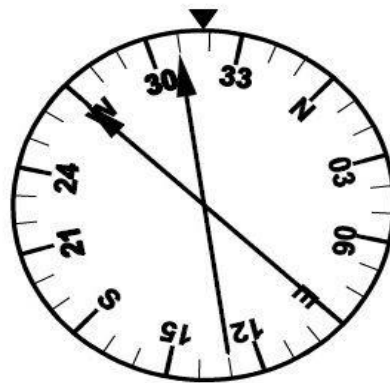


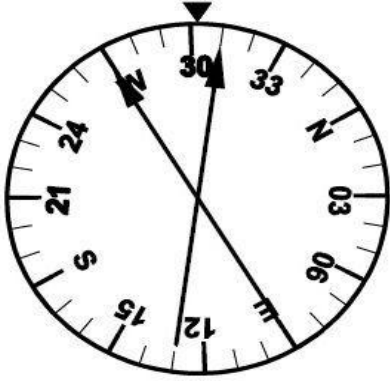
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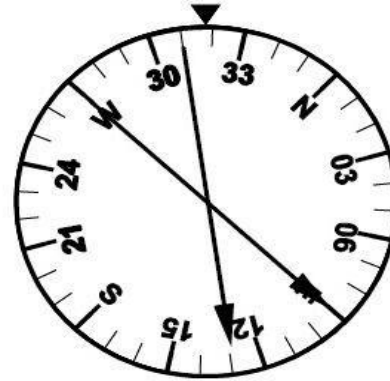
a



b



c



d

Figure I-28

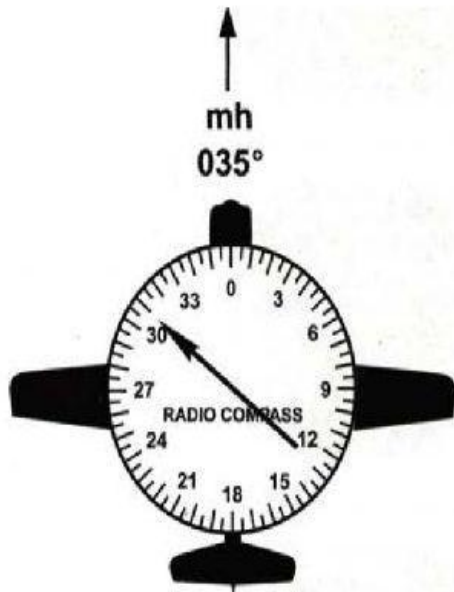


Figure I-29

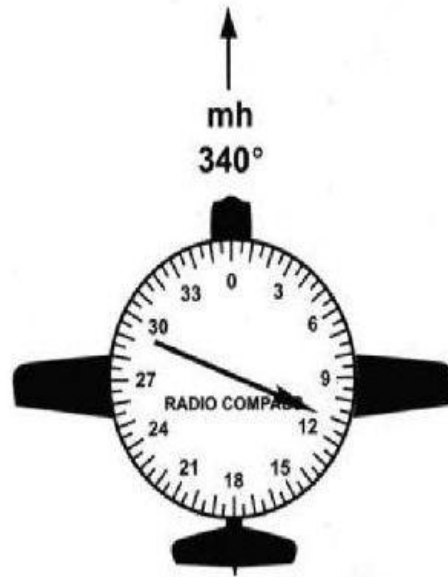


Figure I-30

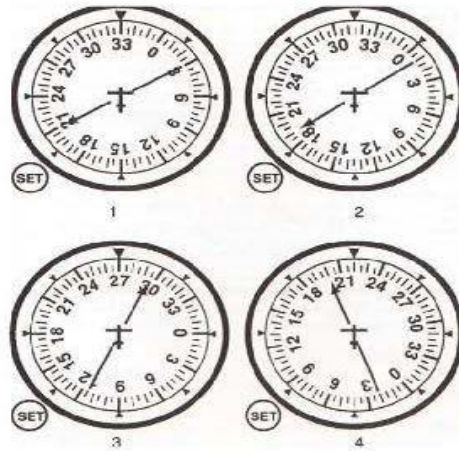


Figure I-31

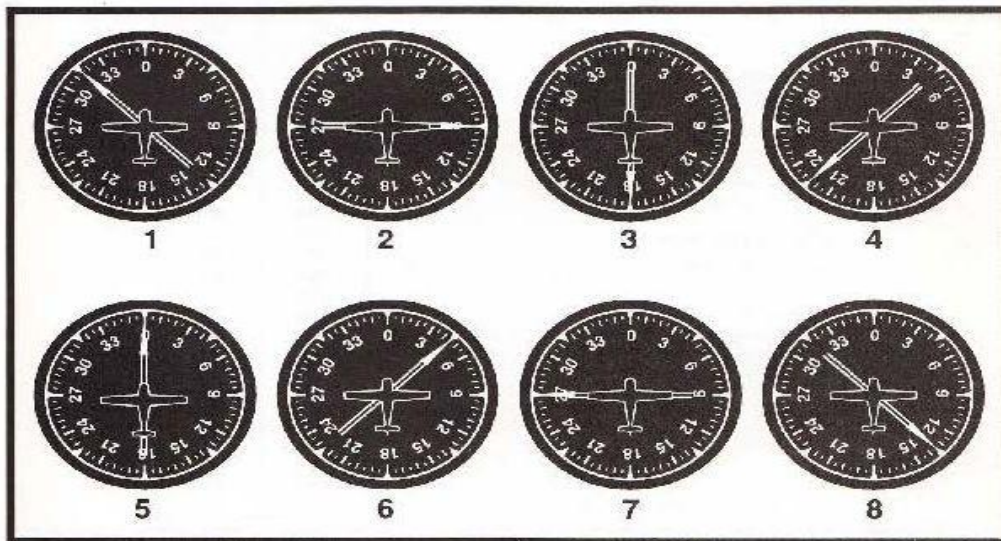


Figure I-32

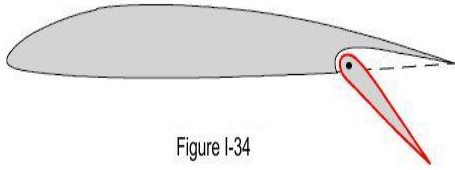


Figure I-34

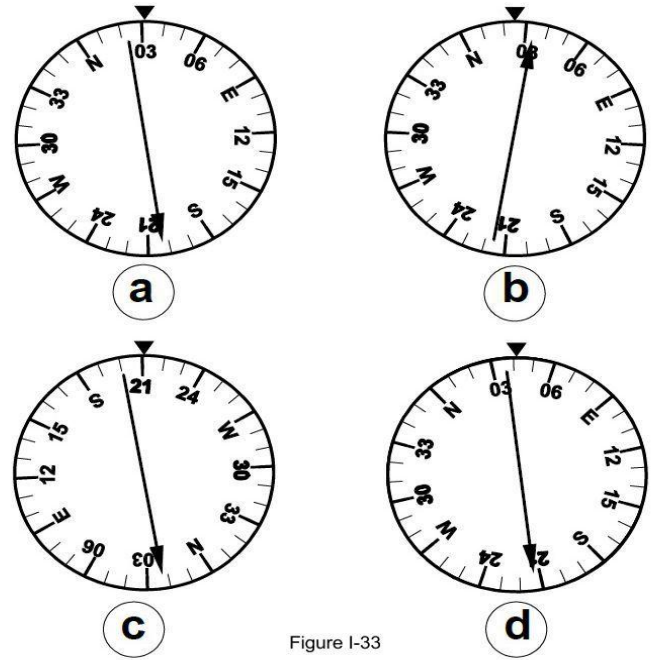
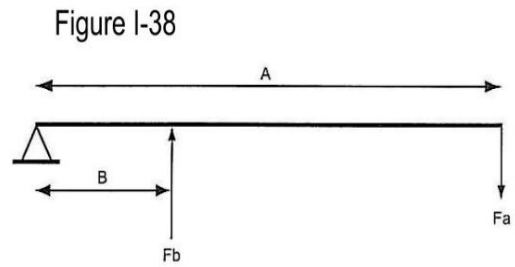
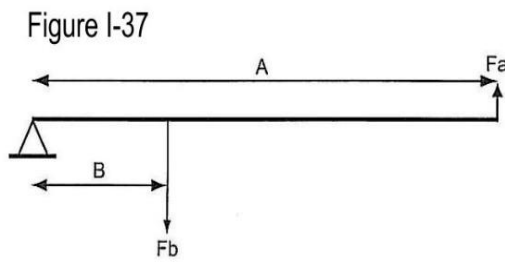
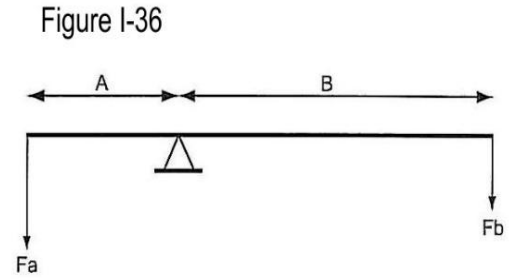
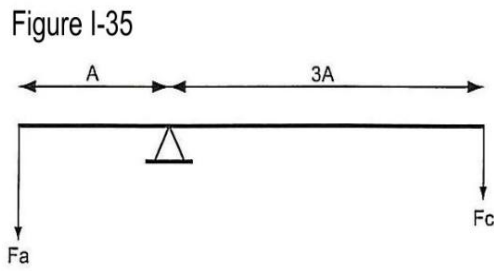


Figure I-33



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