Civil Aviation Organization
Commercial Pilot Written Exam

Jul 2017

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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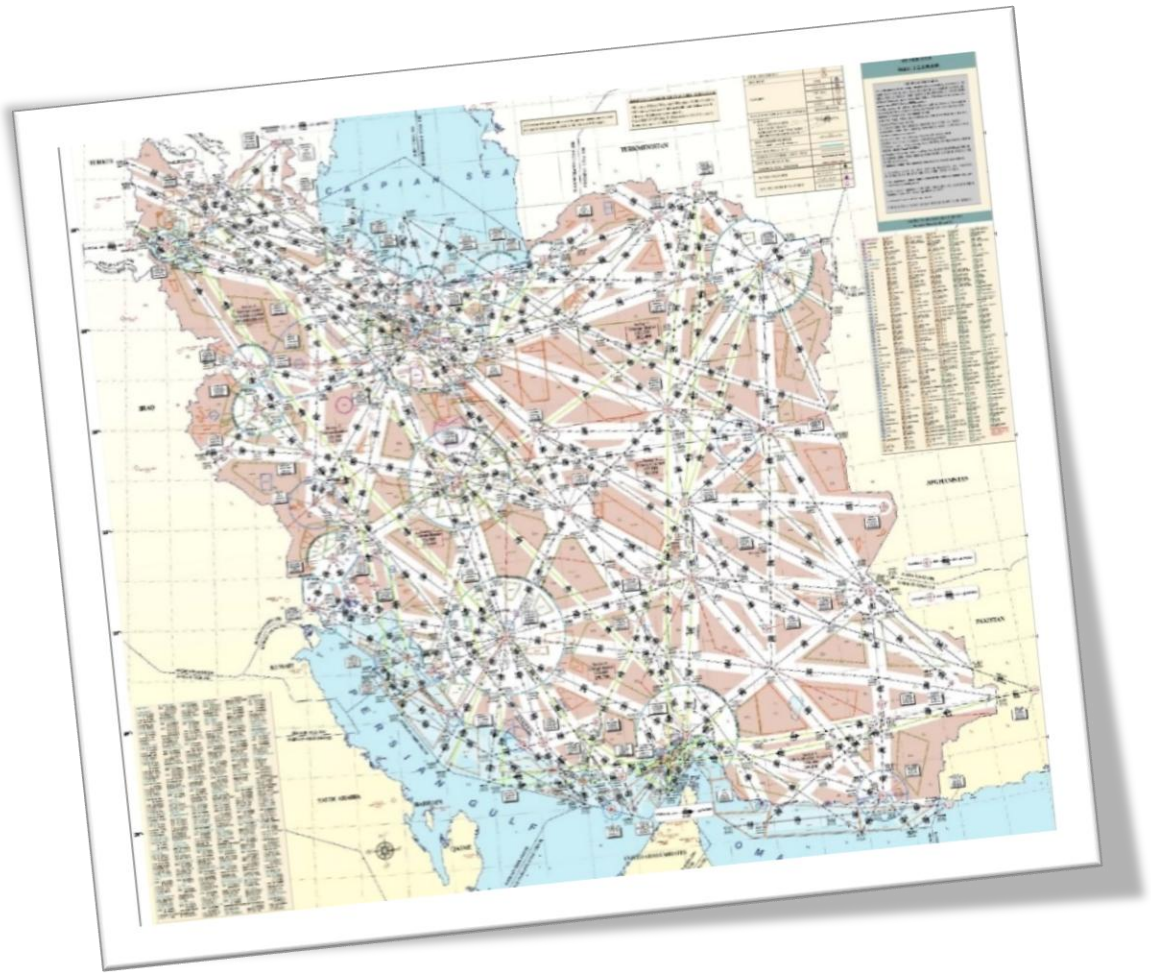
Aeronautical Information Publication



IRAN AIP AIRAC 3 - 2016

1- What is the acronym of “PCN”?
A) Pavement classification number
B) Pavement coefficient number
C) Pre-departure clearance notification
D) Performance communication navigation

2- Which of the following charts are published by IRAN AIS?
A) Aerodrome charts
B) Precision approach terrain charts
C) ATC surveillance minimum altitude chart
D) All answers are correct

3- What is the ICAO scale for word aeronautical chart based on IRAN AIP?
A) 1:250,000
B) 1:500,000
C) 1:1,000,000
D) 1:10,000,000

4- Which one of following statement is correct "EP - SCE" is?
A) EP - SCE is a registration mark.
B) EP is a nationality mark.
C) SCE is a registration mark.
D) "B" and "C" are correct.

5- The location indicator "OICJ" is for?
A) Boroujerd
B) Khoramabad
C) Sanandaj
D) Ilam

6- Where can we find the abbreviations used in AIS publication?
A) GEN 2
B) GEN 3
C) ENR 1
D) ENR 3.1

7- Which part of AIP contains the list of radio navigation aids?
A) ENR 1
B) ENR 4
C) GEN 2.5
D) GEN 3

8- Which part of AIP contains the radio navigation aids/systems?
A) ENR 4
B) ENR 1
C) GEN 2.5
D) GEN3

9- What is the accuracy of the location of navigational aids measured by GPS in Iran?
A) ± 10 meters.
B) ± 5m.
C) Within 8 meters.
D) B and C are correct.

10- What is the purpose of Arak NDB?
A) Aerodrome facility
B) Enroute facility
C) Off route navigation aid
D) A and B are correct

11- What is the purpose of "DARBAND" VOR/DME?
A) Aerodrome facility.
B) Enroute facility.
C) Off route navigation aid.
D) A and B are correct.

12- 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

13- What is the color of regular AIP amendment cover sheet?
A) Blue
B) Pink
C) Red
D) Yellow

14- What is the color of AIRAC amendment cover sheet?
A) Blue
B) Pink
C) Red
D) Yellow

15- The color of AIP supplement paper is.....

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

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

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

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

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

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

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

19- Which class of VDF antenna has bearing accuracy ±5°?

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

20- What is the series of domestic NOTAM?

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

21- How does AIS amend aeronautical charts?

A) By NOTAM
B) By AIRAC
C) By supplement
D) A and B are correct

22- NOTAM "B" contain Information about .....operation.

A) International

B) Domestic

C) Snow

D) All answer are correct

23- What is the validity of "SNOWTAM"?

A) 12 hrs

B) 30 min

C) 24 hrs

D) 60 min

24- The SNOWTAM contain information about:

A) Slush

B) Snow

C) Compacted snow

D) All answer are correct

25- What is the meaning of "NOTAM C"?

A) Replace

B) Cancel

C) New

D) Snow

26- What is the meaning of "NOTAM R"?

A) Replace

B) New

C) Cancel

D) Snow

27- What is the meaning of "NOTAM N"?

A) Snow

B) New

C) Cancel

D) Replace

28- In Which Iranian airspace VFR flights operates?

A) B, C, D

B) B, D

C) D, E

D) C, D, G

29- VFR flight shall not operate at night within Tehran FIR but may be authorized to operate in aerodrome traffic zone by coordination with ATS authority:

A) True

B) False

30- What is the minimum height above obstacle for IFR flight within Tehran FIR?

A) 1000 ft

B) 1500 ft

C) 2000 ft

D) 2500 ft

31- Which section of AIP contains information about "meteorological service"?

A) GEN1

B) ENR3

C) GEN3.5

D) ENR4

32- How many ATS MET reporting station are specified in Iran?

A) 3

B) 4

C) 5

D) 6

33- How many compulsory ATS MET reporting stations are specified in Iran?

A) 3

B) 4

C) 5

D) 6

34- In which part of AIP we can find the "on request" ATS MET reporting station?

A) ENR 3

B) GEN 2

C) GEN 3.5

D) ENR 4

35- The compulsory MET reporting station are:

A) Zahedan, Esfehan, Uromiyeh

B) Abadan, Birjand, Sabzevar

C) Zahedan, Abadan, Esfehan

D) Sabzevar, Abadan, Esfehan

36- METAR in Iran will be issued every:

A) 1 hour
B) 30 minute
C) A or B are correct
D) None

37- Which part of AIP contain VFR/IFR rules?

A) ENR 3
B) ENR 1
C) AD 1
D) GEN 4

38- Where can we find the information about flight plan?

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

39- How many SAR (search and rescue station) are specified in Iran?

A) 6
B) 8
C) 9
D) 10

40- Which part of AIP contain the information about interception procedures?

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

41- Which part of AIP contains the information about "unlawful interference"?

A) ENR 1
B) ENR 3
C) GEN 3
D) GEN 1

42- Which part of AIP contains the information about "airspace classification"?

A) ENR 3

B) ENR 1

C) GEN 3

D) GEN 1

43- How many airspaces are classified in Iran?

A) 4

B) 3

C) 5

D) 2

44- How many controlled airspaces are classified in Iran?

A) 3

B) 2

C) 1

D) 4

45- How many uncontrolled airspace(s) is (are) classified in Iran?

A) 1

B) 2

C) 3

D) 4

46- Which class of airspace in Iran are specified as controlled airspace?

A) B, C, D

B) A, B, C, D

C) A, C, D

D) A, D

47- Which class of airspace(s) in Iran specified as uncontrolled airspace(s)?

A) F, G

B) F

C) G

D) E, F, G

48- What is the class of airspace outside AIRWAY, TMA and CTR within TEHRAN FIR?

A) A

B) C

C) D

D) G

49- What is the classification of SHIRAZ CTR?

A) A

B) D

C) D, A

D) C

50- What is the classification of SHIRAZ TMA above FL200?

A) C

B) A

C) A, C

D) D

51- What is the radius of ARDABIL ATZ?

A) 10 NM

B) 5 NM

C) 7 NM

D) 15 NM

52- Which part of AIP contains information about altimeter setting procedure?

A) ENR 1

B) ENR 3

C) GEN 3

D) GEN 1

53- In which chart you can find transition altitude?

A) Instrument approach

B) SID

C) STAR

D) All answers are correct

54- The QNH value shall transmit in ..... within Tehran FIR.

A) hPa

B) MB

C) Inch.Hg

D) PSI

55- The reported QNH in Iran is valid up to

A) 25 km

B) 25 NM

C) 30 NM

D) 30 km

56- Which types of MET report are available in OIZC?

A) METAR
B) SPECI
C) SIGMET
D) A and B are correct

57- 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.

58- 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.

59- For which type of operation, the repetitive flight plan may be filed:

A) Controlled flight.
B) VFR flight.
C) IFR flight.
D) All type of operation.

60- What is minimum visibility for operation as a special VFR in Iran?

A) 3000 m.
B) 1500 m.
C) 2000 m.
D) 5 km.

61- What is the minimum prescribed ground visibility for fixed wings aircraft which operates under VFR flight in IRAN?

A) 5 km.
B) 8 km.
C) 2 km.
D) 1.5 km.

62- What is the location of wind vane in OIKQ?

A) 1400 m from THR RWY 23
B) 1600 m from THR RWY 05
C) 1800 m from THR RWY 05
D) 1600 m from THR RWY 23

63- How long does IFR flight plan is valid?

A) 90 minutes in exceeds of estimated off - block time.
B) 30 minutes in exceeds of estimated off - block time.
C) 45 minutes in exceeds of estimated off - block time.
D) 10 minutes in exceeds of estimated off - block time.

64- Which sections are available in IRAN AIP?

A) NOTAM, AGA, AIP
B) GEN, AIP, NOTAM
C) GEN, ENR, AD
D) NOTAM, AIP, AIC

65- "AIC" is stand for:

A) NOTAM
B) AIP supplement
C) Aeronautical Information Circulars
D) AIP check list

66- How many sections are available in GEN?

A) 4
B) 5
C) 7
D) 6

67- GEN 2 includes:

A) National regulations and requirements.
B) List of location of indicator.
C) Checklists and summaries.
D) Aerodrome charges.

68- GEN 2 includes:

A) National regulations and requirements.
B) Measuring system.
C) Services.
D) ATS route

69- Which of the following airport is not equipped with RVR?

A) OITL
B) OISS
C) OING
D) OICS

70- ENR 0 includes:
A) Table of contents to part 2.
B) General rules and procedures.
C) Checklists and summaries.
D) IFR Rules

71- ENR 1 includes:
A) Table of contents to part 2.
B) General rules and procedures.
C) Checklists and summaries.
D) CTR information.

72- ENR 2.1 includes:
A) Table of contents to part 2.
B) General rules and procedures.
C) FIR / UIR / TMA.
D) Navigation warning Area.

73- ENR 3 includes:
A) ATS Routes.
B) General rules and procedures.
C) ATS airspace.
D) Radio navigation aids.

74- ENR 4 includes:
A) Radio Navigation Aids/Systems.
B) General rules and procedures.
C) ATS airspace.
D) Flight planning.

75- ENR 5 includes:
A) Radio Navigation Aids/Systems.
B) Navigation Warnings.
C) ATS airspace.
D) Airspace classification.

76- ENR 6 includes:
A) Radio Navigation Aids/Systems.
B) Navigation Warnings.
C) En-route Charts.
D) ATS route.

77- AD 0 includes:
A) Table of contents to part 3.
B) Tables and codes.
C) Aerodromes/Heliports and Air Navigation Services.
D) Aerodrome charts.

78- AD 1 includes:
A) Table of contents to part 3.
B) Tables and codes.
C) Aerodromes/Heliports Introduction.
D) Aerodrome charges.

79- AD 2 includes:
A) Table of contents to part 3.
B) Aerodromes.
C) Heliports.
D) Aerodrome charges.

80- AD 1.3 includes:
A) Table of contents to part 3.
B) Aerodromes.
C) Index aerodromes and heliport.
D) Aerodrome charts.

81- What is the lateral limit of ATS ROUTE A416 between TABRIZ and ARDABIL?
A) 10 NM.
B) 15 NM.
C) 20 NM.
D) 25 NM.

82- What is the distance between TABRIZ and ARDABIL on ATS route A416?
A) 105.2 NM.
B) 78.3 NM.
C) 19.2 NM.
D) 20.5 NM.

83- What is entry and exit point on ATS route A418:
A) SHIRAZ and ORSAR
B) BUBUX and DAPER
C) SHIRAZ and BOJNORD.
D) DAPER and EGLUL

84- What is the MOCA on ATS route B416:

A) 1250 ft
B) 2500 ft
C) 1070 ft
D) 3100 ft

85- On which ATS route(s) significant point "AGINA" is (are) used?

A) UP146.
B) G208.
C) W10.
D) UL333.

86- When will the critical snow banks outside 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.

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

A) OIII.
B) OIIE.
C) OIFN.
D) A and B are correct.

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

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

89- Which of the following airports is equipped to RVR facility?

A) OITR
B) OIMB
C) OICK
D) All answers are correct

90- Which meteorological documents must be provided for international flight?

1) Significant weather chart

2) Upper wind and air temperature charts

3) Latest available OPMET for destination aerodrome

4) Latest available OPMET for alternate aerodrome

A) 1,2,3

B) 2,3,4

C) 1,3,4

D) 1,2,3,4

91- What is the speed limitation for IFR flights within class "D" airspace below 10,000 ft AMSL?

A) 250 KT IAS.

B) 260 KT IAS.

C) 250 KT TAS.

D) 260 KT TAS.

92- 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.

93- 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.

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

A) B airspace.

B) A airspace.

C) G airspace.

D) E airspace.

95- How long before expected time of departure, the international flight is required to obtain meteorological information?

A) At least one hour

B) At least two hour

C) At least three hour

D) At least four hour

96- What is the airways classification outside TMA in Iran?

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

97- Only one revision is acceptable for VFR flight within:

A) 60 minute, before EOBT.
B) 15 minute, after EOBT.
C) 60 minute, after EOBT.
D) 30 minute, after EOBT.

98- 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.

99- How long before expected time of departure, the domestic flight is required to obtain meteorological information?

A) At least one hour.
B) At least two hours.
C) At least three hours.
D) At least four hours.

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

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

101- Which Annex to the Chicago Convention covers environmental protection?

A) ANNEX 15.
B) ANNEX 16.
C) ANNEX 17.
D) ANNEX 18.

102- The ICAO document concerning the provision of the AIS is Annex ____ to the Convention on Civil Aviation.

A) 9
B) 15
C) 7
D) 16

103- Annex 6 to the Convention of Chicago covers:

A) Security
B) Operation of aircraft
C) Facilitations
D) Aerodromes

104- ICAO aeronautical charts information are contained in Annex _____ to the Chicago Convention.

A) 17
B) 9
C) 14
D) 4

105- ICAO meteorological service for international air navigation:

A) Annex 14
B) Annex 12
C) Annex 3
D) Annex 9

106- What is the Tehran VOLMET frequency?

A) 121.7 MHz
B) 122.5 MHz
C) 119.5 MHz
D) not provided in Iran

107- "A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation" is the definition of:

A) NOTAM.
B) Aeronautical Information Circular (AIC).
C) Aeronautical Information Publication (AIP).
D) Aeronautical Information Regulation and Control (AIRAC).

108- AIRAC is stand for:

A) Aviation Information Regulation and Control.
B) Aeronautical Information Regulation and Control.
C) Aeronautical Information Rules and Control.
D) Aviation Information Rules and Control.

109- What is AIRAC?

A) A package of information including AIP, NOTAMS route briefings.
B) A telecommunicated message of operational significance which has short notice.
C) The main body of knowledge concerning a national aviation system.
D) A means of amending operationally significant permanent information.

110- The information concerning charges for aerodromes/heliports and Air Navigation Services are on the following part of the AIP:

A) AD
B) GEN
C) FAL
D) ENR

111- In which section of AIP are contained information elements relating to prohibited, restricted and dangerous areas?

A) GEN
B) ENR
C) AGA
D) MAP

112- What is the accuracy of RVR information when ATIS report RVR for RWY 29L in Mehrabad airport is 500 m?

A) ±25 m
B) ±50 m
C) ±75 m
D) ±100 m

113- Which ATS unit in Tehran FIR provide AIRMET meteorological report?

A) Mehrabad approach
B) Mehrabad tower
C) Tehran ACC
D) All answers are correct

114- The SIGMET service in the AIP is in the following part:

A) GEN
B) AGA
C) ENR
D) MET

115- The parts of Aeronautical Information Publication (AIP) are:

A) GEN, ENR (en-route) and AD (aerodromes)
B) GEN, AGA, COM, RAC, FAL, SAR, MET, MAP
C) GEN, AGA, COM, ENR, FAL
D) GEN, ENR, RAG, AD

116- A detailed description of lower ATS routes can be found in part ____ section ____ of the AIP.

A) 2, ENR0
B) 2, ENR3
C) 3, AD0
D) 3, AD2

117- Which part of AIP contain information about sporting activity area?

A) ENR 1.
B) GEN 2.
C) ENR 5.
D) AD 1.

118- In which chapter of the AIP can you find a list with "location indicators"?

A) GEN
B) AGA
C) ENR
D) AD

119- Fuel available at an aerodrome will be published in:

A) AIP-GEN
B) AIP-AD
C) AIP-RAC
D) AIP-ENR

120- Operationally significant changes to the AIP shall be published in accordance with ____ procedures and shall be clearly identified by the acronym _____.

A) Aeronautical information circular; AIRAC.
B) Aeronautical information regulation and control; AIRAC.
C) Aeronautical information and control; NOTAM.
D) Aeronautical information publication; AIS.

121- What is the validity of SIGMET report that issued by Tehran ACC:

A) 4 hour
B) 6 hour
C) 9 hour
D) 30 hour

122- The temporary, long duration modification (3 months or more) and the short-term extensive or graphical information are published as follows:

A) AIP Amendments.
B) Trigger NOTAM.
C) AIP Supplements.
D) NOTAM.

123- When the "storm warning" will be issued?

A) Min wind speed is more than 34 kts
B) Min wind speed is more than 41 kts
C) Gust in excess of 41 kts
D) A and C are correct

124- Which frequency are used by SAR operation aircraft in Tehran FIR?

A) 121.5 MHz
B) 243 MHz
C) 500 KHz
D) A and B are correct

125- What is the symbol "V" in SAR operation that use by survivors?

A) Require medical assistant.
B) Require assistant.
C) Require medical kit.
D) Require additional time for SAR.

126- 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
B) AD 1
C) ENR4
D) GEN 2

127- Which type of RNAV route is used in Tehran FIR?

A) RNAV 2
B) RNAV 4
C) RNAV 5
D) RNAV 10

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

A) FAL
B) GEN
C) ENR
D) AD

129- 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.

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

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

131- 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.

132- According to AIP "UIC" is the abbreviation of:

A) Upper Information Region
B) Upper information Center
C) Upper flight Information Region
D) Upper Airway

133- What is the purpose of Bam NDB?

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

134- What is the firefighting category of PAYAM airport?

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

135- 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

136- What is the location name of "OICC"?

A) Kermanshah
B) Kerman
C) Kashan
D) Bam

137- What is the time of sunrise in OINR on 27th of January?

A) 07:04
B) 07:14
C) 06:14
D) 06:24

138- What is the radius of SHIRAZ CTR?

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

139- What is (are) fuel available in SHIRAZ Airport?

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

140- What is the vertical limit of SHIRAZ CTR?

A) 6000 ft
B) 15500 ft
C) 11500 ft
D) 12500 ft

141- What is the vertical limit of prohibited area OI- P7 "PERSEPOLIS"?

A) 7500 ft AMSL
B) 8500 ft AMSL
C) 9000 ft AMSL
D) 7000 ft AMSL

142- What is the transition altitude of SHIRAZ International Airport?

A) 12000 ft AMSL
B) FL120
C) 13000 ft AMSL
D) FL130

143- What is the upper vertical limit and radius of SHIRAZ TMA?

A) 8500 ft – 60 NM
B) FL245 – 70 NM
C) 8500 ft – 70 NM
D) FL275 – 60 NM

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

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

145- Which type of ATS routes have been established to provide more direct an economic routes?

A) VOR routes
B) NDB routes
C) GPS routes
D) RNAV routes

146- All flights before entering Iran ADIZ are required to contact with ADIZ frequency…… prior to entering and contact to Tehran ACC ……. Before entering Tehran FIR

A) At least 10 minutes – at least 5 minutes.
B) At least 5 minutes – at least 10 minutes.
C) At least 10 minutes – at least 10 minutes.
D) At least 5 minutes – at least 5 minutes.

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

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

148- Where can we find runway clear way dimension?

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

149- Where can we find information about caution area?

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

150- Warning services is provided all aerodrome meteorological office if one or several of the following phenomenon are expected to occur at airport:

1) Thunderstorm
2) Hail
3) Heavy snow
4) Heavy rain
5) Freezing precipitation
6) Frost

A) 1,2,3,4,5
B) 1,2,3,5,6
C) 1,4,6
D) 1,2,3,4,5,6

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

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	B	114	A	127	C	140	C
102	B	115	A	128	D	141	D
103	B	116	B	129	C	142	C
104	D	117	C	130	D	143	B
105	C	118	A	131	B	144	A
106	D	119	B	132	B	145	D
107	C	120	B	133	C	146	A
108	B	121	A	134	A	147	B
109	D	122	C	135	D	148	A
110	B	123	D	136	A	149	B
111	B	124	D	137	B	150	B
112	B	125	B	138	D		
113	C	126	A	139	B		

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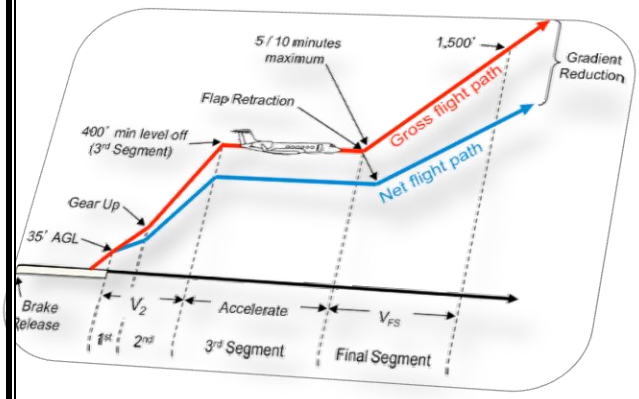
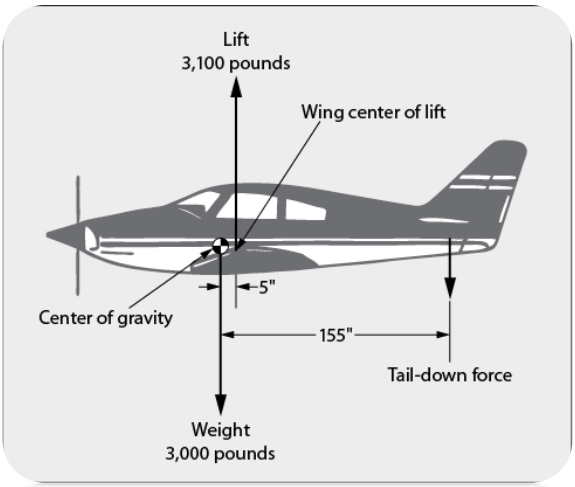
AIRCRAFT PERFORMANCE





1- 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.

2- 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.

3- Which statement is correct for a descent without engine thrust at 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 tailwind component increases the ground distance.

4- Which one gives the greatest gliding time?
A) Lower mass.
B) A headwind.
C) A tailwind.
D) Higher mass.

5- 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.

6- 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}

7- 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.

8- 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 maximum thrust and maximum drag condition.
D) Aeroplane has reached maximum thrust and minimum drag condition.

9- 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.

10- 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

11- 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.

12- What is the effect of increasing atmospheric pressure on landing performance?

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

13- What is the effect of decreasing atmospheric pressure on performance?

A) A reduced takeoff distance and improved initial climb performance
B) An increased takeoff distance and degraded initial climb performance.
C) An increased takeoff distance and improved initial climb performance.
D) A reduced takeoff distance and degraded initial climb performance.

14- What is the effect of increasing atmospheric pressure on takeoff performance?

A) A reduced takeoff distance and improved initial climb performance.
B) An increased takeoff distance and degraded initial climb performance.
C) An increased takeoff distance and improved initial climb performance.
D) A reduced takeoff distance and degraded initial climb performance.

15- 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.

16- 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}

17- 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.

18- 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.

19- 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.

20- Maximum endurance:

A) Can be achieved in level un accelerated 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.

21- 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.

22- 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.

23- 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.

24- 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.

25- 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.

26- A higher temperature causes __ in air density and __ in lift.

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

27- 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.

28- 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.

29- 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.

30- 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.

31- What is the effect of increasing weight on Vs?
A) Increases.
B) Decreases.
C) Remains constant.
D) Increases or decreases, depending on the amount of weight which increase.

32- 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

33- 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 of the above.

34- 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.

35- 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.

36- 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.

37- 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.

38- 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.

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

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

40- What does density altitudes signify?

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

41- 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.

42- 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

43- 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.

44- Which of the following factors lead to the maximum flight time of a glide?
A) High mass.
B) Headwind.
C) Tailwind.
D) Low mass.

45- 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 run- way slope.
C) Low aircraft mass, lower air density, uphill runway slope.
D) Low aircraft mass, high air density, uphill runway slope.

46- In term of indicated airspeed for jet aeroplane the Vx and Vy 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.

47- 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.

48- 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 Vx.
C) Improves the rate of climb.
D) Decreases the rate of climb and the angle of climb.

49- 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.

50- 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.

51- An increase in ambient temperature causes the absolute ceiling to:

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

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

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

53- Which of the following will decrease the value of Vs 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.

54- If there is a decrease in atmospheric pressure and all other factors remain constant, it should result in:

A) Increased takeoff distance and decreased climb performance.
B) Increased takeoff distance and increased climb performance.
C) Decreased takeoff distance and decreased climb performance.
D) Decreased takeoff distance and increased climb performance.

55- How does a decreased pressure altitude at an airport affect aeroplane performance?

A) Increased accelerate-stop distance.
B) Increased takeoff distance required.
C) Decreased takeoff distance required.
D) Increased takeoff run.

56- The landing distance required will be increased as a result of all of the following:
A) Increased temperature, increased pressure altitude, uphill runway slope.
B) Increased temperature, increased pressure altitude, downhill runway slope.
C) Decreased temperature, decreased pressure altitude, uphill runway slope.
D) Increased temperature, decreased pressure altitude, downhill runway slope.

57- 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.

58- On a reciprocating 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.

59- 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.

60- During climb to the cruising level, a headwind component
A) Decreases the climb time.
B) Increases the amount of fuel for the climb.
C) Increases the climb time.
D) Decreases the ground distance flown during climb.

61- 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.

62- 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.

63- 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.

64- 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.

65- An aeroplane is in a power off glide at best gliding speed. If the pilot decreases the pitch attitude the glides distance will:
A) Decreases.
B) Increases.
C) Remains the same.
D) May increase or decrease depending on the Aeroplane.

66- Which of the following statements is correct?
A) Induced drag is independent of the speed.
B) Induced drag decreases with increasing angle of attack.
C) Induced drag decreases with increasing speed.
D) Induced drag increases with increasing speed.

67- The Density Altitude:
A) Is used to establish minimum clearance of 2.000 feet over mountains.
B) Is equal to the pressure altitude.
C) Is used to determine the aeroplane performance.
D) Is used to calculate the FL above the Transition altitude.

68- The absolute ceiling:
A) Can be reached only with minimum steady flight speed.
B) Is the altitude at which the maximum rate of climb is zero.
C) Is the altitude at which the aeroplane reaches a maximum rate of climb of 100 ft/min.
D) Is the altitude at which the best climb gradient attainable is 5%.

69- What will be the effect on an aeroplane performance if aerodrome pressure altitude is decreased?
A) It will increase the accelerate stop distance.
B) It will increase the takeoff distance required.
C) It will increase the takeoff ground run.
D) It will decrease the takeoff distance required.

70- What will be the influence of the aeroplane performance if aerodrome pressure altitude is increased?

A) It will increase the accelerate stop distance available.
B) It will increase the takeoff distance.
C) It will decrease the takeoff distance.
D) It will increase the takeoff distance available.

71- 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.

72- 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.

73- Which condition reduces the required runway for takeoff?

A) Higher than recommended airspeed before rotation.
B) Lower than standard air density.
C) Increased headwind component.
D) Increased TAS.

74- 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}

75- 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.

76- 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.

77- 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.

78- 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.

79- 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.

80- 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.

81- If the atmospheric pressure is less than standard:
A) Takeoff distance would be reduced.
B) Takeoff distance would be increased.
C) Takeoff distance would not be affected.
D) Takeoff distance would be increase about 30%.

82- 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.

83- 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.

84- On a reciprocating engine aeroplane, to maintain a given angle of attack, configuration and altitude at higher gross mass:

A) The lift/drag ratio must be increased.
B) The airspeed will be decreased and the drag increased.
C) The airspeed and the drag will be increased.
D) The airspeed will be increased but the drag does not change.

85- Pressure altitude is:

A) The altimeter indication when QNH is set on the subscale.
B) The altimeter indication when QFE is set on the subscale.
C) The altitude above sea level.
D) The altimeter indication when 1013.25 hPa is set on the subscale.

86- For a piston engine aircraft, the service ceiling corresponds to:

A) The altitude for which the power required and power available curves are tangential.
B) The greatest altitude at which more than one speed is available.
C) The altitude at which the aircraft is capable of a climb rate of 100 feet per minute.
D) The altitude at which the aircraft is capable of a climb rate of 500 feet per minute.

87- Which statement is correct for a descent without engine thrust at maximum lift to drag ratio speed?

A) The higher the gross mass the greater is the speed for descent.
B) The higher the gross mass the lower is the speed for descent.
C) The higher average temperature (OAT) the lower is the speed for descent.
D) The mass of an aeroplane does not have any effect on the speed for descent.

88- The service ceiling of an aircraft is:

A) The altitude where rate of climb is zero.
B) The highest altitude permitted for flight because of maneuver capability.
C) The altitude where a low specific rate of climb is achieved.
D) The altitude above which cruising speed cannot be maintained.

89- The speed for maximum lift to drag ratio will result in:

A) The maximum endurance for a propeller driven aeroplane.
B) The maximum range for a jet aeroplane.
C) The maximum range for a propeller driven aeroplane.
D) The maximum angle of climb for a propeller driven aeroplane.

90- Which of the following statements is correct about horizontal unaccelerated level flight speed if aircraft mass decreases?

A) The minimum drag increases and the lAS for minimum drag increases.
B) The minimum drag increases and the lAS for minimum drag decreases.
C) The minimum drag decreases and the lAS for minimum drag decreases.
D) The minimum drag decreases and the lAS for minimum drag increases.

91- With regard to un accelerated horizontal flight, which of the following statements is correct?
A) The minimum drag is a function of the density altitude.
B) The minimum drag is a function of the pressure altitude.
C) The minimum drag is proportional to the aircraft mass.
D) The minimum drag is independent of the aircraft mass.

92- With piston engines aircraft, a pilot wants to fly for maximum time. Therefore he has to fly the speed corresponding to:
A) The minimum angle of descent.
B) The minimum drag.
C) The minimum power required.
D) The maximum lift.

93- You are the commander of a light twin piston aircraft. The aircraft performance has been calculated, but before departure another passenger is taken on board. What will be the effect of the extra passenger on board?
A) The performance will be degraded but the performance calculations need not be performed again as the safety factors are so large.
B) The performance will be improved.
C) No effect.
D) The performance will be degraded; the performance calculations should be performed again.

94- In a steady climb at a constant speed:
A) The power available must equal the power required.
B) The power available must exceed the power required.
C) The power available must be less than the power required.
D) The power required must be greater than the power available.

95- When gliding into headwind airspeed should be:
A) Reduced to gust penetration speed.
B) The same as the best Ranges speed in still air.
C) Lower than the best Ranges speed in still air.
D) Higher than the best Range speed in still air.

96- Which force compensates the weight in unaccelerated straight and level flight?
A) The resultant from lift and drag.
B) The thrust.
C) The drag.
D) The lift.

97- What is the effect of tailwind on the time to climb to a given altitude?
A) The effect on time to climb will depend on the aero- Plane type.
B) The time to climb increases.
C) The time to climb decreases.
D) The time to climb does not change.

98- What is the effect of increased mass on the performance of a gliding aeroplane?
A) The speed for best angle of descent increases.
B) There is no effect.
C) The gliding angle decreases.
D) The lift to drag ratio decreases.

99- The force exactly opposing and balancing lift in a glide descent is:
A) Thrust x sin (angle of descent)
B) Thrust x cos (angle of descent)
C) Weight x sin (angle of descent)
D) Weight x cos (angle of descent)

100- What happen to Vx and Vy if the landing gear is extended?
A) V_X decreases and V_y increases.
B) V_X and V_y decrease.
C) V_X and V_y increase.
D) V_X increases, V_y decreases.

101- What is the effect of extending flaps on Vx and Vy?
A) V_X increases and V_y decreases.
B) V_X increases and V_y increases.
C) V_X decreases and V_y increases.
D) V_X decreases and V_y decreases.

102- Which of the following forces will balance thrust during steady climb?
A) Drag + W sin Θ
B) Weight
C) Drag
D) Drag + W cos Θ

103- In straight and level flight the lift is opposed by the:
A) Drag and weight.
B) Weight.
C) Thrust.
D) Drag.

104- For a jet aircraft the best rate of climb is achieved:
A) At the optimum lift to drag ratio.
B) When excess thrust available is at a maximum.
C) When excess power available is at a maximum.
D) At the optimum angle of attack, nominally 4°.

105- Absolute ceiling occurs:
A) On a jet aircraft when the rate of climb falls to 750 ft/min
B) When the achievable rate of Climb is zero.
C) On a jet aircraft when the rate of climb falls to 100 ft/min.
D) On a jet aircraft when the rate of climb falls to 300 ft/min.

106- What margin above the stall speed is provided by the landing reference speed V_{REF}?
A) 1. 05 Vso
B) 1. 3 Vso
C) 1. 1 Vso
D) V_{MCA} x 1. 2

107- The speed V_S is defined as:
A) Speed for best specific range.
B) Safety speed for takeoff in case of a contaminated runway.
C) Design stress speed.
D) Stalling speed or minimum steady flight speed at which the aeroplane is controllable.

108- Which speed denotes the stall speed in the landing configuration?
A) V_{so}
B) V_{S1}
C) V_s
D) V_{S1G}

109- The maximum indicated air speed of a piston engine aeroplane, in level flight, is reached:
A) At the practical ceiling.
B) At the optimum cruise altitude.
C) At the service ceiling.
D) At the lowest possible altitude.

110- Which of the following will probably result in the greatest increase in takeoff distance for a single-engine piston aeroplane?
A) Headwind; downslope; high surface temperature.
B) Headwind; downslope; low surface temperature.
C) Tailwind; downslope; high surface temperature.
D) Tailwind; upslope; high surface temperature.

111- In a given configuration the endurance of a piston engine aeroplane only depends on:

A) Speed, mass and fuel on board.
B) Altitude, speed, mass and fuel on board.
C) Altitude, speed and mass.
D) Speed and mass.

112- According to the information in a light aircraft manual, which gives two power settings for cruise (65% and 75%) If you fly at 75% instead of 65%:

A) Cruise speed will be higher, fuel consumption will be higher.
B) Cruise speed will be the same, fuel consumption will be the same.
C) Cruise speed will be higher, fuel consumption will be lower.
D) Cruise speed will be higher, fuel consumption will be the same.

113- On a reciprocating single-engine aeroplane, with increasing altitude at constant gross mass, angle of attack and configuration, the minimum drag speed as IAS (V_{MD}) :

A) Remains unchanged but the CAS increases.
B) Increases at constant TAS.
C) Decreases and the CAS decreases too because of the lower air density.
D) Remains unchanged but the TAS increases.

114- What affect has a tailwind on the maximum endurance speed?

A) Tailwind only affects holding speed.
B) No affect.
C) The lAS will be increased.
D) The lAS will be decreased.

115- On a reciprocating single-engine aeroplane, to maintain a given angle of attack, configuration and altitude at higher gross mass:

A) An increase in airspeed is required but power setting does not change.
B) Requires an increase in power and decrease in the air speed.
C) An increase in airspeed and power is required.
D) A higher coefficient of drag is required.

116- (Refer to figure C-01) Using the climb performance chart, for the single engine aeroplane, determine the rate of climb and the gradient of climb in the following conditions, Given:

OAT at takeoff:	**ISA**
Airport pressure altitude:	**3000 ft**
Aeroplane mass:	**3450 lbs**
Speed:	**100 KIAS**

A) 1310 ft/min and 11.3%.
B) 1170 ft/min and 9.9%.
C) 1120 ft/min and 11.0%.
D) 1030 ft/min and 8.4%.

117- (Refer to figure C-02) With regard to the landing chart for the single engine aeroplane determine the landing distance from a height of 50 ft. Given:

OAT:	**0˚C**
Pressure Altitude:	**1000**
Aeroplane Mass:	**3500 lbs**
Tailwind component:	**5 kts**

Flaps: landing position (down)
Runway: paved and dry

A) 1650 feet
B) 2000 feet
C) 1150 feet
D) 2420 feet

118- (Refer to figure C-04) With regard to the landing chart for the single engine aeroplane determine the landing distance from a height of 50 ft. Given:

OAT:	**ISA**
Pressure Altitude:	**1000 ft**
Aeroplane Mass:	**3500 lbs**
Tailwind component:	**5 kts**

Flaps: Landing Position (down)
Runway: paved and dry

A) 1700 feet
B) 1300 feet
C) 1150 feet
D) 920 feet

119- (Refer to figure C-03) With regard to the landing chart for the single engine aeroplane determine the landing distance from a height of 50 ft. Given:

OAT:	**27˚C**
Pressure Altitude:	**3000 ft**
Aeroplane Mass:	**2900 lbs**
Tailwind component:	**5kts**

Flaps: landing position (Down)
Runway: paved and dry

A) 1370 feet
B) 1700 feet
C) 1850 feet
D) 1120 feet

120- (Refer to figure C-02) With regard to the landing chart for the single engine aeroplane determine the minimum runway length required. Given:

OAT:	**0˚C**
Pressure Altitude:	**1000 ft**
Aeroplane Mass:	**3500 lbs**
Tailwind component:	**5 kts**
Flaps: Landing position	
Runway: paved and wet	
Runway Slope: 1% down slope	
Correction factor for wet/grass run way:	**1.15**
Correction factor for 1% down slope:	**1.05**
Correction factor for performance CAT B:	**1.43**

A) 2950 ft
B) 1700 ft
C) 2300 ft
D) 1100 ft

121- (Refer to figure C-04) With regard to the landing chart for the single engine aeroplane (determine the minimum runway length. Given:

OAT:	**ISA**
Pressure Altitude:	**1000 ft**
Aeroplane Mass:	**3500 lbs**
Tailwind component:	**5 kts**
Flaps: Landing position (down)	
Runway: paved and Wet	
Runway Slope: 2% upslope	
Correction factor for wet/grass run way:	**1.15**
Correction factor for 1% down slope:	**1.05**
Correction factor for performance CAT B:	**1.43**

A) 2900 ft.
B) 1750 ft.
C) 2250 ft.
D) 1150 ft.

122- (Refer to figure C-03) With regard to the landing chart for the single engine aeroplane determine the minimum runway length. Given:

OAT:	**27˚C**
Pressure Altitude:	**3000 ft**
Aeroplane Mass:	**2900 lbs**
Tailwind component:	**5 kts**
Flaps: Landing position (down)	
Runway: Dry / Grass 5 cm long	
Correction factor for wet/grass run way:	**1.15**
Correction factor for 1% down slope:	**1.05**
Correction factor for performance CAT B:	**1.43**

A) 1200 ft
B) 1850 ft
C) 3050 ft
D) 2600 ft

123- (Refer to figure C-05) With regard to the landing chart for the single engine aeroplane determine the landing distance from a height of 50 ft. Given:

OAT:	**ISA+15˚C**
Pressure Altitude:	**0 ft**
Aeroplane Mass:	**2940 lbs**
Headwind component:	**10 kts**
Flaps: Landing position (down)	
Runway: short and wet great film soil	
Correction factor (wet /grass):	**1.38**

A) 950 feet
B) 2200 feet
C) 1300 feet
D) 1794 feet

124- (Refer to figure C-05) With regard to the landing chart for the single engine aeroplane determine the minimum runway length. Given:

OAT:	**ISA +15˚C**
Pressure Altitude:	**0 ft**
Aeroplane Mass:	**2940 lbs**
Headwind component:	**10 kts**
Flaps: Landing position (down)	
Runway: short and wet/ grass - firm soil	
Correction factor for Wet/ grass run way:	**1.38**
Correction factor for performance CAT B:	**1.43**

A) 800 ft
B) 600 ft
C) 1100 ft
D) 2600 ft

125- A climb gradient required is 3.3%. For an aircraft maintaining 100 kts TAS (no wind), this climb gradient corresponds to a rate of climb (ROC) of approximately:

A) 330 ft/min
B) 3300 ft/min
C) 3. 30 m/s
D) 33. 0 m/s with 100KIAS /15 kts Headwind

126- (Refer to figure C-05) With regard to the landing chart for the single engine aeroplane determine the landing distance from a height, of 50 ft. Given:

OAT: **ISA + 15˚C**
Pressure Altitude: **0 FT**
Aeroplane Mass: **2940 lbs**
Headwind component: **10 KTS**
Flaps: Landing position (down)
Runway: paved and dry

A) Approximately: 1000 feet.
B) Approximately: 800 feet.
C) Approximately: 2000 feet.
D) Approximately: 1300 feet.

127- Which of the following speeds give the maximum obstacle clearance in the climb?

A) V_y
B) $1.2 \times V_{S1}$
C) V_X
D) V_{FE}

128- Flying at the maximum rate of climb speed will give:

A) Maximum height in the shortest distance.
B) Maximum height in the shortest time.
C) Maximum height in both shortest time and distance.
D) Minimum height gains in the shortest distance.

129- V_{LO} is defined as:

A) Actual speed that the aircraft lifts off the ground.
B) Minimum possible speed that the aircraft could lift off the ground.
C) The maximum speed for landing gear operation.
D) The long range cruise speed.

130- V_y is defined as:

A) Speed for best rate of descent.
B) Speed for best angle of climb.
C) Speed for best rate of climb.
D) Maximum speed which should be used in a climb.

131- V_X is defined as:

A) The speed for best angle of climb.
B) The speed for best rate of climb.
C) The speed for best specific range.
D) The speed for best angle of flight path.

132- The speed V_{LO} is defined as:

A) The minimum speed in the landing configuration with one engine inoperative at which it is possible to maintain control of the aeroplane within defined limits whilst applying varying power.
B) The stall speed in the landing configuration.
C) The speed at which the aircraft leaves the ground, not more than V_2 and not less than V_R
D) The maximum speed for extending or retracting the landing gear.

133- As long as an aeroplane is in a steady climb:

A) V_X is always less than V_y.
B) V_X may be greater or less than V_y depending on altitude.
C) V_X is always greater than V_y.
D) V_y is always greater than V_{MO}.

134- The correct sequence of speeds in climb is:

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

135- 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.

136- Which of The following parameters decrease the takeoff ground run?

1) Decreasing takeoff mass
2) Increasing takeoff mass
3) Increasing density
4) Decreasing density
5) Increasing flap setting
6) Decreasing flap setting
7) Increasing pressure altitude
8) Decreasing pressure altitude

A) 2,3,6,7
B) 1,4,6,8
C) 2,4,5,7
D) 1,3,5,8

137- 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.

138- 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.

139- 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.

140- The flight manual of a light twin engine recommends two cruise power settings (65% and 75%). The 75% power setting in relation to the 65% results in:
A) Same speed and fuel-burn/distance, but an increase in the fuel-burn per hour.
B) An increase in speed, fuel consumption and fuel-burn/ distance.
C) Same speed and an increase of the fuel-burn per hour and fuel-burn/distance.
D) An increase in speed and fuel-burn/distance, but an unchanged fuel-burn per hour.

141- Approaching in turbulent wind conditions during manual flight requires:
A) No change in approach speed.
B) An increase in V_{REF}
C) A steeper approach path.
D) An increase in approach speed.

142- An aircraft is climbing at a constant power setting and a speed of V_X If the speed is reduced and the power setting maintained, the:
A) Climb gradient will decrease and the rate of climb will increase.
B) Climb gradient will decrease and the rate of climb will decrease.
C) Climb gradient will increase and the rate of climb will increase.
D) Climb gradient will increase and the rate of climb will decrease.

143- Moving the center of gravity from the forward to the aft limit (gross mass, altitude and airspeed remain unchanged):
A) Increases the power required.
B) Decreases the induced drag and reduces the power required.
C) Affects neither drag nor power required.
D) Increases the induced drag.

144- For normally aspirated reciprocating engines the brake horse power delivered:
A) Increases with decreasing air density.
B) Decreases with increasing air density.
C) Decreases with decreasing air density.
D) None of the above.

145- The critical engine inoperative:
A) Decreases the power required because of the lower drag caused by the wind milling engine.
B) Does not affect the aeroplane performance since it is independent of the power plant.
C) Increases the power required because of the greater drag caused by the wind milling engine and the compensation for the yaw effect.
D) Increases the power required and decreases the total drag due to the wind milling engine.

146- The takeoff distance required increases:
A) Due to downhill slope because of the smaller angle of attack.
B) Due to headwind because of the drag augmentation.
C) Due to lower gross mass at takeoff.
D) Due to slush on the runway.

147- Aft center of gravity (within the approved limits):
A) Increases maximum range.
B) Improves longitudinal stability.
C) Decreases maximum range.
D) Increases stalling speed.

148- Heavy rain may temporarily cause:
A) Increased weight.
B) Increased stalling speed.
C) Reduced forward speed.
D) All of the above.

149- 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.

150- For a piston-engine aeroplane at a constant altitude, angle of attack and configuration, an increased weight will require:
A) More power but less speed.
B) More power and the same speed.
C) More power and more speed.
D) The same power but more speed.

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

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	D	114	B	127	C	140	B
102	A	115	C	128	B	141	D
103	B	116	C	129	C	142	B
104	C	117	A	130	C	143	B
105	B	118	A	131	A	144	C
106	B	119	C	132	D	145	C
107	D	120	A	133	A	146	D
108	A	121	A	134	A	147	A
109	D	122	C	135	C	148	D
110	D	123	D	136	D	149	A
111	B	124	D	137	C	150	C
112	A	125	A	138	B		
113	D	126	D	139	B		

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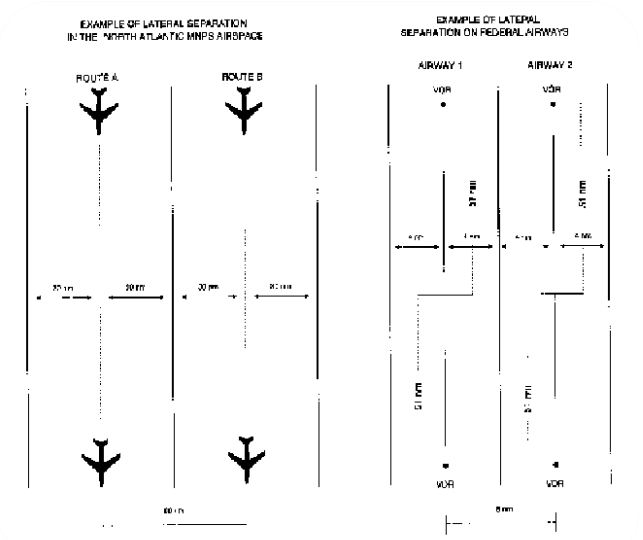
Annex 2



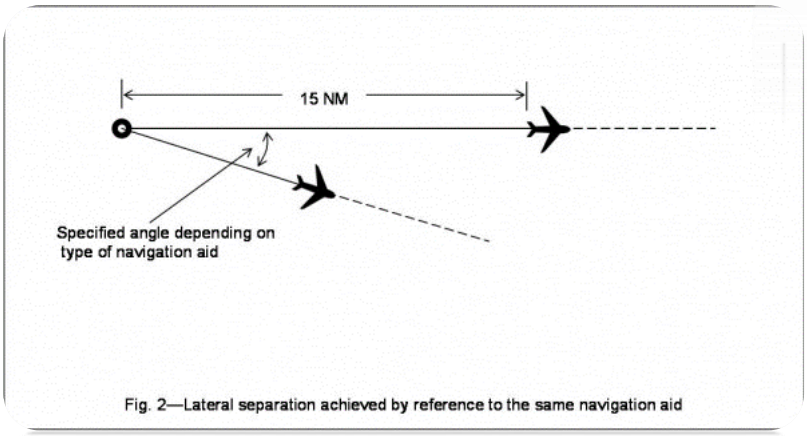


Fig. 2—Lateral separation achieved by reference to the same navigation aid

- Annex 2 – 10th, AMDT 44

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- The ICAO annex which deals with Rules OF THE AIR is?

A) ANEX 11.
B) ANNEX 14.
C) ANNEX 1.
D) ANNEX 2.

3- An aeroplane is classified as a:

A) Rotorcraft.
B) Power driven heavier than aircraft.
C) Airship.
D) Lighter than air aircraft.

4- 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.

5- Which of the following statements defines as flight visibility?

A) The visibility forward from the cockpit of an aircraft in flight, corrected for slant range error.
B) The visibility forward from the cockpit of an airplane in flight.
C) The visibility at an aerodrome, as reported by an accredited observer.
D) The visibility in the direction of takeoff or landing over which the runway lights or surface markings may be seen from the touchdown zone.

6- Which of the following defines flight visibility?

A) Visibility determined in flight not obscured by cloud, dust, haze or precipitation.
B) The forward visibility from the cockpit of an aircraft in flight.
C) The ability to determine in the air the distance and identity of unlighted objects by day and lighted objects by night.
D) The forward distance at which objects can be discerned in the air with reference to atmospheric conditions.

7- 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 3.000 ft above the aerodrome.

8- What is aerodrome traffic?

A) Local flying airplanes in or adjacent to the visual circuit.
B) All traffic on the movement area of an aerodrome.
C) All traffic on the maneuvering area of an aerodrome and flying in the vicinity of the aerodrome.
D) All traffic flying through the aerodrome traffic zone.

9- Which one of the following airspaces is designated for Iran?

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

10- An ETA for an IFR flight with navigation facility is referred:

A) IAF
B) FAF/FAP
C) Touchdown
D) None of the above

11- 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 1013 hPa and vertical position above that is then reported as a FL.

12- 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.

13- What defines a danger area?

A) A zone where military activity includes firing projectiles in the air.
B) Notified airspace (zone or area) where activities dangerous to flight may exist.
C) NOTAM activated airspace where the normal flight rules are disregarded.
D) Airspace of defined dimension where activities dangerous to flight may exist.

14- The person who has final authority as to the disposition of an aircraft during flight time is:

A) The airliner operator
B) The Pilot-In-Command
C) The aircraft owner
D) The ATC controller if the aircraft is flying in a controlled airspace.

15- 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.

16- What does pilot authorize to deviate from rules of the air?

A) Only in the interests of flight safety.
B) Anytime the PIC thinks it is necessary.
C) If the operator has special dispensation from the aircraft manufacturer.
D) Only when it is economically advantageous.

17- Altitude is measured from....

A) MSL
B) AGL
C) Aerodrome elevation
D) All

18- who is responsible for compliance rules of the air during flight?

A) The most senior of captains when more than one captain present on flight deck.
B) The pilot flying (pilot at the controls).
C) The Pilot-In-Command regardless of which pilot is at the flying controls.
D) The operator.

19- 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

20- When two-way radio communication is lost, a pilot should select _____ on the transponder.

A) Code 7500
B) Code 2000
C) Code 7700
D) Code 7600

21- Who are safety-sensitive personnel?

A) Air traffic controllers
B) Crew members
C) Aircraft maintenance personnel
D) All answers are correct

22- 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.

23- On an VFR 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's 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.

24- Flight plan should be submitted to air traffic service unit:

A) 60 minutes before the flight plan becomes active.
B) 60 minutes before departure or, if filed in flight, 10 minutes before the aircraft is estimated to reach the intended point of entry into a control area or advisory area or the point of crossing an airway or advisory route.
C) 10 minutes before departure into an advisory area.
D) 60 minutes before departure or, if filed in flight, 30 minutes before the aircraft is estimated to reach the intended point of entry into a control area or advisory area or the point of crossing an airway or advisory route.

25- An aircraft is considered to be overtaking, if it approaching other aircraft from the rear on a line forming an angle of less than:

A) 50 degrees with the plane of symmetry of the latter.
B) 60 degrees with the plane of symmetry of the latter.
C) 70 degrees with the plane of symmetry of the latter.
D) 80 degrees with the plane of symmetry of the latter.

26- Aircraft "A" with an ATC clearance is flying in VMC conditions within a control area. Aircraft "B" with no ATC clearance is approaching at approximately the same altitude and on a converging course. Which has the right of way?

A) Aircraft "A" regardless of the direction which "B" is approaching.
B) Aircraft "B" regardless of the direction "A" is approaching.
C) Aircraft "B" if "A" is on its left.
D) Aircraft "A" if "B" is on its right.

27- What is the minimum flight altitude permitted over obstacle in an area where minimum flight altitude does not provide?

A) 500 ft.
B) 1000 ft within a radius of 8 km.
C) The altitude which permits the aircraft to land safely in the event of an engine failure.
D) 500 ft above the highest obstacle within 600 m of the aircraft position.

28- if the time estimated for the next reporting point differs from that notified to ATS, a revised estimate shall be notified to ATS if the time difference is:

A) in excess of two minutes.
B) three minutes or more.
C) plus, or minus four minutes or more
D) Five minutes or more

29- Anti-collision lights on an aircraft must be switched ON, when aircraft is on aircraft stand?

A) Between SS and SR or any other period specified by the appropriate authority.
B) All vehicle operating on the movement area.
C) All vehicle moving on the maneuvering area.
D) As soon as engines are running.

30- 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.

31- Taxiing is movement of an aircraft on the surface of an aerodrome under its own power.....

A) Including take-off
B) Excluding take-off
C) Excluding take-off and landing
D) Including take-off and landing

32- 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

33- A flight plan shall be submitted prior to departure for a controlled flight at least:
A) 30 minutes prior to leave the blocks.
B) 10 minutes prior to departure.
C) 60 minutes prior to departure.
D) 50 minutes prior to leave the blocks.

34- Which one of the following lights will indicate the aircraft flight path?
A) Navigation light
B) Anti-collision light
C) Landing light
D) None

35- EOBT is the time:
A) At which the aircraft will commence movement 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.

36- 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.

37- A steady green light from aerodrome control to an aircraft on the ground means:
A) Cleared to land.
B) Cleared for takeoff
C) Taxi approved.
D) Wait for further clearance.

38- On aerodromes aircraft taxiing on the maneuvering area of an aerodrome shall give way to:
A) All vehicles moving on the apron except the "follow me" vehicle.
B) Other converging aircraft.
C) Other vehicles and pedestrians.
D) Aircraft taking off or about to take off.

39- Aircraft taxiing on the maneuvering area must give way to:
A) Departing traffic.
B) Landing traffic.
C) Departing and landing traffic.
D) Follow-me vehicles.

40- The visual signal for indicating a state of distress is:
A) Repeated switching on and off of the landing lights.
B) Repeated switching on and off of navigation lights.
C) A succession of red pyrotechnics.
D) Any of the above.

41- When a controlled flight inadvertently deviates from its current flight plan, ATC has to be informed in case:
A) It is a deviation from the track.
B) The estimated time is in error by more than 2 minutes.
C) Of an urgency situation.
D) The TAS varies by plus or minus 15% of the TAS notified in the flight plan.

42- When two taxiing aircraft are converging:
A) Each shall alter heading to the right.
B) The one that has the other on its left gives way.
C) Each shall alter heading to the left.
D) The one that has the other on its right gives way.

43- An aircraft shall display, if so equipped an anti-collision light:
A) Outside the daylight-period in flight, but not on the ground when it is being towed.
B) Outside the daylight-period at engine-start. During the daylight-period this is not applicable.
C) When the engines are running.
D) While taxiing, but not when it is being towed.

44- Which one of the following manner decreases the safety of aircraft operation?
A) Negligent
B) Reckless
C) Acrobatic
D) All answers are correct

45- When two aircraft are approaching head-on in flight and there is a danger of collision:
A) The smaller aircraft alters heading to port.
B) The larger aircraft alters heading to the right.
C) Both aircraft alter heading to the right.
D) Both aircraft alter heading to port.

46- 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

47- From sunset to sunrise an aircraft in flight shall display:

A) Anti-collision lights intended to attract attention of other aircraft, and navigation lights intended to indicate the relative path of the aircraft to an observer Lights showing the company logo may be displayed at all times.
B) Anti-collision lights intended to attract attention of other aircraft.
C) Navigation lights intended to indicate the relative path of the aircraft to an observer. No other lights shall be displayed if they are likely to be mistaken for the navigation lights.
D) Anti-collision lights intended to attract attention of other aircraft, and navigation lights intended to indicate the relative path of the aircraft to an observer No other lights shall be displayed if they are likely to be mistaken for the navigation lights.

48- Where two aircraft are converging at the same level:

A) The aircraft that is slower shall give way.
B) The aircraft that is faster shall give way.
C) The aircraft that has the other on its right shall give way.
D) The aircraft that has the other on its left shall give way.

49- 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.

50- …… 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.

51- 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.

52- A controlled airspace extending upwards from the surface to the specified limit is:
A) terminal control area.
B) Control area.
C) Control zone.
D) Control center.

53- An airborne flight plan must be submitted:
A) 10 minutes before the intended point of entry into a CTA or advisory area.
B) 15 minutes before the intended point of entry into a CTA or advisory area.
C) 30 minutes before the intended point; of entry into a CTA or advisory area.
D) 60 minutes before the intended point of entry into a CTA or advisory area.

54- The "total estimated elapsed time" in block 16 of an IFR flight plan is the estimated time:
A) Of endurance at cruising power taking into account pressure and temperature on that day.
B) Required by the aircraft from takeoff to arrive over the designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced.
C) Required by the aircraft from the moment it moves by its own power until it stops at the end of the flight (block time).
D) Required by the aircraft from takeoff to arrive over the destination aerodrome.

55- Which lights of the preceding aircraft will be observed by the overtaking aircraft?
A) Port
B) Starboard
C) Rear
D) All answers are correct

56- The highest priority for landing has:
A) An aircraft that is compelled to land (Emergency landing).
B) A military aircraft.
C) An aircraft on a diplomatic flight (Head of state).
D) An Air Ambulance carrying a very sick person needing immediate medical attention.

57- What information shall be study carefully by pilot-in-command before beginning a flight as pre-flight action?
A) Current weather report
B) Weather Forecast
C) Fuel requirement
D) All answers are correct

58- 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

59- A series of green flashes from aerodrome control directed to an aircraft on ground means:
A) Cleared to taxi.
B) Accelerate taxi speed.
C) Slow down taxi speed, but continue.
D) Stand by, clearance for takeoff will be given in short time.

60- When two aircraft are approaching head on or approximately so and there is a danger of collision, each shall:
A) Alter its heading to the right.
B) Alter its heading to the left.
C) Switch on all available lights in order to warn the other traffic.
D) Turn, climb or descent as appropriate in order to avoid.

61- Two aircraft are approaching each other in a controlled airspace class D in VMC at approximately the same level on converging courses. Aircraft "A" is flying under IFR, Aircraft "B" is flying under VFR. Who has the right of way?
A) Aircraft "B", providing it has "A" on its left.
B) Aircraft "A", providing it has "B" on its right.
C) Aircraft "B" regardless of the direction from which "A" is approaching.
D) Aircraft "A" regardless of the direction from which "B" is approaching.

62- 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.

63- An aircraft is at 12000 ft in class F airspace (VFR). The required distance from cloud is:
A) 1500 ft vertically and 1500 m horizontally.
B) 1500 m horizontally and 1000 ft vertically.
C) Clear of cloud and in sight of surface.
D) 1500 ft vertical and 1000 m horizontal.

64- A VFR flight when flying inside an ATS airspace classified as B has to maintain the following minima of flight visibility and distance from clouds:
A) 5 km below 3050 m (10000 ft) AMSL and clear of clouds.
B) 8 km below 3050 m (10000 ft) AMSL, 1500 m horizontal and 300 m vertical from clouds.
C) 5 km visibility, 1500 m horizontal and 300 m vertical from clouds.
D) 5 km below 3050 m (10000 ft) AMSL, 1500 m horizontal and 300 m vertical from clouds.

65- Procedure to be applied in case of communication failure in VMC (on a VFR flight plan):

A) Maintain VMC, land at the nearest suitable airfield and advise ATC as soon as possible.
B) Maintain last assigned level proceed to destination perform visual landing, advise ATC as soon as possible after landing.
C) Maintain VMC, proceed to destination and land within 30 minutes of the ETA.
D) Proceed according to the filed flight plan to destination.

66- What is the VMC criteria for a flight under VFR in class G airspace at 2000 ft AMSL at 200 kts?

A) Flight visibility of 5 km, clear of cloud and surface in sight.
B) Flight visibility of 3 km, clear of cloud and surface in sight.
C) Flight visibility of 1500 m, clear of cloud and in sight of the ground.
D) Flight visibility of 5 km, 1500 m horizontally and 300 m vertically from cloud.

67- Except where necessary for landing and takeoff, VFR flights are not permitted over congested areas of cities, towns or settlements, or over an open air assembly of persons at a height less than _____ above the highest obstacle within a radius of _____ from the aircraft.

A) 300 m, 600 m
B) 300 m, 600 ft
C) 500 ft, 600 m
D) 1000 ft, 600 ft

68- An aircraft flying above the sea between 4500 feet MSL and 9000 feet MSL outside controlled airspace under VFR, must remain on principle at least:

A) Clear of clouds and in sight of the surface; 8 km visibility.
B) 1500 m horizontally, 1000 feet vertically from clouds; 8 km visibility.
C) 1500 m horizontally, 1000 feet vertically from clouds; 5 km visibility.
D) 2000 feet horizontally, 1000 feet vertically from clouds; 5 km visibility.

69- The VMC minima for a VFR flight inside an ATS airspace classified as B, is:

A) 8 km visibility when at or above 3050 m (10000 ft) AMSL, and 1500 m horizontal and 300 m vertical from clouds.
B) 8 km visibility when at or above 3050 m (10000 ft) AMSL and clear of clouds.
C) 5 NM visibility below 3050 m (10000 ft) AMSL. clear of clouds.
D) 5 NM visibility when below 3050 m (10.000 ft) AMSL, 1500 m horizontal and 300 m vertical from cloud.

70- Except when necessary for takeoff or landing, a VFR flight over congested areas of cities, towns or settlements or over an open air assembly of persons shall not be flown at a height less than:

A) 300 m above the highest obstacle within a radius of 600 ft from the aircraft.
B) 300 m above the highest obstacle.
C) 300 m above the highest obstacle within a radius of 600 m from the aircraft.
D) 600 m above the highest obstacle within a radius of 300 m from the aircraft.

71- The VMC minima for an airspace classified as "G" above 10000 feet MSL are:

A) 1500 m horizontally and 1000 feet vertically from clouds, 5 km visibility.
B) 1 nautical mile horizontally and 1.000 feet vertically from clouds, 5 km visibility.
C) 1500 m horizontally and 1000 feet vertically from clouds, 8 km visibility.
D) 1 nautical mile horizontally and 1000 feet vertically from clouds, 8 km visibility.

72- In order to comply with VFR outside controlled airspace above 3000 ft a pilot must be 1000 ft vertically, 1.5 km horizontally clear of cloud and:

A) Have a flight visibility of at least 5 NM.
B) Have a flight visibility of at least 3 NM and be in sight of the surface.
C) Have a flight visibility of at least 8 km and be in sight of the surface.
D) Have a flight visibility of at least 5 km.

73- Except when a clearance is obtained from an ATC unit, a VFR flight cannot enter a control zone when ceiling is less than:

A) 1500 feet or visibility is less than 5 km.
B) 1000 feet or visibility is less than 8 km.
C) 1000 feet or visibility is less than 5 km.
D) 2000 feet or visibility is less than 5 km.

74- 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.

75- Which aircraft has the right-of-way when they are converging?

A) Airplane.
B) Balloon.
C) Glider.
D) Airship.

76- Which of the following converging aircraft has the right-of-way?

A) Aircraft towing another aircraft.
B) Airship.
C) Rotorcraft.
D) Airplane.

77- 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.

78- Which of the following statements concerning the right-of-way is correct when two or more heavier-than-air aircraft are approaching an aerodrome for the purpose of landing?

A) Aircraft at the lower level shall give way to the aircraft at the higher level.
B) Aircraft at the higher level shall give way to the aircraft at the lower level.
C) An aircraft on final approach shall give way to on aircraft on downwind leg.
D) Towing aircraft has right of way than lower aircraft.

79- Which lights must be displayed by all aircraft in flight between sunset and sunrise:

A) Navigation lights and anti-collision lights.
B) Anti-collision lights and landing lights
C) Navigation lights and landing lights.
D) Strobe light and landing light.

80- 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.

81- 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.

82- SVFR may be authorized when the ground visibility is not less than:

A) 1000 m
B) 1500 m
C) 1800 m
D) 5 km

83- 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.

84- What is the definition of level?

A) Flight level
B) Altitude
C) Height
D) All answers are correct.

85- Aerodrome defines an area over:

A) Land
B) Water
C) A and B
D) A or B

86- Which signal shall be said by an aircraft when it has a very urgent message regarding another aircraft which is in fire?

A) Mayday
B) PANPAN
C) XXX
D) SOS

87- Except when a clearance is obtained from an ATC unit, VFR flights shall not takeoff or land at an aerodrome within a CTR of Airspace Class C or D or enter the aerodrome traffic zone or traffic pattern when the:

A) Ceiling is less than 1500 ft or the ground visibility is less than 5 km. .
B) Ceiling is less than 1000 ft or the ground visibility is less than 5 km.
C) Ceiling is less than 2000 ft or the ground visibility is less than 5 km.
D) Ceiling is less than 1000 ft or the ground visibility is less than 8 km.

88- Who shall be permitted to switch off the any flashing light?

A) Pilot-in-command
B) Operator
C) ATC
D) None

89- During an IFR flight in VMC in controlled airspace the experience a two-way radio communication failure exists, You will:

A) Land at the nearest suitable aerodrome and inform ATC.
B) Descend to the flight level submitted for that portion of flight.
C) Land at the nearest suitable aerodrome maintaining VMC and inform ATC.
D) Select squawk 7600, climb to the flight planned altitude and continue according to the current flight plan to destination.

90- Above what flight level IFR flight is compulsory?

A) 30
B) 90
C) 10
D) 200

91- Advisory service shall be provided in accordance with?

A) Clearance
B) Suggest and advise
C) Traffic information
D) B & C are correct

92- 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

93- 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

94- 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

95- Where State has not established minimum IFR altitudes, the minimum height of an aircraft above the highest obstacle over high terrain, or in mountainous areas shall be for an IFR flight:

A) At least 2000 ft within 8 km of the estimated position.
B) At least 1000 ft within 8 km of the estimated position.
C) At least 2000 ft within 5 km of the estimated position.
D) At least 1000 ft within 5 km of the estimated position.

96- To which flight plan shall an aircraft shall adhere itself?

A) Current flight plan
B) Operational flight plan
C) Filed flight plan
D) Repetitive flight plan

97- The lowest flight level for VFR is:

A) 200
B) 35
C) 45
D) 50

98- 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

99- When flying under IFR, the experience of total communications failure is exist in conditions of no cloud and unlimited visibility. What should you do?

A) Proceed to destination under VFR.
B) Descend to en-route minimum sector altitude and land at the nearest suitable IFR aerodrome.
C) If able to maintain VMC, land at the nearest suitable aerodrome and then inform ATC.
D) Continue under IFR and follow the filed flight plan.

100- Flying a magnetic track of 125°, what is the correct non RVSM semi-circular flight level?

A) FL310
B) FL330
C) FL350
D) FL390

101- Which light fitted on aircraft may be switched-off by pilot?

A) Navigation lights
B) Any flashing lights
C) Strobe lights
D) Landing

102- According to which of the following basis the advisory service shall not be provided?

A) advice
B) clearance
C) suggest
D) traffic information

103- 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

104- 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.

105- What SSR code shall be selected by, a hijacked airplane?

A) 7700
B) 7600
C) 7500
D) 7400

106- In areas where a vertical separation minimum (VSM) 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) FL390
C) FL390
D) FL400

107- An aircraft with a communications failure is attempting to land at its destination. It must land within:

A) 15 minutes of the last acknowledged EAT.
B) 30 minutes of the last acknowledged EAT.
C) 45 minutes of the last acknowledged EAT.
D) 1 hour of the last acknowledged EAT.

108- Under which condition the pilot-in-command of an aircraft may depart from rules of the air?

A) VMC
B) Interest of safety
C) IMC
D) Formation

109- 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

110- Ceiling is the base of lowest layer of cloud covering more than half of the sky below?

A) 6000 ft
B) 2000 ft
C) 2000 M
D) 20000 ft

111- 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 ft above the highest obstacle located within 10 NM of the estimated position of the aircraft.
D) 2000 ft above the highest obstacle located within 10 NM of the estimated position of the aircraft.

112- When not flying over high terrain or mountainous areas 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 ft above the highest obstacle located within 10 NM of the estimated position of the aircraft.
B) 2000 ft 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.

113- Which procedure do you follow after having experienced a two-way communication failure during a flight in accordance with IFR in VMC?

A) Continue the flight at the assigned level and route, carry out level changes as indicated in the filed ATC flight plan, land at the destination aerodrome at the planned ETA.
B) Maintain the assigned level and route and land at the nearest aerodrome where VMC conditions prevail.
C) Continue to fly in VMC, land at the nearest suitable aerodrome, report the arrival by the most expeditious means to the appropriate Air Traffic Control unit.
D) Continue to fly in VMC and return to the aerodrome of departure.

114- 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

115- 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 (1.200 m).

116- The Vertical Separation Minimum (VSM) 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).

117- 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) All the above.
B) 1, 2, 3
C) 1, 2 ,4
D) 2, 3, 4

118- Above FL290 the vertical flight separation between aircraft on the same direction in VSM area is:

A) 3000 feet.
B) 2000 feet.
C) 4000 feet.
D) 1500 feet.

119- The aircraft has the right of way shall maintain its:

A) Heading.
B) Speed.
C) Level.
D) A & B are correct.

120- 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

121- An aircraft which is intercepted by another aircraft shall set its transponder to:

A) Mode A, Code 2000 unless otherwise instructed by the appropriate ATS unit.
B) Mode A, Code 7700 unless otherwise instructed by the appropriate ATS unit.
C) Mode A, Code 7000 unless otherwise instructed by the appropriate ATS unit.
D) Mode A, Code 7600 unless otherwise instructed by the appropriate ATS unit.

122- 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

123- An aircraft intercepted by another aircraft shall immediately attempt to establish radio communication with the intercepting aircraft on the following frequencies:

A) 121.5 MHz or 243 MHz
B) 243 MHz or 125.5 MHz
C) 121.5 MHz or 125.5 MHz
D) 121.5 MHz or 282.8 MHz

124- 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

125- Which one are the objectives of air traffic control service:

A) Prevent collision between aircraft
B) Prevent collision between aircraft and obstruction
C) Expediting and maintaining an orderly flow of air traffic
D) All answers are correct

126- The transition level:

A) Shall be the lowest available flight level above the transition altitude that has been established.
B) Shall be the highest available flight level below the transition altitude that has been established.
C) For the aerodrome is published in the AGA section of the AIP.
D) Is calculated and decided by the commander.

127- 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.

128- The pilot of a departing aircraft flying under IFR shall change the altimeter setting from QNH to standard setting 1013.25 hPa when passing:

A) Transition layer.
B) Transition altitude.
C) Transition level.
D) The level specified by ATC.

129- What is the definition of "aerodrome traffic"?

A) Traffic on the maneuvering area and in the circuit.
B) Traffic on the maneuvering area and in the vicinity of the aerodrome.
C) Traffic on the movement area and in the vicinity of the aerodrome.
D) Circuit traffic.

130- "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).

131- Control Area (CTA) is defined as follows:

A) A controlled airspace extending upwards from a height of 1.000 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.

132- 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.

133- 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.

134- The estimated time at which the aircraft will commence movement associated with departure is:

A) EOBT
B) EET
C) TEET
D) ETA

135- A control area or portion thereof established in the form of a corridor known as:

A) A Terminal Maneuvering Area.
B) An upper air route.
C) An airway.
D) A SVFR entry/exit corridor.

136- 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.

137- 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

138- Flight Information Region (FIR) is an airspace within which the following services are provided:

A) Flight Information Service, Alerting Service and Advisory Service.
B) Flight Information Service only.
C) Flight Information Service and Advisory Service.
D) Flight Information Service and Alerting Service.

139- 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.

140- The controlling authority for a CTA is an:

A) TWR
B) ACC
C) APP
D) GND

141- 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

142- 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

143- 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) The must informs the control unit "cancelling my IFR flight".
2) The must requests and obtain clearance.
3) The may request his IFR flight plan to be changed to a VFR flight plan.
4) The flight plan automatically becomes a VFR flight plan.
The correct combination of statements is:
A) 1,4
B) 1,3
C) 2,4
D) 2,3

144- The vertical IFR separation minimum being applied by ATC within a controlled airspace for reciprocal track above FL290 in VSM airspace is:
A) 1000 feet (300 m).
B) 2000 feet (600 m).
C) 500 feet (150 m).
D) 4000 feet (1.200 m).

145- The vertical IFR separation minimum being applied by ATC within a controlled airspace for reciprocal track below FL290 is:
A) 1000 feet (300 m).
B) 2000 feet (600 m).
C) 500 feet (150 m).
D) 2500 feet (750 m).

146- An Expected Approach Time (EAT) is given:

A) When an aircraft is instructed to hold.
B) When the approach delay is longer than 20 minutes.
C) On request.
D) For all flights.

147- Unless otherwise specified, in RVSM airspace the vertical separation of 1000 ft is valid up to:

A) FL190.
B) FL290.
C) FL410.
D) from 4500 ft to FL290.

148- A VFR flight constitutes essential traffic to other VFR flights, when operating in controlled airspace classified as:

A) B and C.
B) B.
C) B, C, and D.
D) B, C, D, and E.

149- Above 30000 ft, the vertical separation between aircraft on reciprocal tracks will be:

A) 2000 ft.
B) 1000 ft.
C) 1000ft within RVSM airspace, 2.000 ft in VSM airspace.
D) 4000 ft.

150- What is the minimum vertical separation between reciprocal aircraft flying IFR below FL290?

A) 500 feet.
B) 1000 feet.
C) 1500 feet.
D) 2000 feet.

151- Air traffic advisory service is provided in:

A) Control area
B) Advisory area
C) Advisory route
D) B & C are correct

152- Based on what facility the ACAS operate:

A) NAVAIDS
B) SSR
C) SSR transponder
D) Communication

153- What is vertical position of an aircraft, if set 1013.2 hPa?
A) Flight level
B) Altitude
C) Height
D) None

154- What will be the level of aircraft below lowest usable Flight level?
A) Flight level
B) Altitude
C) Height
D) None

155- What will be the level of an airplane at transition altitude?
A) Altitude
B) Flight level
C) Height
D) B and C

156- 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

157- Chang over point may be established on a route which is equipped with:
A) DME
B) NDB
C) VOR
D) ILS

158- Clearance limit are limited to:
A) Appropriate significant point.
B) Controlled airspace boundary
C) Destination
D) All answers are correct

159- Repetitive flight plan is submitted by the:
A) Pilot - in - command
B) Operator
C) Dispatcher
D) All answers are correct

160- Within which airspace SVFR is authorized?
A) ATZ
B) TMA
C) AWY
D) CTR

161- What will be the minimum ceiling for VFR at a controlled aerodrome?
A) 1000 ft
B) 1000 m
C) 1500 m
D) 1500 ft

162- What is minimum height of a VFR flight over congested area?
A) 2000’
B) 500’
C) 100’
D) 1000’

163- Who is responsible to establish minimum flight altitude?
A) State
B) Operator
C) Pilot-in-command
D) All answers are correct

164- Who is responsible for the operation of aircraft?
A) Pilot-in-command
B) Operator
C) State
D) A person who recognize by ATCU

165- Which navigation light of overtaken aircraft may not be seen at night?
A) Port
B) Starboard
C) Rear
D) A or B are correct

166- Which aircraft has right of way?
A) Landing
B) Taking off
C) Emergency
D) Urgency

167- 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

168- What is the purpose of using navigation light?
A) Indicate relative flight path
B) Attract attention
C) A and B
D) A or B

169- 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

170- 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

171- Within which class of airspace the VFR flight are not permitted?
A) class B
B) class A
C) class C
D) class D

172- Who is responsible to publish AIP:
A) Operator
B) State
C) ICAO
D) ATS authority

173- 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

174- What is the term of level above transition altitude?
A) Altitude
B) Flight level
C) Height
D) QNH

175- 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

176- 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

177- Which portion of flight is called "significant portion" of flight?
A) Cruise
B) Climb
C) Descend
D) None

178- 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

179- What is the minimum flight visibility for VFR at 12000 ft?
A) 5 km
B) 8km
C) 1500m
D) 1000m

180- Above what flight level, the VFR flight shall not operate?
A) 200
B) 20000
C) 290
D) 29000

181- When may an IFR flight cancel its IFR flight?
A) Ground in sight
B) In VMC
C) Uninterrupted ground in sight
D) Uninterrupted VMC

182- An IFR flight shall not operate?
A) Above MEA
B) Above FL 200
C) Below minimum flight altitude
D) Along advisory route

183- Who are responsible to arrange a formation flight within uncontrolled airspace?
A) Pilots -in-command
B) Appropriate authority
C) Air traffic controller
D) None

184- What is the maximum lateral distance between aircraft in formation flight?
A) 1 NM
B) 0.5 NM
C) 1 km
D) B or C are correct

185- What is the maximum vertical separation of formation flight?
A) 100 m
B) 30 m
C) 30 ft
D) None

186- The aircraft that has right of way shall maintain its:
A) Heading
B) Speed
C) A or B
D) A and B are correct

187- 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

188- 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

189- 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

190- Who is the appropriate authority regarding flight over other than the high seas?

A) State of operator
B) State of registry
C) State of occurrence
D) State of territory being overflown

191- ADS stand for:

A) Automatic direction specification
B) Aerodrome data system.
C) Aviation development service
D) Automatic dependent surveillance

192- Acrobatic flight is a flight consist of manoeuvers performed by an aircraft involving abrupt changes in attitude or speed .....

A) Intentionally.
B) Compulsory.
C) Automatically.
D) All answers are correct.

193- 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.

194- 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

195- Aeronautical information publication will be issued by:
A) State
B) Operator
C) ATC unit
D) Flight standard

196- ACAS operation is based on:
A) Primary surveillance radar
B) Secondary surveillance radar transponder
C) Pressure altitude
D) Single side band

197- An airspace of defined dimension established around an aerodrome for the protection of aerodrome traffic is .....
A) CTR.
B) ATZ.
C) CTA.
D) TMA.

198- 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

199- All aircraft flying in the vicinity of an aerodrome or operating on the maneuvering area of an aerodrome is:
A) Controlled traffic
B) Known traffic
C) Aerodrome traffic
D) Air traffic

200- How many airspaces are designated by ICAO?
A) 7
B) 5
C) 6
D) 4

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

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

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Annex 3

- Annex 3 – 18th, AMDT 76

1- 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.

2- 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.

3- What is the approximate speed of a 25 kts wind, expressed in kilometres per hour?

A) 60 km/h
B) 35 km/h
C) 55 km/h
D) 45 km/h

4- 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

5- 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

6- 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

7- Wind at 2000 ft 200˚/40 kts. What would you expect at the surface over the sea approximately?

A) 190˚/30 kts
B) 185˚/40 kts
C) 210˚/30 kts
D) 220˚/40 kts

8- (Refer to figure C-09) Assuming a generalized zonal system of world climatic and wind circulation, zone U is in area of:

A) SW trade winds.
B) Travelling depressions.
C) NE trade winds.
D) Subtropical high pressure.

9- The following weather report is a:

OIII 241322 VRB03KT 1500 HZ OVC004 BECMG 1517 OOOOOKT 0500 FG VV002 TEMPO 2022 0400 FG VV001

A) METAR.
B) 24 hour TAF.
C) SPECI.
D) 9 hour TAF.

10- 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:

A) Warm front.
B) Cold front.
C) Trade wind front.
D) Sea-breeze front.

11- (Refer to figure C-07) The diagram in the annex represents a cross-section of the following frontal weather system:

A) Warm occlusion.
B) Cold occlusion.
C) Warm front.
D) Cold front.

12- 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

13- (Refer to figure C-08) What change in pressure will occur at point "A" during the next approximately 1 to 2 hours?

A) Approximately constant pressure.
B) A drop in pressure.
C) Irregular fluctuations.
D) A rise in pressure.

14- (Refer to figure C-11) The cold front is indicated at position:

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

15- (Refer to figure C-11) The warm sector is indicated by letter:

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

16- (Refer to figure C-10) Which of the following best describes Zone B?

A) Col.
B) Ridge of high pressure.
C) Depression.
D) Trough of low pressure.

17- (Refer to figure C-10) Which of the following best describes Zone C?

A) Ridge of high pressure.
B) Col.
C) Trough of low pressure.
D) Depression.

18- (Refer to figure C-11) What does zone B depict?

A) A trough.
B) A ridge.
C) The warm sector.
D) The cold front.

19- (Refer to figure C-13) The pressure system at position "D" is a:

A) Secondary low
B) Col.
C) Trough of low pressure.
D) Ridge of high pressure.

20- (Refer to figure C-12) The front labeled "F" is a:
A) Cold front.
B) Warm front.
C) Warm occlusion.
D) Cold occlusion.

21- (Refer to figure C-11) What does zone C depict?
A) A trough.
B) A ridge.
C) The warm sector.
D) The cold front.

22- (Refer to figure C-10) Which of the following best describes Zone A?
A) Ridge of high pressure.
B) Trough of low pressure.
C) Depression
D) Cold front.

23- (Refer to figure C-08) What pressure does an observer at point "C" encounter during the next 1 hour?
A) Rising pressure.
B) Falling pressure.
C) A pressure rise first, then an immediate pressure drop.
D) No substantial pressure change.

24- (Refer to figure C-08) What temperature change does an observer at point "C" encounter in the next 1 to 2 hours?
A) The temperature decreases.
B) The temperature increases.
C) The temperature first increases and then decreases.
D) No substantial temperature change.

25- (Refer to figure C-08) What pressure changes does an observer at point "B" encounter during the next hour?
A) Rising pressure.
B) Falling pressure.
C) A pressure rise first, then an immediate pressure drop.
D) No substantial pressure change.

26- 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.

27- What is the meaning of the abbreviation "BKN"?

A) 6 - 8 oktas.
B) 3 - 4 oktas.
C) 5 - 7 oktas.
D) 8 oktas.

28- The meaning of RVR is:

A) Cross-wind component.
B) Runway visual range.
C) Meteorological visibility.
D) Braking action.

29- What is the meaning of the abbreviation "SKC"?

A) 0 okta cloud cover.
B) 1 - 2 oktas cloud cover.
C) 3 - 4 oktas cloud cover.
D) Abbreviation "SKC" is not associated with clouds.

30- What is the meaning of the abbreviation "OVC"?

A) 0 oktas cloud cover.
B) 3 - 4 oktas cloud cover.
C) 5 - 7 oktas cloud cover.
D) 8 oktas cloud cover.

31- Among the ten groups of clouds, the following two are mentioned specifically in meteorological reports and forecasts intended for aviation:

A) Altocumulus and stratus.
B) Cirrostratus and cumulonimbus.
C) Cumulonimbus and towering cumulus.
D) Cumulonimbus and nimbostratus.

32- 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

33- What is the color of warm front is shown on a surface chart?

A) Red
B) Green
C) Blue
D) Violet

34- Runway visual range can be reported in:

A) A TAF.
B) A METAR.
C) A SIGMET.
D) Both a TAF and a METAR.

35- 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.

36- Which of the following weather reports could be, In accordance with the regulations, abbreviated to CAVOK?

A) 29010KT 9999 SCT045TCU 16/12 Q1015 RESHRA NOSIG=
B) 24009KT 6000 RA SCT010 OVC030 12/11 Q1007 TEMPO 4000 =
C) 15003KT 9999 BKN100 17/11 01024 NOSIG =
D) 04012G26KT 9999 BKN030 11/07 01024 NOSIG =

37- Which of the following phenomena should be described as precipitation at the time they are observed?

A) TS
B) SA
C) DZ
D) SQ

38- 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.

39- 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.

40- 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.

41- ATIS information contains:

A) Operational information and if necessary meteorological information.
B) Only meteorological information.
C) Meteorological and operational information.
D) Only operational information.

42- Refer to the following TAF for Tehran.
OIII 061019 20018G30KT 9999 -RA SCT050 BKN080 TEMPO 1113 23012KT 6000

-DZ BKN015 BKN030 BECMG 1518 23020G35KT 4000 RA OVC010=

The lowest cloud base forecast for Tehran (ETA at 12:00 UTC) is:

A) 1000 ft
B) 1500 ft
C) 1500 m
D) 5000 ft

43- How long from the time of observation is a TREND in a METAR valid?

A) 9 hours
B) 2 hours
C) 1 hour
D) 30 minutes

44- Which of the following phenomena should be described as precipitation at the time they are observed?

A) +SHSN
B) VA
C) BR
D) MIFG

45- 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

46- The wind direction in a METAR is measured relative to:

A) Compass North.
B) Magnetic North.
C) True North.
D) Grid North.

47- A METAR message is valid:

A) At the time of observation.
B) For 2 hours.
C) For the hour following the observation.
D) For 9 hours.

48- In a METAR message, abbreviations "BR" and "HZ" mean respectively:

A) BR = mist, HZ = widespread dust.
B) BR = fog, HZ = haze.
C) BR = mist, HZ = smoke.
D) BR = mist, HZ = haze.

49- In a METAR message, the wind group is 23010MPS. This means:

A) Wind from 230° magnetic at 10 miles per hour.
B) Wind from 230° true at 10 miles per hour.
C) Wind from 230° magnetic at 20 knots.
D) Wind from 230°true at 20 knots.

50- 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.

51- 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.

52- The following weather message is a:

OIFM 241200Z 241322 VRB03KT 1500 BR OVC004 BECMG 1517 OOOOOKT 0500 FG VV002 TEMPO 2022 0400 FGVV001

A) METAR.
B) 24 hour TAF.
C) SPECI.
D) 9 hour TAF.

53- The term CAVOK is used when weather conditions are:
A) 9999, CB, NOSIG.
B) 9000, SKC, NOSIG.
C) 8000, HAZARDOUS WX NIL, NOSIG.
D) 9999. NSC, NSW.

54- What does the METAR code "R24R/P1500" mean?
A) Snow clearance in progress on RWY 24-Right, usable runway length 1500 meters.
B) RVR RWY 24-Right is below 1500 meters.
C) RVR RWY 24-Right is above 1500 meters.
D) RVR RWY 24-Right is 1500 meters.

55- Which of the following is a landing forecast?
A) METAR.
B) TAF.
C) SPECI.
D) METAR with TREND.

56- What will be the effect on the reading of an altimeter of an aircraft parked on the ground as an active cold front is approaching and then passing?
A) It will first increase then decrease.
B) It will remain unchanged.
C) It will first decrease then increase.
D) It will fluctuate up and down by about ± 50 feet.

57- RVR is measured when meteorological visibility falls below:
A) 500 m
B) 1500 m
C) 2000 m
D) 2500 m

58- 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.

59- 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.

60- Which of the following conditions is most likely to cause airframe icing?

A) PE
B) GR
C) SHSN
D) +FZRA

61- The unit of pressure most commonly used in meteorology is:

A) kg/cm^2
B) Ibs/in^2
C) hPa
D) $tons/m^2$

62- At FL180, the air temperature is -35˚C. At this level density is:

A) Unable to be determined without knowing the QNH.
B) Greater than the density of the ISA atmosphere at FL180.
C) Less than the density of the ISA atmosphere at FL180.
D) Equal to the density of the ISA atmosphere at FL180.

63- An outside air temperature of -35°C is measured while cruising at FL200. What is the temperature deviation from the ISA at this level?

A) 5°C colder than ISA.
B) 10˚C warmer than ISA.
C) 5˚C warmer than ISA.
D) 10 ˚C colder than ISA

64- The lowest assumed temperature in the International Standard Atmosphere (ISA) is:

A) -44.7˚C
B) -273˚C
C) -56.5˚C
D) -100˚C

65- In the International Standard Atmosphere, the decrease in temperature with height below 11 km is:

A) 1 ˚C per 100 m.
B) 0.65˚C per 100 m.
C) 0.5˚C per 100 m.
D) 0.6˚C per 100 m.

66- If you are flying at FL100 in an air mass that is 10°C warmer than a standard atmosphere, what is the outside temperature likely to be?

A) +15˚C
B) +5˚C
C) -10˚C
D) -15˚C

67- The temperature at FL160 is -22°C and temperature at FL090 is based on the ICAO standard lapse rate, what is the difference temperature between them?

A) -4°C
B) -19 °C
C) 0 °C
D) +4 °C

68- The temperature at FL140 is -12 °C. What will the temperature be at FL110 if the ICAO standard lapse rate is applied?

A) -9˚C
B) -18˚C
C) -6˚C
D) -15°C

69- The temperature at FL080 is +6˚C. What will the temperature be at FL130 if the ICAO standard lapse rate is applied?

A) +2°C
B) -6°C
C) 0°C
D) -4°C

70- The temperature at FL110 is -5 °C. What will the temperature be at FL050 if the ICAO standard lapse rate is applied?

A) -3 ˚C
B) +3 ˚C
C) 0 ˚C
D) +7 ˚C

71- The 0˚C isotherm is forecast to be at FL050. At what FL would you expect a temperature of -6˚C?

A) FL110
B) FL020
C) FL100
D) FL080

72- If Shiraz reports a wind of 300˚/12 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) 330˚/25 kts
D) 270˚/20 kts

73- While flying at FL 120, 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

74- 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

75- 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

76- 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

77- 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

78- 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

79- What is the validity of TREND?

A) 2hours
B) 3hours
C) 4hours
D) 5hours

80- 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.

81- The VARIABLE wind for wind direction is express when wind direction change ……... within last 10 min before observing weather.

A) 30˚ or more
B) 45˚ or more
C) 60˚ or more
D) 50˚ or more

82- Which one of following statement is correct about variable wind direction?

A) 240V260
B) 240V270
C) 240V290
D) 240V310

83- How can you identify wind speed is calm in METAR?

A) WS is calm
B) 00000
C) CALM
D) 11111

84- 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

85- "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

86- 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

87- 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

88- What is the specification of CAVOK?

A) No CB
B) No cloud below 5000 ft
C) No PPTN
D) All answers are correct

89- "R26L/P1200U" in METAR is shown the value of:

A) Visibility
B) RVR
C) Ceiling
D) Temperature

90- 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

91- What is the "U" in RVR information that use for "R26L/P1200U"?

A) Under
B) Up
C) No change
D) Unlimited

92- What is the "N" in RVR information that use for "R26L/P1200N"?

A) No change
B) Down
C) Up
D) Negative

93- 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

94- What is the limitation of visibility in Fog?

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 is equal or less than 1000 m

95- 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

96- 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

97- Which of the following items are used in TREND?

A) BECMG
B) TEMPO
C) FM
D) All answers are correct

98- 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"

99- Terminal area forecast is an aerodrome weather forecast that cover an area about:

A) 3 NM
B) 5 NM
C) 10 NM
D) 15 NM

100- 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 hours

101- What is the validity of TAF when it issues every 6 hours?

A) Less than 9 hours
B) Less than 12 hours
C) 12 hours or more
D) Less than 30 hours

102- What is the maximum validity of AIRMET?

A) 6 hours
B) 12 hours
C) 24 hours
D) 30 hours

103- What is the validity of SIGMET?

A) 4 hours
B) 9 hours
C) 24 hours
D) 30 hours

104- Which type of information is available in VOLMET?

A) METAR
B) SPECI
C) TAF
D) All answers are correct

105- Refer to METAR "OIFM 152200Z 00000KT 0100 FG SCT035 BKN100 M02/M02 Q1011 A2986" what is the wind speed?

A) Calm
B) 10 KTS
C) 20 KTS
D) 30 KTS

106- Refer to METAR "OIFM 152200Z 00000KT 0100 FG SCT035 BKN100 M02/M02 Q1011 A2986" what is the horizontal visibility?

A) 1000m
B) 100m
C) 3500m
D) 2200m

107- Refer to METAR "OIFM 152200Z 00000KT 0100 FG SCT035 BKN100 M02/M02 Q1011 A2986" what is the dew point temperature?

A) +2°C
B) +5°C
C) -2°C
D) -5°C

108- Refer to METAR "OIII 151500Z 26010KT 0800 SN SCT035CB BKN100 00/M02 Q1015 A2988" what is the wind direction?

A) 150°
B) 100°
C) 080°
D) 260°

109- Refer to METAR "OIII 151500Z 26010KT 0800 SN SCT035CB BKN100 00/M02 Q1015 A2988" what is the height of ceiling?

A) 1000 Ft
B) 100 Ft
C) 3500 Ft
D) 10000Ft

110- Refer to METAR "OIII 151500Z 26010KT 0800 SN SCT035CB BKN100 00/M02 Q1015 A2988" what is the intensity of snow?

A) Light
B) Moderate
C) Sever
D) Heavy

111- Which information is contained in an AIRMET?

A) Severe icing
B) Severe turbulence
C) Sand storm
D) Wind speed 30 KTS or more at surface

112- "AIRMET" contains information which are potentially hazardous to……..

A) Small aircraft
B) Large aircraft
C) Heavy aircraft
D) All aircraft

113- "SIGMET" are issued for hazardous weather which is considered significant to:
A) Large aircraft
B) Small aircraft
C) Heavy aircraft
D) All aircraft

114- Which information is contained in a SIGMET?
A) Severe icing
B) Severe turbulence
C) Sand storm
D) All answers are correct

115- In a SIGMET what does "EMBD TSGR" stand for?
A) Severe icing
B) Severe turbulence
C) Sand storm
D) Embedded thunderstorm with hail

116- 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

117- In METAR what does the code "BR" stand for?
A) Severe icing
B) Mist
C) Sand storm
D) Embedded thunderstorm with hail

118- 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

119- 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

120- 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

121- In a forecast what does the code "FU" stand for?
A) Icing
B) Thunderstorm in vicinity and light rain showers
C) Hail
D) Smoke

122- 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 pellet

123- In a forecast what does the code "SG" stand for?
A) Severe icing
B) Snow grains
C) Hail
D) Embedded thunderstorm with hail

124- 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

125- In a forecast what does the code "DS" stand for?

A) Severe icing
B) Dust storm
C) Hail
D) Embedded thunderstorm with hail

126- (Refer to figure C-14) What is the height and speed of the jet stream over southern Iran flowing from west to east?

A) FL380 at 80 knots
B) FL420 at 70 knots
C) FL380 at 130 knots
D) FL420 at 120 knots

127- (Refer to figure C-14) What is the height of tropopause over northeast of Iran?

A) FL550
B) FL400
C) FL200
D) FL350

128- (Refer to figure C-14) 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 30,000 ft and bases below 25000 ft.

129- (Refer to figure C-14) What is the intensity and height limits of turbulence in CAT area No.3?

A) Light turbulence below 25000 ft up to 47000 ft.
B) Moderate turbulence below 25000 ft up to 47000 ft.
C) Light turbulence between 25000 ft up to 47000 ft.
D) Moderate turbulence between 25,000 ft up to 47000 ft.

130- (Refer to figure C-15) According to wind and temperature aloft forecast at FL340, what is the average wind and temperature over center of Iran?

A) Wind is from 250° true at 95 knots and temperature is -54°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.

131- (Refer to figure C-16) What weather conditions are forecast to exist from 06:00 Z until 08:00 Z 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.

132- (Refer to figure C-16) Between 04:00 Z and 12:00 Z on 12th of the month the wind at OPKC is forecast to be?

A) Wind from 005° true at 50 knots.
B) Wind from 050° magnetic at 5 knots.
C) Wind from 005° true at 5 knots with gusts to 15 knots.
D) Wind from 050° true at 5 knots with gusts to 15 knots.

133- (Refer to figure C-16) The base of lowest ceiling at LTBA between 06:00 Z to 10:00 Z is forecast to be?

A) 250 ft
B) 3000 ft
C) 2500 ft
D) 300 ft

134- (Refer to figure C-16) What is the reported intensity of the precipitation at OEDF from 06:00Z to 12:00Z on 11th of the month?

A) Moderate rain associated with thunderstorm.
B) Light rain at vicinity.
C) Moderate rain at vicinity.
D) Light rain associated with thunderstorm.

135- 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

136- 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 and C are correct

137- 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

138- 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 elements

139- Runway visual range assessments shall be representative of:

A) Touch down zone RVR for non-precision or CAT I ILS
B) Touch down and mid-point RVR are intended for CAT II ILS
C) Touch down, mid-point and stop end RVR are intended for CAT III ILS
D) All answers are correct

140- What is the reference of light to recognize object with on lit background?

A) Bright light
B) 1000 spot light
C) 1000 candles
D) Dark light

141- "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

142- Which type of aircraft shall report special aircraft observation when they are facing with sever mountain wave or thunder storm with hail?

A) Small aircraft
B) Large aircraft
C) Heavy aircraft
D) All aircraft

143- 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

144- 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

145- 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.

146- What is the gusty wind?

A) Average wind speed change more than 5 knots in 10 minutes.
B) Average wind speed change more than 10 knots in 10 minutes.
C) Average wind speed change more than 15 knots in 10 minutes.
D) Average wind speed change more than 20 knots in 10 minutes.

147- 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.

148- What does the code "PO" in METAR mean?

A) Drizzle
B) Dust storm
C) Sand storm
D) Dust devil

149- What does the code "FC" in METAR mean?

A) Rain
B) Water spout
C) Tornado
D) Funnel cloud

150- What does the code "IC" in METAR mean?

A) Diamond dust
B) Funnel cloud
C) Snow grains
D) Mist

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

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	C	114	D	127	D	140	C
102	A	115	D	128	C	141	B
103	A	116	B	129	B	142	D
104	D	117	B	130	A	143	A
105	A	118	C	131	C	144	B
106	B	119	B	132	D	145	A
107	C	120	C	133	C	146	B
108	D	121	D	134	D	147	C
109	D	122	D	135	A	148	D
110	B	123	B	136	D	149	D
111	D	124	C	137	C	150	A
112	A	125	B	138	D		
113	D	126	C	139	D		

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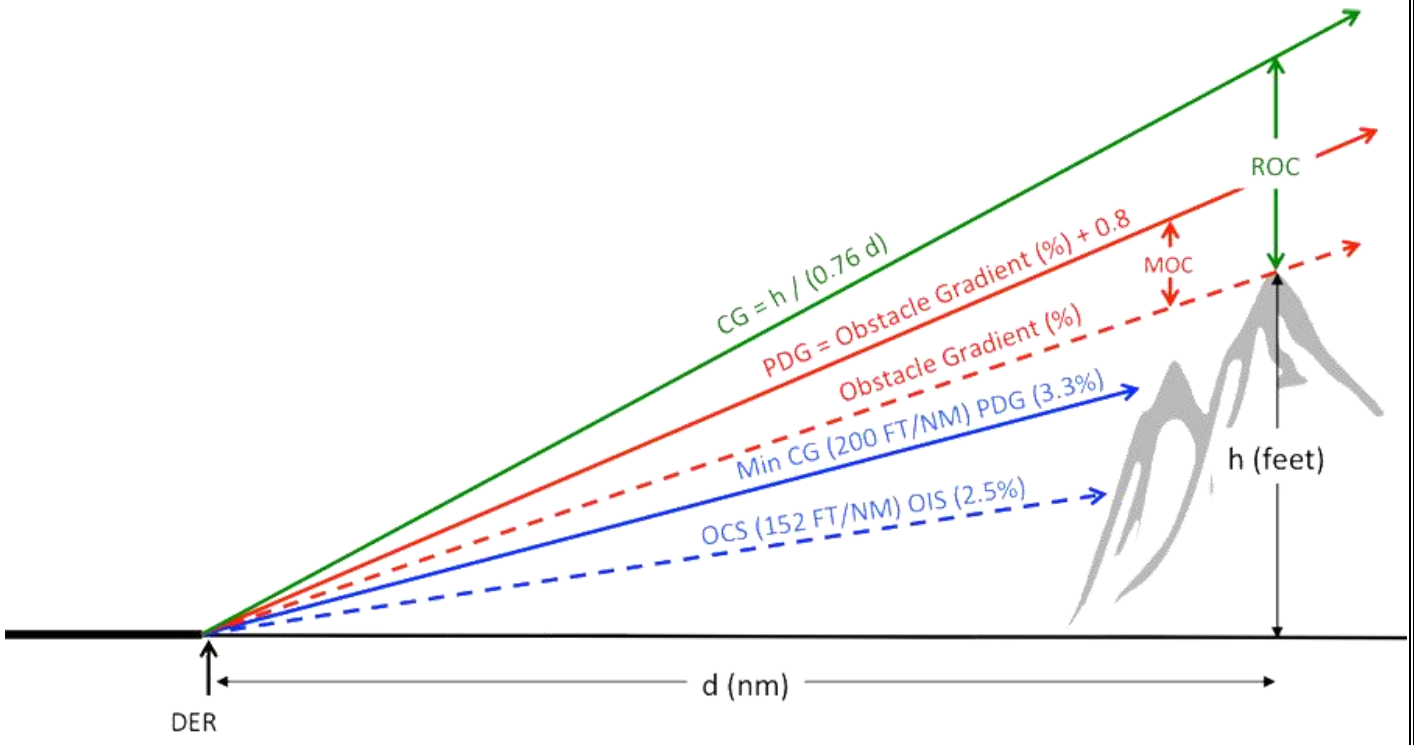
Annex 6 (II)



TERPS:
CG – Climb Gradient (ft/nm)
ROC – Required Obstacle Clearance (ft/nm)
OCS – Obstacle Clearance Surface (152 ft/nm)

ICAO:
PDG – Procedure Design Gradient (%)
MOC – Minimum Obstacle Clearance (0.8%)
OIS – Obstacle Identification Surface (2.5%)

Annex 6 P II 9th, AMDT 34

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 cloud condition and MDA/H or DA/H.

2- An aeroplane can be:

A) Power driven

B) Lighter than air

C) Heavier than air

D) A and C are correct

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- Flight crew member is:

A) A licensed crew member on an aeroplane

B) A licensed crew member on an aero plane during flight time

C) A licensed crew member on an aircraft during flight duty period

D) A licensed crew member on an aircraft

5- 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)

6- Flight time is a synonymous with:

A) Block to block

B) Chock to chock

C) A and B are correct

D) A or B is correct

7- The procedures for carrying of dangerous goods are contained in:

A) Annex 1
B) Annex 6
C) Annex 18
D) Annex 17

8- 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

9- 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

10- 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

11- The aerodrome from which a flight departs may also be used as:

A) En-route alternate aerodrome
B) Destination alternate aerodrome
C) Take-off alternate aerodrome
D) A or B is correct

12- 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)

13- Which of ICAO Annexes shall be applicable to the operation of aeroplanes 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

14- 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

15- MDA/H is specified altitude or height in:

A) Circling approach procedure (2D)
B) Precession approach procedure (3D)
C) Non-precession approach procedures (2D)
D) A or C is correct

16- The operational control is responsibility of:

A) Pilot-in-command
B) Operator
C) State
D) All answers are correct

17- If the incident occurs and necessitates to report by Pilot-in-command, it shall be made normally within….:

A) 10 days
B) 90 days
C) One month
D) 3 months

18- 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

19- If an emergency situation which endangers the safety of the aeroplane necessitates the taking of action which involves a violation of local regulations or procedures When pilot shall be notified to local authority?

A) Within 10 days
B) Within 5 days
C) At termination of flight
D) Without delay

20- What is the lowest height in Precision approach at which missed approach must be initiated?

A) MDH
B) DH
C) OCA
D) DA

21- What is the lowest height as aerodrome operating minima for VOR/DME approach?

A) MDH
B) OCH
C) DH
D) TCH

22- 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

23- Flight recorder comprises?

A) Cockpit voice recorder
B) Flight data recorder
C) A or B is correct
D) A and B are correct

24- The Maximum certificated take-off mass of large aeroplane is:

A) Over 27000 kg
B) Over 5700 kg
C) Over 7000 kg
D) Over 13600 kg

25- 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

26- 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

27- 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)

28- 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

29- Navigation for flights under the visual flight rules is accomplished by:

A) Instrument
B) Visual reference to landmarks
C) VMC
D) IMC

30- Which of ICAO Annex shall be applicable to international general aviation operations with aeroplane?

A) Annex 6 Part II
B) Annex 6 Part III
C) Annex 6 Part I
D) Annex 8

31- 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

32- 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

33- 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

34- 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 security of aircraft.
D) Operation, safety and security of aircraft during flight time.

35- Each flight crew member required to be at their station during:

A) En-route
B) Takeoff and Landing
C) Cruise climb
D) Only landing

36- How many destination alternate aerodromes shall be specified in flight plan for IFR flights?

A) One
B) Two
C) At least one
D) None

37- What is the minimum deviation from selected flight level, the alert system shall be active in RVSM airspace?

A) ±300 ft
B) ±200 ft
C) ±100 ft
D) ±500 ft

38- Which of the following operation shall be able to establish two-way communication?

A) IFR
B) Controlled VFR
C) Night operation
D) All answers are correct

39- The amount of fuel for IFR flight when no destination alternate required is:

A) Departure to Destination + 2 hrs
B) Departure to Destination + at least 45 min at normal cruising altitude
C) Departure to Destination + 45 min at normal cruise consumption
D) Departure to Destination + 2 hrs at normal cruise consumption

40- How shall be the weather minima at destination and destination alternate for an IFR flight?

A) Equal to aerodrome minima
B) At or above minima
C) Above minima
D) All answers are correct

41- What shall be the minimum visibility at isolated destination aerodrome when no Destination alternate is required?

A) 5.5 km
B) 4 km more than procedure minima
C) A or B is correct
D) A and B are correct

42- The amount of fuel required for VFR at day to the aerodrome of intended landing is:

A) Departure to Destination + at least 30 minutes at normal cruising altitude
B) Departure to Destination + at least 45 minutes at normal cruising altitude
C) Departure to Destination + 45 minutes
D) Departure to Destination + 30 minutes

43- For which of the following pressure, the non-pressurized aeroplane, 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

44- When an aeroplane 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

45- Who is responsible to approve and publish an Instrument approach procedure?

A) Operator
B) State of the operator
C) ATC
D) State of the aerodrome

46- For flights in defined portions of airspace where a RVSM is applied, an aeroplane shall be authorized by the ……for operation in the airspace concerned.

A) State of Registry
B) Operator
C) State
D) State of Operator

47- Which category of precision approach may use both visibility or RVR as aerodrome operating minima?

A) CAT I
B) CAT II
C) CAT III
D) All answers are correct

48- What is the difference between altitude indicated by the altimeter display and pressure altitude corresponding to undisturbed ambient pressure?

A) Target level of safety
B) Altimetry system error
C) Total vertical error
D) Technical error

49- 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

50- All turbine engine aircraft with maximum certificated take-off mass in excess of ……. or authorized to carry more than …… shall be equipped with GPWS which has a forward looking terrain avoidance function.:

A) 5700 kg – 15 passengers
B) 27000 kg – 30 passengers
C) 5700 kg – 9 passengers
D) 15000 kg – 9 passengers

51- 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

52- 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

53- Which manual contain the operating limitation?

A) Flight manual
B) Operational manual
C) Annex 6
D) Annex 1

54- 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

55- RVSM approval is valid:

A) at least once every two years or within intervals of 1000 flight hours per aeroplane, whichever period is longer
B) at least once every year or within intervals of 1000 flight hours, whichever is longer
C) at least once every years or within intervals of 1000 flight hours, whichever is shorter
D) at least once every two years or within intervals of 1000 flight hours per aeroplane, whichever period is shorter

56- Which FDR shall record the configuration of lift and drag devices only?

A) Type IA
B) Type IIA
C) Type I
D) Type II

57- Which equipment is able to warn a pilot regarding to excessive altitude loss after take-off or go-around?

A) Radar altimeter.
B) GPWS.
C) Radio altimeter.
D) ADS.

58- After entering the final approach segment or after descending below 300 m (1000 ft) above the aerodrome, if the reported VIS 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

59- Safety harness includes:

A) Shoulder straps
B) Seat belt
C) A and B are correct
D) A or B is correct

60- 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

61- 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 (1 000 ft)
B) Glide slope
C) 600 m (2 000 ft)
D) 450 m (1 500 ft)

62- The flight manual shall be updated by implementing changes made mandatory by:

A) State of Operator
B) Operator
C) State
D) State of Registry

63- How an aeroplane may be refueled, when passengers are on board the aeroplane?

A) attended by pilot in command or other qualified person
B) two-way communications should be maintained between the ground crew supervising the refueling and the pilot-in-command or other qualified personnel
C) A and B are correct
D) A or B is correct

64- If a flight crew member capacity is reduced due to lack of oxygen, what is the responsibility of pilot in command?

A) Continue to destination
B) Not continue beyond nearest suitable aerodrome
C) Continue to en-route alternate
D) Back to departure

65- When an aeroplane is authorized to operate in icing condition?

A) Certify to operate
B) Equipped for operation
C) A or B is correct
D) A and B are correct

66- 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

67- 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

68- Cockpit voice recorder shall be capable of retaining the information recorded during at least the last:

A) 30 days
B) 30 hours
C) 30 minutes
D) any time

69- Extended flight over water means when a flight operated over water at a distance of:

A) More than 50 NM, away from land suitable for making an emergency landing
B) More than 50 NM, or 30 minutes at normal cruising speed, whichever is the lesser, away from land suitable for making an emergency landing
C) More than 50 NM, or 30 minutes at normal cruising speed, whichever is the greater, away from land suitable for making an emergency landing
D) 50 NM, or 30 minutes, whichever is the lesser, away from land

70- Type A of Instrument approach operations shall only be continued with the required visual reference when:

A) A MDH or DH above 75 m (250 ft)
B) A MDH above 75 m (250 ft)
C) A MDH or DH at or above 75 m (250 ft)
D) A MDH or DH at or below 75 m (250 ft)

71- The color of the markings of break-in points shall be:

A) Red
B) Yellow
C) Black
D) A or B is correct

72- A Reduced Vertical Separation Minimum (RVSM) of 300 m (1000 ft) is applied:

A) Between FL290 and FL410
B) Between FL290 and FL410 inclusive
C) Between FL290 and FL410 exclusive
D) Above FL290

73- How many landing lights an aeroplane requires when operating at night?

A) One
B) Two
C) At least one
D) At least two

74- 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

75- How many fire extinguishers shall be located on pilot's compartment?

A) One
B) Two
C) At least one
D) At least two

76- VFR flights which are operated as controlled flights shall be equipped with:

A) VFR instruments
B) IFR instruments
C) GPWS
D) ELT

77- 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

78- The instruments and equipment, including their installation in aeroplane shall be approved or accepted by:

A) State of Operator
B) Operator
C) State
D) State of Registry

79- The FDR container is to be painted in:

A) Orange or yellow
B) Red
C) Black
D) Yellow

80- Type B of Instrument approach operations shall only be continued with the required visual Reference when:

A) A MDH or DH above 75 m (250 ft)
B) A DH below 75 m (250 ft)
C) A MDH or DH at or below 75 m (250 ft)
D) A DH at or below 75 m (250 ft)

81- All aeroplane on all flights shall carry:

A) Interception procedures
B) Flight manual
C) Current suitable chart
D) All answers are correct

82- 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) 3 months
D) 4 months

83- 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

84- 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

85- The flight manual contains the information specified in:

A) Annex 18
B) Annex 8
C) Annex 6
D) Annex 16

86- Which one will warn the flight crew, the unsafe terrain clearance while not in landing configuration?

A) RADAR
B) ACAS
C) GPS
D) GPWS

87- According to which ICAO annexes the flight crew shall be licensed?

A) Annex 6
B) Annex 1
C) Annex 2
D) Annex 11

88- When a flight recorder shall be switched off?

A) En-route
B) Take off
C) Landing
D) Never

89- 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 367 hPa

90- 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) Calculated usable fuel available is equal to the landing fuel.

91- The records of maintenance release form of the aeroplane shall be kept for a minimum period of:

A) 90 days
B) One year
C) 3 months
D) 4 months

92- How many ELT shall have an aeroplane which individual certificate of airworthiness is first is issued after 1 July 2008?

A) At least two ELTs, one of which shall be automatic
B) at least one ELT of any type
C) At least one automatic ELT
D) At least two

93- 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) This is an emergency situation but an indication that an emergency situation is possible should any additional delay occur.

94- The standard of noise certification is contained in?

A) Annex 18
B) Annex 16 Vol I
C) Annex 16 Vol II
D) Annex 8

95- For flights in defined portions of airspace or on routes where a PBN 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

96- Who is responsible for the submission of journey log book?

A) Operator
B) Pilot-in-command
C) State
D) State of the operator

97- Which document specified the number and composition of flight crew member?

A) Flight manual
B) Annex 6
C) Operations manual
D) Aircraft operating manual

98- Who is responsible to submit a report regarding act of an unlawful interference authority without delay?

A) Pilot-in-command
B) Operator
C) ATC
D) All answers are correct

99- Flight data recorder type IA, I and II shall be capable to retain information during at least the last …….. of operation:

A) 30 hours
B) 25 hours
C) 30 minutes
D) 25 minutes

100- The FDR shall start to record prior to the aeroplane:

A) Moving under its own power until the termination of the flight when the aeroplane is no longer capable of moving under its own power
B) Moving under its own power until when the aeroplane finally stopped at end of flight taking off until the termination of the flight
C) Moving from taxi until the termination of the flight when the aeroplane is stopped
D) A or C is correct

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

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Annex 10

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1- 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

2- How many times, the distress signal may be transmitted?

A) 2 times
B) 3 times
C) At least 2 times
D) At least 3 times

3- How many times, the urgency signal may be transmitted?

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

4- How may an aircraft communicate the intents of medical transport?

A) PANPAN
B) MAY-DEE-CAL
C) MAYDAY
D) A & B for three times

5- For which bands of frequencies, the SELCAL should be utilized?

A) VHF + HF
B) VHF + UHF + MF
C) VHF
D) HF only

6- 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

7- 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.

8- 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.

9- What is the meaning of “Out” in radiotelephony?
A) My transmission ended and no 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.

10- 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.

11- What is the meaning of “Report” 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.

12- 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.

13- 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.

14- 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.

15- 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.

16- What does the phrase READ BACK mean?
A) You correctly receive this message
B) Let me know that you have received and understood this message
C) Repeat all other specified part of this message back to me exactly as received.
D) Check and confirm with originator.

17- What does the phrase ROGER mean?
A) A direct answer in the affirmative.
B) I have received all of your last transmission.
C) A direct answer in the negative.
D) Cleared for takeoff or cleared to land.

18- If a controller would like to say to you "PASS ME THE FOLLOWING INFORMATION" must use the expression:
A) READBACK
B) REPORT
C) SAY AGAIN
D) REQUEST

19- Which phrase shall be used if you want to say YES?
A) Roger
B) Yes
C) Affirm
D) Affirmative

20- What does the instruction "VACATE LEFT" mean?
A) Turn left to leave the runway.
B) Give way to aircraft from the left.
C) Clear the runway immediately.
D) Hold position on the left side of the runway.

21- 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

22- 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.

23- 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.

24- What does the instruction “GO AROUND” mean?

A) Overtake the aircraft ahead.
B) Carry out a missed approach.
C) Make a 360° turn.
D) Proceed with your message.

25- Which phraseology is to be used to ask the control tower for permission to taxi on a runway in the direction opposite to that in use?

A) Request backtrack on runway.
B) Clearance to backtrack.
C) To enter back runway.
D) Backtrack clearance.

26- 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.

27- Which of these phrases is used to inform the control tower that a pilot is performing a missed approach?

A) Pulling up.
B) Overshooting.
C) Will make another approach.
D) Going around.

28- 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.

29- 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.

30- Which phrase shall be used to confirm that a message has been repeated correctly?

A) That is right.
B) Correct.
C) Affirm.
D) That is affirmative.

31- Which of these statements best describes the meaning of the phrase STANDBY?

A) Wait and I will call you.
B) Continue on present heading and listen out.
C) Select STANDBY on the SSR transponder.
D) Permission granted for action proposed.

32- Which phrase shall be used if you want to say "I UNDERSTAND YOUR MESSAGE AND WILL COMPLY WITH IT"?

A) Will comply with your instruction.
B) Roger.
C) WILCO.
D) OK, will do it.

33- Which of the following sequences shows the correct elements of a position report in the correct order?

1) Aircraft identification
2) Position
3) Heading (°M)
4) Flight level or altitude
5) Next position and ETA
6) Ensuing significant point
7) Aircraft type
8) Time

A) 1, 2, 3, 4, 5, 6
B) 1,7,2, 6, 4
C) 1,2,8,4,5,6
D) 1,2,4,5,6

34- If a pilot receives an instruction from ATC which cannot be carried out, the reply should use the phrase:

A) CANCEL INSTRUCTION
B) UNABLE
C) NEGATIVE INSTRUCTION
D) REGRET CANNOT FOLLOW INSTRUCTION

35- You are making a long straight in approach to land, at what range would you make the call "LONG FINAL"?

A) 2 NM
B) 4 NM
C) Between 8 and 4 NM
D) 3 NM

36- What does the word "NEGATIVE" mean?

A) Permission not granted.
B) Proposed action granted.
C) Disregard last instruction
D) Consider that transmission as not sent.

37- What does the word "WILCO" mean?

A) I read you fine.
B) I have received all of your last transmission.
C) I understand your message and will comply with it.
D) As communication is difficult; I will call you later.

38- Which word or phrase shall be used if you want to say "WAIT AND I WILL CALL YOU"?

A) Roger
B) Go ahead
C) Standby
D) WILCO

39- 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.

40- When should aircraft EP-ABC call Mehrabad TOWER on initial call?

A) TOWER EP-ABC
B) Mehrabad TOWER E-BC
C) Mehrabad EP-ABC
D) Mehrabad TOWER EP-ABC

41- What is the radiotelephony call sign for the aeronautical station providing surface movement control of aircraft on the maneuvering area?

A) Ground
B) Approach
C) Tower
D) Control

42- What is the radiotelephony call sign suffix for the aeronautical station indicating aerodrome information service?

A) Flight center
B) Flight information center
C) Information
D) Control

43- 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

44- 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

45- Which of the following abbreviated call signs of aircraft EP-ABC is correct?

A) EP-BC
B) E-BC
C) ABC
D) BC

46- Aircraft E-BC has been instructed to contact Payam TOWER on frequency 118.4, What is the correct response to indicate that it will follow this instruction?

A) Payam TOWER E-BC.
B) Will change to TOWER E-BC.
C) Changing over E-BC.
D) 118.4 E-BC.

47- 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.

48- A message preceded by the phrase "TRANSMITTING BLIND DUE 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.

49- When transmitting a message preceded by the phrase "TRANSMITTING BLIND DUE TO RECEIVER FAILURE" during an en-route 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.

50- On the readability scale what does READABILITY 1 mean?

A) Readable but with difficulty.
B) Readable.
C) Perfectly readable.
D) Unreadable.

51- On the readability scale what does READABILITY 3 mean?

A) Readable but with difficulty.
B) No problem to understand.
C) Loud and clear.
D) Unreadable.

52- Aircraft EP-ABC is making a test transmission with Ahwaz TOWER on frequency 121.1, What is the correct phrasing for this transmission?

A) Ahwaz TOWER EP-ABC signal check.
B) Ahwaz TOWER EP-ABC preflight check.
C) Ahwaz TOWER EP-ABC radio check 121.1.
D) Ahwaz TOWER EP-ABC frequency check.

53- On the readability scale what does READABILITY 5 mean?

A) Perfectly readable.
B) Unreadable.
C) Problem to understand.
D) Readable but with difficulty.

54- Which elements of instructions or information shall always be read back?

A) Surface wind, visibility, ground temperature, runway in-use, altimeter settings, heading and speed instructions.
B) Runway-in-use, visibility, surface wind, heading instructions, altimeter settings.
C) Runway-in-use, altimeter settings, SSR codes, level Instructions, heading and speed instructions.
D) Wind speed, runway-in-use, altimeter settings, level instructions, SSR codes.

55- Cherokee EP-ABC receives the following instruction:
"E-BC CLIMB STRAIGHT AHEAD UNTIL 2500 FEET BEFORE TURNING RIGHT. WIND 270 DEGREES 6 KNOTS. CLEARED FOR TAKEOFF". What is the correct read back?
A) Straight ahead, 2500 feet right turn, wind west 6 knots, cleared for takeoff, E-BC.
B) Wilco, cleared for takeoff, E-BC.
C) Right turn after 2500, roger, E-BC.
D) Straight ahead, at 2500 feet right turn, cleared for takeoff, E-BC.

56- An aircraft is instructed to hold short of the runway-in-use. What is the correct phraseology to indicate it will follow this instruction?
A) WILCO
B) Holding short.
C) Will stop before.
D) Roger.

57- Shall an ATC route clearance always be read back?
A) No, if the communication channel is overloaded.
B) No, if the ATC route clearance is transmitted in a published form (e.g. Standard Instrument Departure Route/SID).
C) Yes, unless otherwise authorized by ATS authority concerned.
D) No, if the content of the ATC clearance is clear and no confusion is likely to arise.

58- Aircraft E-BC has been instructed to listen on ATIS frequency 123.25, on which information are being broadcast. What is the correct response to indicate that it will follow this instruction?
A) Checking 123.25 E-BC.
B) Changing to 123.25 E-BC.
C) Will contact 123.25 E-BC.
D) Monitoring 123.25 E-BC.

59- How should a pilot terminate the read back of an ATC clearance?
A) With his own aircraft call sign.
B) With the word "Wilco".
C) With the ATC ground station call sign.
D) With the word "Roger".

60- A pilot is required to read back the following ATC messages:
A) Altimeter settings, weather information, airways clearances, information regarding the proximity of other aircraft and taxi instructions.
B) Altimeter settings, weather information, information regarding the proximity of other aircraft and taxi instructions.
C) Altimeter settings, airways clearances, SSR operating instructions, level instructions and any message when requested by ATC.
D) Altimeter settings, taxi instructions, takeoff clearances, weather information and any other information given by ATC.

61- When asked by ATC "ARE YOU ABLE TO MAINTAIN FL080?" the correct reply contains the word:

A) ROGER
B) WILCO
C) AFFIRM or NEGATIVE
D) CLEARED

62- What is the correct way of expressing visibility?

A) Visibility 1.2 kilometer's.
B) Visibility 1200 feet.
C) Visibility 1.2 nautical miles.
D) Visibility 1200 meter's.

63- What action is required by the pilot of an aircraft station if he/she is unable to establish radio contact with an aeronautical station?

A) Squawk mode A code 7500.
B) Divert to the alternate airport.
C) Try to establish communication with other aircraft or aeronautical stations.
D) Land at the nearest aerodrome appropriate to the route of flight.

64- An aircraft station fails to establish radio contact with an aeronautical station on the designated frequency. What action is required by the pilot?

A) Return to the airport of departure.
B) Continue the flight to the destination airport without any communication.
C) Attempt to establish contact with the station on an alternative frequency.
D) Land at the nearest airport without an ATC unit.

65- What is the transponder code for radio communication failure?

A) 7200
B) 7600
C) 7500
D) 7700

66- An aircraft in distress shall send the following signal by radiotelephony:

A) PAN PAN, PAN PAN, PAN PAN
B) DETRESFA, DETRESFA, DETRESFA
C) MAYDAY, MAYDAY, MAYDAY
D) URGENCY, URGENCY, URGENCY

67- The frequency used for the first transmission of a MAYDAY call shall be:

A) The distress frequency 121.5 MHz
B) The frequency currently in use
C) Any other international emergency frequency
D) Any frequency at pilot's discretion

68- The distress message shall contain as many as possible of the following elements:
A) Aircraft call sign, nature of distress, pilots intention, present position, level and heading.
B) Aircraft call sign, route of flight, destination airport.
C) Aircraft call sign, aerodrome of departure, position and level.
D) Aircraft call sign, present position, assistance required.

69- Distress is defined as a condition:
A) Requiring immediate assistance and danger may or may not be threatened.
B) A condition of being threatened by serious and/or imminent danger, and of requiring immediate assistance.
C) Concerning the safety of an aircraft or other vehicle, or some person on board or within sight, but does not require immediate assistance.
D) Concerning the safety of any aircraft, ship or other vehicle.

70- A Distress or Urgency call shall be preceded by the prefix MAYDAY or PANPAN transmitted:
A) Once.
B) Twice.
C) Three times.
D) Until acknowledged.

71- Which frequency shall be used for the first transmission of an urgency call?
A) The international emergency frequency.
B) The air-ground frequency in use at the time.
C) The regional guard frequency.
D) Any frequency at pilot's discretion.

72- An aircraft transmitting a distress message is required to give its position as:
A) The most accurate possible using GPS if fitted.
B) Present or last known position, altitude or level and heading.
C) Position relative to a VRP.
D) Latitude and longitude.

73- What does the phrase "BREAKBREAK" mean?
A) The exchange of transmissions is ended and no response is expected.
B) It indicates the separation between portions of a message transmitted to an aircraft station.
C) It indicates the separation between messages transmitted to different aircraft in a very busy environment.
D) My transmission is ended and I expect a response from you.

74- An urgency message shall be preceded by the radiotelephony urgency signal:
A) ALERFA, spoken three times.
B) URGENCY, spoken three times.
C) MAYDAY, spoken three times.
D) PANPAN, spoken three times.

75- The subsequent content of a distress or urgency message must consist of the following items:
1. Position
2. Intention of person in command
3. Type of aircraft
4. Nature of emergency
5. Call sign
Transmitted in the order:
A) 5, 4, 2, 3, 1
B) 5, 4, 1, 2, 3
C) 5, 4, 2, 1
D) 5, 4, 3, 2, 1

76- A condition of urgency is defined as:
A) A condition of being threatened by serious and or immediate danger and of requiring immediate assistance.
B) A condition concerning the safety of an aircraft or other vehicle or of some person on board or within sight and requiring immediate assistance.
C) A condition requiring immediate assistance.
D) A condition concerning the safety of an aircraft or other vehicle or some of person on board or within sight, but which does not require immediate assistance.

77- What is the maximum distance at which you might expect solid VHF contact over flat terrain at FL100?
A) About 123 NM
B) About 300 NM
C) About 30 NM
D) About 12 NM

78- The frequency 121.500 MHz is designated as:
A) An international emergency frequency
B) A frequency for air-to-air communication
C) A regional UHF frequency
D) An airline operation frequency

79- What is the frequency separation between consecutive frequencies in the VHF band?
A) 8.33 kHz
B) 50 kHz
C) 25 kHz
D) A & C are correct

80- What is the maximum distance at which you might expect solid VHF contact over flat terrain at FL050?

A) About 8 NM
B) About 85 NM
C) About 15 NM
D) About 150 NM

81- To which frequency bands do the frequencies 118.000 & 136.975 MHz of the Aeronautical Mobile Service belong?

A) Medium frequency.
B) Very low frequency.
C) Low frequency.
D) Very high frequency.

82- Which frequency band contains frequencies of the Aeronautical Mobile Service?

A) 108.000 - 117.975 MHz
B) 118.000 - 136.975 MHz
C) 1810 - 2850 kHz
D) 11650 -13200 kHz

83- What does the term "AIR-GROUND COMMUNICATION" mean?

A) One-way communication from stations or locations on the surface of the Earth.
B) One-way communication from aircraft to stations or locations on the surface of the Earth.
C) Two-way communication between aircraft and stations or locations on the surface of the Earth.
D) Any communication from aircraft to ground station requiring handling by the Aeronautical Fixed Telecommunication Network (AFTN).

84- What does the term "BROADCAST" mean?

A) A transmission where no reply is required from the receiving station.
B) A radiotelephony transmission from ground station to aircraft in flight.
C) A transmission of information relating to air navigation that is not addressed to a specific station or stations.
D) A transmission containing meteorological and operational information to aircraft engaged in flights over remote and oceanic areas out of range of VHF ground stations.

85- What does the abbreviation SAR mean?

A) Surveillance airport radar.
B) Search and rescue.
C) Standard arrival route.
D) Secondary altimeter responder.

86- What does the abbreviation ATIS mean?
A) Air traffic information service.
B) Airport terminal information service
C) Aircraft terminal information service
D) Automatic terminal information service

87- What does "SELCAL" mean?
A) A system in which radiotelephony communication between two stations can take place in both directions simultaneously.
B) A system in which radiotelephony communication can be established between aircraft only
C) A system which permits the selective calling of individual aircraft over radiotelephone channels linking a ground station with the aircraft.
D) A system provided for direct exchange of information between air traffic services (ATS) units.

88- What does the abbreviation SSR mean?
A) Runway visibility report
B) Search and surveillance radar
C) Surface strength of runway
D) Secondary surveillance radar

89- What does H24 mean?
A) Continuously operation
B) Sunrise to Sunset.
C) Available 24 hours a day by prior notice only.
D) Aircraft handling available 24 hours a day.

90- The SELCAL system:
A) Allows two-way VHF data transmission between ATC and aircraft.
B) Allows two-way data transmission between operator and aircraft.
C) Allows the aircraft to be contacted on VHF and HF frequencies that are not being monitored by the flight crew.
D) Allows satellite communication.

91- The abbreviation "HN" means the facility described operates:
A) Between sunrise and sunset.
B) 24 hours a day.
C) By prior notification.
D) Between sunset and sunrise.

92- What does the word "CORRECT" mean?
A) That is true.
B) Radar contact established.
C) Listen out on (frequency).
D) Establish radio contact with ...

93- An aircraft is requested to fly at 2500 feet on the airfield QFE, all references to vertical position should now be referred to as:

A) Height
B) Altitude
C) Flight level
D) Pressure Altitude

94- You obtain a clearance to descend to an altitude of 2500 feet, the clearance should also include the following pressure setting or settings:

A) QFE
B) QNH
C) QFE or QNH
D) QNE

95- Which of the following statements relating to message categories is correct?

A) The lowest priority message category is meteorological.
B) Urgency has greatest priority over everything except distress.
C) Flight safety messages have a higher priority than direction finding messages.
D) Flight safety messages have a higher priority than medical urgency messages.

96- The ATC message is classified as a:

A) Flight regularity message.
B) Meteorological message.
C) Flight safety message.
D) Urgency message.

97- You receive the following ATC message:
EP-SCE clear destination Zanjan via flight plan route, initially climb to 6500 ft up to 20 DME and maintain heading 300°, This message is:

A) Clear to takeoff and departure to Zanjan.
B) A clearance to line-up.
C) A flight safety message.
D) A flight regularity message.

98- A message concerning regular information is:

A) A flight security message.
B) An urgency message.
C) A flight safety message.
D) A flight regularity message.

99- The order of priority of the following messages in the aeronautical mobile service is:

A) Distress message, urgency message and direction finding message.

B) Direction finding message, distress message and urgency message.

C) Distress message, flight safety message and urgency message.

D) Meteorological message, direction finding message and flight regularity message.

100- The clearance "CLEARED FOR IMMEDIATE TAKEOFF RUNWAY 03" is:

A) A flight safety message.

B) An urgency message.

C) An unauthorized message.

D) A flight regularity message.

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

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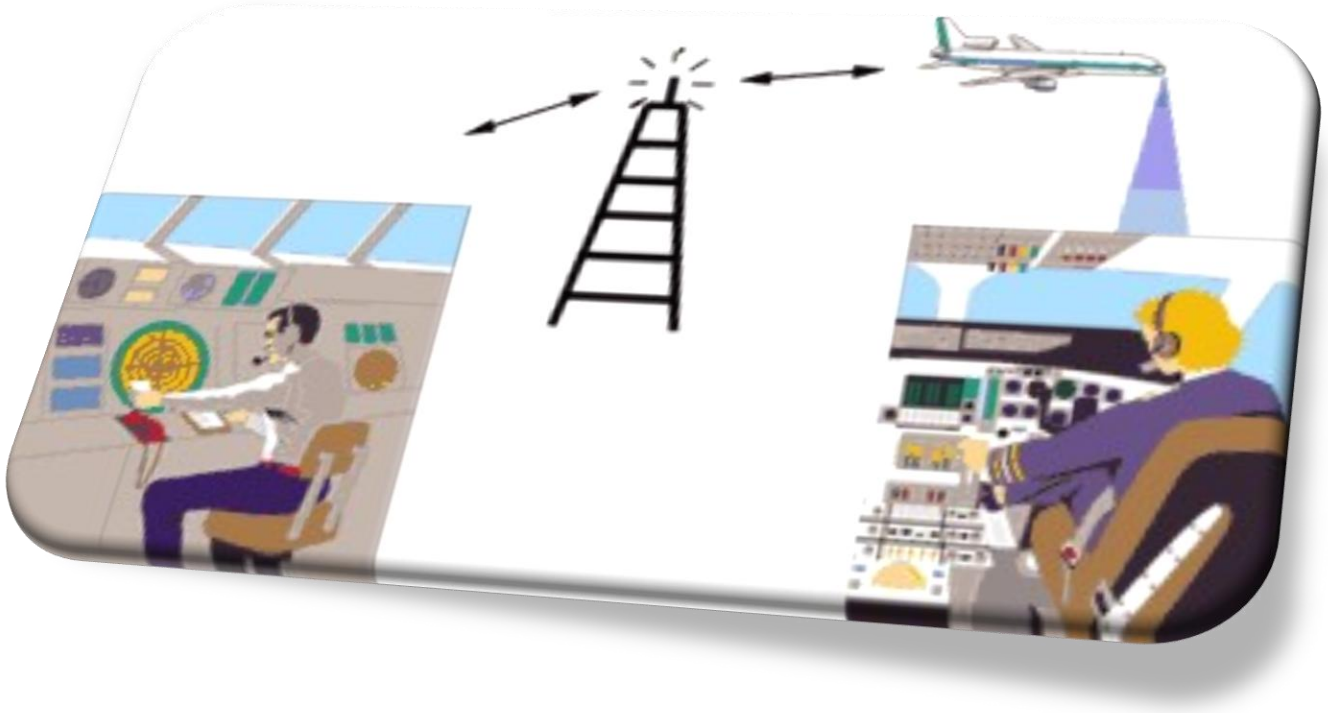
ANNEX 11



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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

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

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 certainly that an aircraft and its occupants are threatened by gave and imminent danger or required immediate assistant" is known as:

A) Alert phase
B) Distress phase
C) Uncertainly phase
D) Urgent phase

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 responsible 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

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 the area navigation route?

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 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 uncontroll service

A) 1,2,3

B) 1,2,4

C) 2,3,4

D) 1,3,4

17- Air traffic control services are divided to …… parts.

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 an ATC clearance?

A) C
B) D
C) E
D) F

21- Which type of separation are provided for IFR flight 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- Which 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

25- Which 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

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	A	8	D	15	C	22	B
2	B	9	A	16	A	23	A
3	A	10	B	17	B	24	A
4	C	11	C	18	D	25	D
5	A	12	D	19	D		
6	B	13	A	20	D		
7	C	14	B	21	D		

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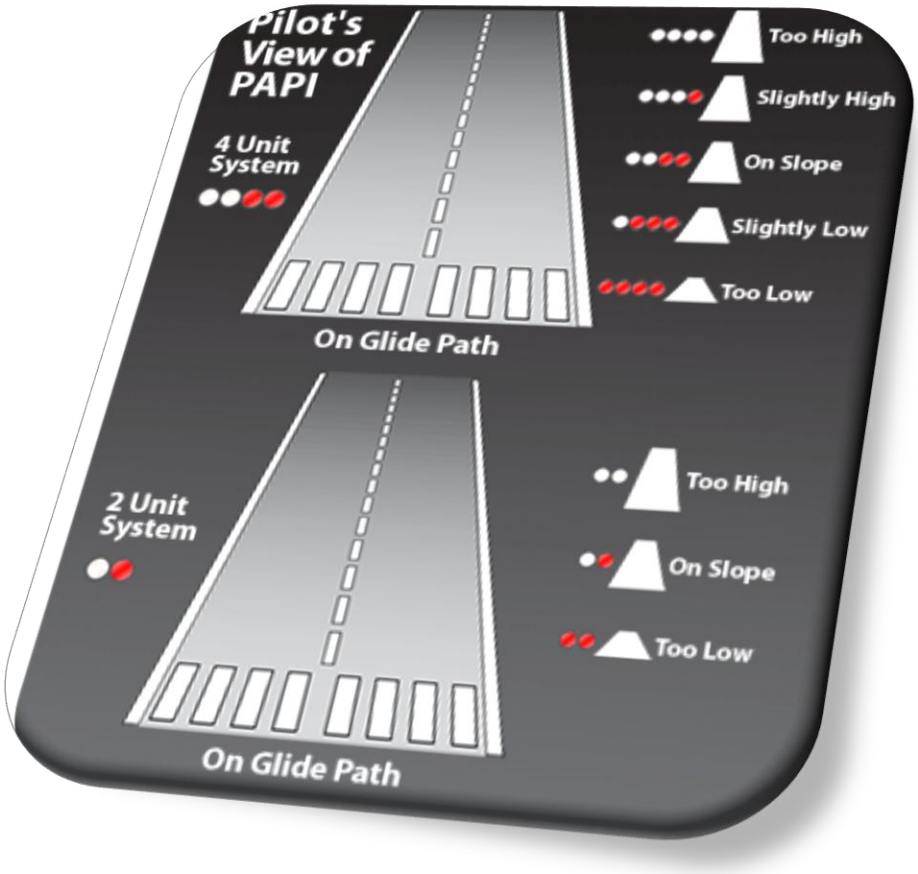
ANNEX 14


Pilot's View of PAPI
4 Unit System
Too High
Slightly High
On Slope
Slightly Low
Too Low
On Glide Path
2 Unit System
Too High
On Slope
Too Low
On Glide Path

1- If a runway is reported as damp, the braking action may be assumed to be:
A) Excellent.
B) Acceptable.
C) Unknown.
D) Poor.

2- on a wet runway
A) Extensive standing water is visible.
B) The surface shows a change of color due to moisture.
C) Significant patches of standing water are visible.
D) The surface is soaked but no significant patches of standing water are visible.

3- A runway would not be reported as "flooded" unless:
A) Significant patches of standing water are visible.
B) 30% of the runway surface is covered to a depth between 3 mm and 15 mm with water.
C) Extensive standing water is visible.
D) 60% of the runway surface is covered by at least 3 mm of water.

4- Which of the following describe the state of the surface of a runway?
A) Wet, damp; flushed, contaminated.
B) Contaminated, flooded, damp, wet with water patches.
C) Dry, wet, water patches, flooded.
D) Dry, damp; wet, water patches, flooded.

5- In ATIS you receive Information that there are "WATER PATCHES" on the runway. This means that at least_____ of runway is covered with standing water.
A) 5%
B) 10%
C) 25%
D) 50%

6- The braking action for a specific runway is reported as "0.36". This means the estimated surface friction is:
A) Poor.
B) Medium/poor.
C) Medium/good.
D) Good.

7- What is a PAPI?
A) Precision Approach Power Indicator.
B) Precision Approach Path Indicator.
C) Precision Approach Power Index.
D) Precision Approach Path Index.

8- When the surface of a runway-is soaked but there is no standing water, the correct term is:
A) Damp
B) Wet
C) Water patches
D) Flooded

9- Dry snow is snow which:
A) Has specific gravity over 0.5.
B) Will fall apart again if compacted by hand.
C) Will form a snow ball if compacted by hand.
D) Has a low water content.

10- 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.

11- "A defined rectangular area on the ground at the end of takeoff run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned takeoff" is the definition for:
A) Runway strip.
B) Runway end safety area.
C) Stopway.
D) Clearway.

12- "Clearway" is defined rectangular area established to:
A) Reduce the risk of damage to aircraft running off a runway.
B) Permit aircraft to make a portion of its initial climb to a specific height.
C) Protect aircraft during takeoff or landing operations.
D) Permit the aircraft to stop if it fails the takeoff.

13- A defined rectangular area, selected or prepared as a suitable area over which an airplane may make a portion of its initial climb to a specified height is called:
A) Clearway.
B) Stopway.
C) Takeoff run available (TORA).
D) Runway end safety area (RESA).

14- Non-precision approach runways and precision approach runways CAT I,II and III are defined as:

A) Parallel runways.
B) Movement area.
C) Instrument runways.
D) Non-instrument runways.

15- A red square panel with a yellow strip along each diagonal, displayed in the signal area of an aerodrome indicates:

A) Aerodrome is unfit for aircraft movement, and landings are prohibited.
B) Exercise special care when landing.
C) Normal safety service are not available.
D) Land on paved surface only.

16- A double white cross displayed horizontally in the signal area means:

A) Special precautions must be observed due to bad state of the taxiways.
B) Need special precautions while approaching for landing.
C) An area unit for the movement of aircraft.
D)The aerodrome is being used by gliders and that glider flights are being performed.

17- The white dumb-bell with black perpendicular bar indicates that:

A) Landing, takeoff and taxiing is allowed on runway and/or taxiway only.
B) Taxiing need not be confined to the taxiways.
C) Glider flying is performed outside the landing area.
D) This aerodrome is using parallel runways.

18- Two or more white crosses, displayed on runways and taxiways, indicate that:

A) The threshold has been displaced.
B) The runway or taxiway should be used in emergency only.
C) The runway or taxiway should be used with caution.
D) The section of the runway or taxiway is unfit for aircraft movement

19- A black letter "C" on a yellow background indicates:

A) Where a visiting pilot should report on arrival.
B) That glider activity is in progress.
C) An IFR holding point.
D) The airfield is unusable.

20- What does a red square with a yellow cross in the signals square indicate?

A) Takeoff and taxi on the runway and taxiways only.
B) Takeoff and landings on the runway only but taxiing on the grass permitted.
C) Aerodrome is unfit for aircraft movements, and landings are prohibited.
D) Caution - glider flying in progress.

21- Information signs (except location signs) consist of an inscription in _____ on a _____ background.

A) Red; black
B) Black; red
C) Black; yellow
D) Yellow; black

22- Runway end lights shall be:

A) Fixed lights showing variable red.
B) Fixed lights showing variable white.
C) Fixed unidirectional lights showing red in the direction of the runway.
D) Fixed unidirectional lights showing white in the direction of the runway.

23- Runway threshold light shall be:

A) Fixed unidirectional lights showing white in the direction of approach.
B) Fixed unidirectional lights showing green in the direction of approach.
C) Fixed lights green color.
D) Fixed lights showing green or white colors.

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.

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- What color is taxiway edge lighting?
A) White
B) Green
C) Yellow
D) Blue

32- Which of the following describes threshold lights?
A) Red unidirectional.
B) Green Omni-directional.
C) Red Omni-directional.
D) Green unidirectional.

33- What shape is a landing direction indicator?
A) T
B) I
C) V
D) Y

34- 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.

35- The color of the fixed, unidirectional runway threshold and wing bar lights shall be:
A) Yellow
B) White
C) Green
D) Red

36- 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.

37- 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 chequered.

38- "TODA" takeoff distance available is:
A) The length of the runway available plus the length of clearway available.
B) The length of the takeoff run available plus the length of clearway available.
C) The length of the takeoff run available plus the length of the stopway and clearway.
D) The length of the takeoff run available plus the length of the stop way.

39- TODA is defined as:
A) TORA plus clearway.
B) TORA plus stopway.
C) TORA plus EDA.
D) TORA plus clearway and stopway.

40- The declared takeoff run available at an aerodrome is:
A) The takeoff distance available less the stopway.
B) The takeoff distance available less the clearway.
C) The takeoff distance available less the clearway and the stopway.
D) The same as the landing distance available.

41- Regarding declared airfield distances the ASDA is:

A) The distance from the start of the takeoff run to the end of the c1earway.

B) The distance from the start of the takeoff run to the last point capable of bearing the full weight of the aircraft under normal operating conditions.

C) The distance from the start of the takeoff run to the end of the stopway.

D) The area beyond the end of the prepared surface only available to aircraft stopping in an emergency.

42- Takeoff distance available is defined as:

A) Takeoff run available plus the stop way.

B) The takeoff run available.

C) Takeoff run available plus stop way and clearway.

D) The takeoff run available plus the clearway.

43- "ASDA" (Acceleration Stop Distance Available) is:

A) The length of the takeoff run available plus the length of stop way (if stopway provided).

B) The length of the runway plus the length of stop way available (if stopway provided).

C) The length of the takeoff run available plus the length of stop way and clearway (if provided).

D) The length of the takeoff run available plus the length of the clearway.

44- Which of the statements below describes the Accelerated Stop Distance Available (ASDA)?

A) The length of the runway declared available and suitable for the ground run of an airplane taking off.

B) The length of the runway plus the length of the clearway.

C) The length of the runway plus the length of the stop way.

D) The length of the runway declared available and suitable for the ground run of an airplane landing.

45- 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.

46- 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 260° true

47- 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.

48- 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 & B are correct.

49- 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

50- The area up to displaced threshold is used for:
A) Taxiing, takeoff and landing roll out.
B) Takeoff and landing only.
C) Landing and taxiing only.
D) Taxiing, takeoff and landing.

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	B	14	C	27	D	40	B
2	D	15	B	28	C	41	C
3	C	16	D	29	B	42	D
4	D	17	B	30	A	43	A
5	C	18	D	31	D	44	C
6	C	19	A	32	D	45	B
7	B	20	C	33	A	46	C
8	B	21	C	34	C	47	B
9	B	22	C	35	C	48	C
10	C	23	B	36	C	49	D
11	C	24	A	37	C	50	A
12	B	25	D	38	B		
13	A	26	C	39	A		

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Flight Planning

1- (Refer to figure C-17) 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

2- 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

3- Given TAS 500 kts and OAT -40 °C, Mach number is:

A) 0.80
B) 0.82
C) 0.84
D) 0.88

4- (Refer to figure C-18) A turbojet aeroplane is flying using the following data:

Optimum flight level

Mach No.:	**0.80**
Mass:	**190000 kg**
Temperature:	**ISA**
Tailwind component:	**100 kts**

The fuel mileage and the fuel consumption per hour are:

A) 105 NM / 1000 kg, 6515 kg/hr.
B) 86 NM / 1000 kg, 6515 kg/hr.
C) 71 NM / 1000 kg, 5330 kg/hr.
D) 105 NM / 1000 kg, 5330 kg/hr.

5- (Refer to figure C-19) 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.

6- (Refer to figure C-20) 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

7- 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 litters**

A) 17350 kg
B) 22100 kg
C) 17550 kg
D) 22300 kg

8- 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

9- (Refer to figure C-21) 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

10- (Refer to figure C-22) Find time and fuel to climb.

Given:	**FL075**
Temperature:	**OAT +5 °C**
Wind:	**20 kts head**

Takeoff from MSL with the initial mass of 3650 lbs.

A) 7 min; 2.6 USG.
B) 10 min; 3.7 USG.
C) 9 min; 3.4 USG.
D) 9 min; 2.7 USG.

11- (Refer to figure C-23) Find the fuel flow for the twin jet aeroplane.

Given:

Cruise:	**Mach 0.74 at FL310**
Mass:	**50000 kg**
Temperature:	**ISA**

A) 2560 kg / hr.
B) 1150 kg / hr.
C) 2994 kg / hr.
D) 2300 kg / hr.

12- (Refer to figure C-24) Find the fuel mileage penalty for the twin jet aeroplane with regard to the given flight level.

Given:

1) FL 310

2) Long range cruise

3) Cruise mass of 53.000 kg

A) 4%

B) 1%

C) 10%

D) 0%

13- 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.

14- (Refer to figure C-17) In order to find alternate fuel and time to alternate, the aeroplane operating manual shall be entered with:

A) Distance in nautical miles (NM), wind component, Landing Mass at alternate.

B) Distance in nautical air miles (NAM), wind component, Landing Mass at alternate.

C) Distance in nautical miles (NM), wind component, Zero Fuel Mass.

D) Distance in nautical miles (NM), wind component, Dry Operating Mass plus holding fuel.

15- (Refer to figure C-25) What is the fuel and time for the trip?

Given:

Distance:	**1000 NM**
Wind:	**50 kts tail**
Long Range Cruise	
Pressure Altitude:	**FL370**
Outside Air Temperature:	**ISA**
Landing Mass:	**35000 kg**

A) 4950 kg, 2 hrs 15 min.
B) 5350 kg, 2 hrs 15 min.
C) 4300 kg, 2 hrs 40 min.
D) 4300 kg, 2 hrs 15 min.

16- 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

17- 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.

18- (Refer to figure C-26) What is the fuel required, given the following information?

Distance:	**350 NM**
Cruise:	**300 KIAS / FL210**
Tailwind component:	**70 kts**
Landing Mass:	**53000 kg**

A) 2470 kg
B) 3320 kg
C) 2250 kg
D) 2810 kg

19- (Refer to figure C-27) What is the maximum possible trip distance?

Headwind component:	**50 kts**
Temperature:	**ISA + 10 °C**
Brake release mass:	**65000 kg**
Trip Fuel available:	**18000 kg**

A) 3480 NM
B) 3100 NM
C) 2740 NM
D) 2540 NM

20- (Refer to figure C-28) 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

21- (Refer to figure C-29) 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.

22- (Refer to figure C-28) 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

23- (Refer to figure C-17) 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

24- (Refer to figure C-17) 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

25- (Refer to figure C-17) What is the alternate fuel required?
Given:
Distance to alternate: 450 NM
Landing Mass at alternate: 45000 kg
Headwind component: 30 kts
A) 2500 kg
B) 2750 kg
C) 3050 kg
D) 2900 kg

26- 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 aerodrome elevation in standard conditions.
D) 30 minutes at holding speed at 450 m above MSL in standard conditions.

27- 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.

28- (Refer to figure C-30) For a flight of 2800 ground nautical miles the following applies:

Headwind component: **15 kts**

Temperature: **ISA + 15 °C**

Cruise altitude: **35000 ft**

Landing Mass: **50000 kg**

The Trip Fuel and trip time respectively are:

A) 20000 kg; 7 hrs 00 min.
B) 16200 kg; 6 hrs 20 min.
C) 17000 kg; 6 hrs 10 min.
D) 17600 kg; 6 hrs 50 min.

29- (Refer to figure C-27) For a flight of 2800 ground nautical miles the following applies:

Headwind component: **20 kts**

Temperature: **ISA + 15 °C**

Brake release mass: **64700 kg**

The Trip Fuel and trip time respectively are:

A) 16200 kg; 6 hrs 20 min
B) 15800 kg; 6 hrs 15 min.
C) 17000 kg; 6 hrs 45 min.
D) 18400 kg; 7 hrs 00 min.

30- (Refer to figure C-27) For a flight of 2400 ground nautical miles, the following apply:

Tailwind: **25 kts**

Temperature: **ISA -10 °C**

Brake release mass: **66000 kg**

The Trip Fuel and trip time respectively are:

A) 14600 kg, 5 hrs 45 min.
B) 15000 kg, 6 hrs 00 min.
C) 14000 kg, 5 hrs 35 min.
D) 15800 kg, 6 hrs 20 min.

31- (Refer to figure C-30) For a flight of 2400 ground nautical miles the following apply:

Temperature:	**ISA -10 °C**
Cruise altitude:	**29000 ft**
Landing Mass:	**45000 kg**
Trip Fuel available:	**16000 kg**

What is the maximum headwind component which may be accepted?

A) Zero
B) 15 kts
C) 70 kts
D) 35 kts

32- 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

33- (Refer to figure C-36) What is the fuel required to fly from C to D?

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

34- 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

35- (Refer to figure C-27) 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

36- (Refer to figure C-31) What are the climb fuel and time? Given:

Track:	**340° (T)**
W/V:	**280˚/40 kts**
Aerodrome elevation:	**387 ft**
OAT	**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.

37- (Refer to figure C-32) Find the fuel required given the following:

Cruise:	**Mach 0.78 at FL280**
Mass:	**50000 kg**
Distance:	**200 NM**
Headwind component:	**30 kts**

A) 1470 kg
B) 1740 kg
C) 1620 kg
D) 1970 kg

38- (Refer to figure C-29) What is the fuel required for a climb from Sea Level to FL330?

Brake release mass:	**62000 kg**
Temperature:	**ISA + 15 °C**

A) 1800 kg
B) 1650 kg
C) 1750 kg
D) 1700 kg

39- (Refer to figure C-29) What is the fuel required to climb from an airfield at elevation 4.000 ft to FL300?

Given:

Brake release mass:	**58000 kg**
Temperature:	**ISA + 15 °C**

A) 1350 kg
B) 1400 kg
C) 1450 kg
D) 1250 kg

40- (Refer to figure C-31) Find the climb fuel.

Mass at brake release:	**57500 kg**
Temperature:	**ISA - 10 °C**
Average headwind component:	**16 kts**
Initial cruise:	**FL280**

A) 1138 kg
B) 1238 kg
C) 1387 kg
D) 1040 kg

41- (Refer to figure C-17) What is the fuel and time to alternate?

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.

42- (Refer to figure C-33) 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.

43- (Refer to figure C-34) The fuel required for 45 minutes holding, in a racetrack pattern, at PA 5.000 ft, mean gross mass 47000 kg, is:

A) 1635 kg
B) 1090 kg
C) 1690 kg
D) 1125 kg

44- (Refer to figure C-34) 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

45- (Refer to figure C-17) Using the simplified flight planning (alternate planning), find fuel required and trip time to alternate.

Given:

Dry Operating Mass:	**35500 kg**
Traffic 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.

46- 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

47- 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

48- (Refer to figure C-35) 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%

49- 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 miles before the beacon should descent begin?

A) 15.0
B) 30.2
C) 27.1
D) 11.1

50- 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) 0.78
C) 0.76
D) 0.80

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	D	14	A	27	B	40	A
2	A	15	D	28	D	41	B
3	C	16	C	29	C	42	D
4	D	17	C	30	C	43	A
5	A	18	A	31	D	44	C
6	A	19	C	32	C	45	D
7	A	20	C	33	D	46	C
8	A	21	D	34	B	47	A
9	C	22	D	35	D	48	C
10	C	23	B	36	D	49	C
11	D	24	D	37	B	50	D
12	A	25	D	38	D		
13	C	26	C	39	D		

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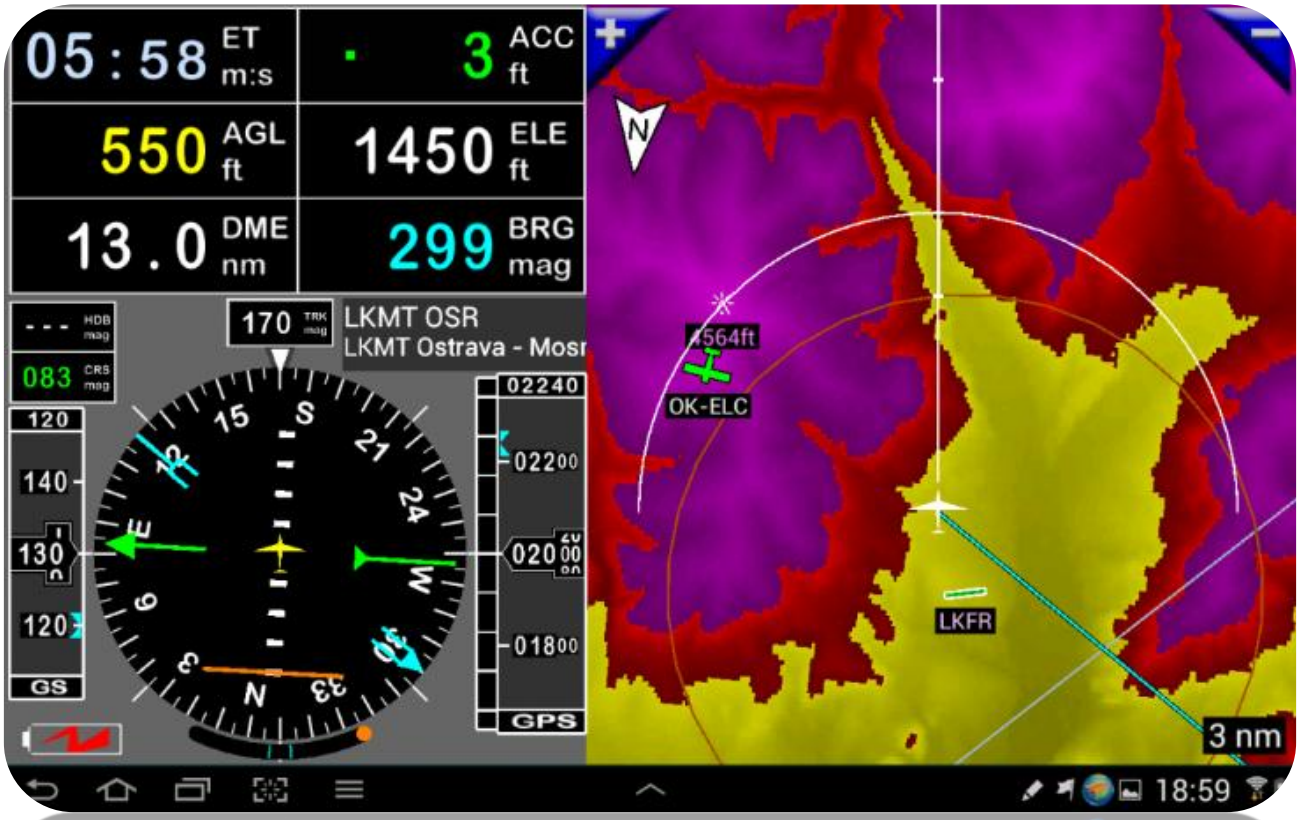
General Navigation



1- If you want to follow a constant true track value:
A) You must fly East West or North/South.
B) You must fly a rhumb line.
C) You must fly a great circle.
D) In most cases, you will also fly the shortest possible track.

2- Consider the following statements on longitude:
A) Longitude is stated in degrees up to 360°.
B) The value of longitude will never exceed 90°.
C) The largest value of longitude is 180°.
D) The largest value of change of longitude is 90°.

3- Consider the following statements on meridians:
A) All meridians run in true direction from South to North.
B) The relative direction between two selected meridians will be constant.
C) On the southern hemisphere the meridians run towards the South Pole.
D) The distance in nautical miles between two selected meridians will be constant.

4- The poles on the surface of the Earth may be defined as:
A) The points where the Earth's axis of rotation cuts the surface of the Earth.
B) The points on the surface of the Earth where all meridians intersect at right angles.
C) The points from where the distance to the equator is equal.
D) The points at which the vertical lines run through the center of the Earth.

5- Consider the following statements on the properties of a great circle:
A) The great circle will maintain their initial true direction.
B) The parallels of latitudes are all great circles.
C) The great circle running through two positions on the surface of the Earth, is the shortest distance between these two positions.
D) All answers are correct.

6- The prime meridian is:
A) The meridian having the highest value of longitude.
B) The meridian 180° E or W.
C) The mid meridian on a chart.
D) The meridian running through Greenwich, England.

7- Consider the following statements on the shape of Earth:
A) The diameters of the Earth is the same at all latitudes.
B) The longest diameter is between the poles.
C) It is slightly flattened at the poles.
D) The diameter at the equator is about 60 NM longer than the diameter between the poles.

8- Using latitude and longitude for a place:

A) The distance from this place to another place may be easily calculated.
B) The location on the earth's surface of this place is defined.
C) The direction from the place to any other place may be easily calculated.
D) Relative directions to another place may easily be calculated.

9- The shortest distance between points on the earth Surface is:

A) A great circle.
B) The arc of a small circle.
C) Half the rhumb line distance.
D) Rhumb line.

10- A correct definition of longitude is:

A) The east-west distance between Greenwich and the place.
B) The arc at equator between the Greenwich meridian and the meridian of the place, measured in degrees, minutes and seconds, named East or West.
C) The angle between the Greenwich meridian and the meridian of the place.
D) The difference between the Greenwich meridian and the meridian of the place, measured at the center of the Earth.

11- Any parallel of latitude is a:

A) Great circle.
B) Rhumb line.
C) Small circle.
D) Meridian of tangency.

12- An aircraft is following the 45°N parallel of latitude. The track followed is a:

A) Constant-heading track.
B) Rhumb line.
C) Great circle.
D) Constant-drift track.

13- The equator is located:

A) On the surface of the Earth, being a circle whose plane is perpendicular to the axis of the Earth and cutting through the center of the Earth.
B) On the surface of the Earth and at right angles to the axis of rotation.
C) On the surface as a small circle, horizontal to the axis of rotation.
D) On the surface parallel to the magnetic equator.

14- In which occasions does the rhumb line track and the great circle track coincide on the surface of the Earth?

A) On East - West tracks in polar areas.
B) On high latitude tracks directly East - West.
C) On East - West tracks in the northern hemisphere north of the magnetic equator.
D) On tracks directly North - South and on East - West tracks along the equator.

15- If you are flying along a parallel of latitude, you are flying:
A) A great circle track.
B) On a North - South track.
C) On a track which is constantly changing direction.
D) A rhumb line track.

16- How many small circles can be drawn between any two points on a sphere?
A) One.
B) None.
C) An unlimited number.
D) Two.

17- How does the convergence of any two meridians on the Earth change with varying latitude?
A) It changes as cos of latitude.
B) It changes as sin of latitude.
C) It increases with decrease of latitude.
D) It is of constant value and does not change with latitude.

18- The convergence of meridians:
A) Is the distance between the meridians in degrees, minutes, and seconds.
B) Is the angular difference between the meridians.
C) Is independent of latitude and longitude.
D) Is greater using rhumb line track than using greater circle.

19- A small circle:
A) Will always cross equator.
B) Has a plane parallel to the Earth's axis of rotation.
C) Will also be a rhumb line.
D) Has a plane that do not pass through the center of the Earth.

20- Parallels of latitude, except the equator are:
A) Both rhumb lines and great circles.
B) Great circles.
C) Rhumb lines.
D) Are neither rhumb lines nor great circles.

21- A line which cuts all meridians at the same angle is called a:
A) line of variation.
B) Great circle.
C) Rhumb line.
D) Agonic line.

22- Radio bearings:
A) Are rhumb lines.
B) Cut all meridians at the same angle.
C) Are great circles.
D) Are lines of fixed direction.

23- Consider the following statements on rhumb lines:
A) Most rhumb lines will run as spirals from the one pole to another.
B) A rhumb line will never cross a great circle.
C) A rhumb line and a great circle will never have the same true direction for some distance.
D) The true direction of a rhumb line on northern hemisphere will increase in true direction, while on southern hemisphere it will decrease.

24- A great circle on the Earth running from the North Pole to the South Pole is called:
A) A longitude.
B) A parallel of latitude.
C) A difference of longitude.
D) A meridian.

25- A rhumb line is:
A) The shortest distance between two points on a Polyconic projection.
B) A line on the surface of the Earth cutting all meridians at the same angle.
C) Any straight line on a Lambert projection.
D) A line convex to the nearest pole on a Mercator projection.

26- A great circle is defined as:
A) A circle in any plane on the surface of a sphere.
B) A circle on the surface of a sphere, whose plane is cutting through the centre of the sphere.
C) A circle running on the outside of the sphere.
D) A circle on the surface of the sphere, with its plane running perpendicular to the axis of rotation.

27- UTC stands for:
A) Coordinated Universal Time.
B) Universal Time Coefficient.
C) Universal Time Constant.
D) Universal Time Compensated.

28- The angle between True North and magnetic North is known as:
A) Deviation.
B) Variation.
C) Alignment error.
D) Dip.

29- Consider the following statements on magnetic variation:
A) Variation will never exceed 90°.
B) Variation will always increase when the total strength of the terrestrial magnetic field increases.
C) The variation is East when True North seems to be located West of Magnetic North.
D) The largest values of variation are found along the anti-meridians of the magnetic poles.

30- At the magnetic equator:
A) Dip is zero.
B) Variation is zero.
C) Deviation is zero.
D) The isogonal is an agonic line.

31- If the True HDG is 165° and the variation is -3 what is the magnetic heading?
A) Variation is negative (Westerly), therefore magnetic heading is 168°.
B) Variation is negative (Westerly), therefore magnetic heading is 162°.
C) Variation is negative (Easterly), therefore magnetic heading is 162°.
D) Variation is negative (Easterly), therefore magnetic heading is 168°.

32- A negative (westerly) magnetic variation signifies that:
A) True North is East of Magnetic North.
B) True North is West of Magnetic North.
C) Compass North is East of Magnetic North.
D) Compass North is West of Magnetic North.

33- Deviation applied to magnetic heading gives:
A) Magnetic course.
B) True heading.
C) Compass heading.
D) Magnetic track.

34- A magnetic compass will be most effective at:
A) A position roughly half way between the magnetic poles.
B) The South magnetic pole.
C) The North magnetic pole.
D) The magnetic equator.

35- "True North" is:
A) The direction along a meridian.
B) The direction along the meridian, toward the North Pole when on the northern hemisphere and toward the South Pole when on the southern hemisphere.
C) is in any direction out from the True North Pole.
D) The direction along any meridian toward the True North Pole.

36- What is the definition of magnetic variation?

A) The angle between the direction indicated by a compass and Magnetic North.
B) The angle between True North and compass North.
C) The angle between Magnetic North and True North.
D) The angle between magnetic heading and Magnetic North.

37- What is deviation?

A) The angle between Magnetic North and compass North.
B) The angle between Magnetic North and True North.
C) The angle between True North and compass North.
D) The angle between True North and Magnetic North.

38- If the CH = 220°, Variation = 12°E, Deviation =2°w what is the corresponding TH?

A) TH = 234°
B) TH = 206°
C) TH = 230°
D) TH = 210˚

39- An Isogonal is a line:

A) Running through all positions having the same magnetic Inclination.
B) Running through all positions having the same magnetic longitude.
C) On the surface of the Earth, running through all positions having the same magnetic latitude.
D) Running through all positions having the same variation.

40- An agonic line is a line that connects:

A) Positions that have the same variation.
B) Positions that have 0˚ variation.
C) Points of equal magnetic dip.
D) Points of equal magnetic horizontal field strength.

41- Compass deviation is defined as the angle between:

A) True North and Magnetic North.
B) Magnetic North and compass North.
C) True North and compass North.
D) The horizontal and the total intensity of the magnetic field.

42- The value of variation:

A) Is zero at the magnetic equator.
B) Has a maximum value of 180°.
C) Has a maximum value of 45° E or 45° W.
D) Cannot exceed 90°.

43- If compass HDG is 340° and deviation +3, what is magnetic heading?
A) Deviation is positive (Easterly), therefore magnetic heading is 343°.
B) Deviation is positive (Westerly), therefore magnetic heading is 343°.
C) Deviation is positive (Easterly), therefore magnetic heading is 337°.
D) Deviation is positive (Westerly), therefore magnetic heading is 337°.

44- The deviation of a compass is described as +4˚ This means that:
A) The deviation may be described as westerly.
B) Compass heading will always be different by 4 degrees from true heading.
C) The compass heading will have a lower number in degrees than the magnetic heading.
D) The compass needle seems to be pointing at a pole located west of the magnetic pole.

45- The angle between Magnetic North and compass North is called:
A) Magnetic variation.
B) Compass error.
C) Compass deviation.
D) Alignment error.

46- What is a line of equal magnetic variation?
A) An isocline.
B) An isogonal.
C) An isogriv.
D) An isovar.

47- The agonic line is:
A) A line of zero magnetic deviation.
B) A line of equal magnetic deviation.
C) A line of zero magnetic variation.
D) A line of equal magnetic variation.

48- Deviation is:
A) An error to be added to magnetic headings.
B) A correction to be added to magnetic heading to obtain compass heading.
C) A correction to be added to compass heading to obtain magnetic heading.
D) An error to be added to compass heading to obtain magnetic heading.

49- 210 Knots equals to ……. Mph.
A) 218
B) 418
C) 242
D) 442

50- Fuel used during flight is 85 US gallons in 2 hours and 08 minutes. Determine the fuel consumption?

A) 40 GPH
B) 52 GPH
C) 40 PPH
D) 52 GPH

51- If the maximum allowable Tailwind component for a given airplane is 9 knots, is it possible for taking off runway 30 at which surface wind is reported 050°/ 15 knots?

A) Yes
B) No

52- 80 US gallons equals to ……. liters.

A) 333
B) 33.3
C) 303
D) 30.3

53- Given:

Pressure Altitude: **10000 ft**
Outside Air Temperature: **-20 °C**
Calibrated Airspeed: **115 Kts**
Find True Air Speed?

A) 130 Kts
B) 152 Kts
C) 130 Mph
D) 152 Mph

54- How long does it take to fly 720 NM at 120 knots ground speed?

A) 700 Minutes
B) 6 hours
C) 600 Minutes
D) 5.5 hours

55- Given:
First bearing: 100 ° at 10:25 UTC
Second bearing: 092° at 10:27 UTC
Ground Speed: 100 knots.
Find time & distance to Station.
A) 15 min – 25 NM
B) 10 min – 15 NM
C) 20 min – 30 NM
D) 5 min – 8 NM

56- Given:
Pressure Altitude: 22000 ft
Outside Air Temperature: -15°C
Calibrated Altitude: 21600 ft
Find True Altitude.
A) 21800 ft
B) 20800 ft
C) 20200 ft
D) 22800 ft

57- Aircraft has flown 300 NM in 02 hours and 30 minutes, what is the ground speed?
A) 120 Kts
B) 105 Mph
C) 120 Mph
D) 105 Kts

58- The mass of 48 US gallons Fuel is: (SG = 0.72)
A) 345 Kg
B) 288 lbs
C) 345 lbs
D) 288 Kg

59- Given:
True course: 040 °

True air speed: 120 kts

Wind: 160° / 20 kts

Find True Heading and Ground Speed?
A) TH= 030° – G/S=100 Kts
B) TH= 053° – G/S=110 Kts
C) TH= 048° – G/S= 130 Kts
D) TH= 034° – G/S= 105 Kts

60- If an aircraft is required to fly at M 0.80 and maintain FL290, what CAS should be kept?
A) 280 Kts
B) 290 Kts
C) 295 Kts
D) 310 Kts

61- Find the mass of 15 Imperial gallons Oil?
A) 115 lbs
B) 135 lbs
C) 1150 lbs
D) 1350 lbs

62- If True air speed is 135 knots and required wind correction angle is 17° to the right. What is the effective true air speed?
A) 129 Kts
B) 138 Kts
C) 120 Kts
D) 119 Kts

63- Given:
Pressure Altitude 30000 ft
Outside Air Temperature -35 °C
Find Density Altitude?
A) 30000 ft
B) 29500 ft
C) 28500 ft
D) 31000 ft

64- Given:

Climb/Mile: **350 (Ft/NM)**

Ground Speed: **85 Knots**

Find Climb/min.

A) 495 Ft/min
B) 465 Ft/min
C) 450 Ft/min
D) 515 Ft/min

65- Given:

Mach Number: **0.70**

Indicated Air Temp.: **-20°C**

C_T: **0.80**

Find the Temperature Rise.

A) -18.4 °C
B) +30 °C
C) +18.4 °C
D) -24 °C

66- Given:

Density Altitude **26000 ft**

Outside air temperature **-36 °C**

Find the Pressure altitude.

A) 26,000 ft
B) 25,000 ft
C) 27,000 ft
D) 27,500 ft

67- Surface wind is reported 310° at 25 knots and RWY 27 is cleared to land. Find the crosswind component.

A) 9 Kts
B) 11 Kts
C) 21 Kts
D) 16 Kts

68- If outside Air Temperature is 10 °C. Find the Speed of Sound.

A) 633 Mph
B) 653 Kts
C) 633 Kts
D) 653 Mph

69- The mass of 25 Imperial gallons fuel is (SG=0.72):

A) 18 lbs
B) 205 lbs
C) 180 lbs
D) 20.5 lbs

70- Given:

Pressure Altitude: 36000 ft

Outside Air Temperature: - 40 °C

Find the density altitude.

A) 36200 ft
B) 35300 ft
C) 35800 ft
D) 37300 ft

71- 34000 ft is approximately equal to ……. meter.

A) 11000
B) 10500
C) 10000
D) 11500

72- If an airplane flies at 154 knots and experiences 25° right wind correction angle. Find the Effective True Air Speed?

A) 136 Kts
B) 140 Kts
C) 122 Kts
D) 119 Kts

73- Given:

Pressure Altitude:	**39000 ft**
Indicated Air Temperature:	**-20 °C**
Calibrated Air Speed:	**230 kts**
C_T:	**1.0**

Find True Air Speed.

A) 423 Kts
B) 431 Kts
C) 454 Kts
D) 442 Kts

74- How long does it take to fly 48 NM at 145 knots ground speed?

A) 15 min
B) 10 min
C) 20 min
D) 25 min

75- If the maximum allowable Crosswind component for a given aeroplane is 20 Kts and the reported surface wind is 210°/30 Kts. Is it possible to land on RWY 16L?

A) Yes
B) No

76- Given:

Pressure Altitude:	**9000 ft**
Outside Air Temperature:	**-20°C**
Calibrated Air Speed:	**135 Kts**

Find the True Air Speed.

A) 140 Kts
B) 150 Kts
C) 160 Kts
D) 130 Kts

77- If Outside Air Temperature is 0°C, calculate the Speed of Sound.

A) 642 Mph
B) 614 Kts
C) 614 Mph
D) 642 Kts

78- If fuel used during flight is 53 US gallons and elapsed flight time 03 hours and 20 minutes, calculate the fuel consumption.

A) 90 PPH
B) 12 GPH
C) 96 PPH
D) 15 GPH

79- First Bearing is 340° at time 16:25 UTC
Second Bearing is 331° at time 16:28 UTC
Ground Speed: 75 Knots
Find time and distance to station?

A) 15 min – 20 NM
B) 20 min – 25 NM
C) 25 min – 30 NM
D) 30 min – 35 NM

80- Given:
Pressure Altitude 34000 ft

Calibrated Air Speed 300 Kts

Find the Mach Number:

A) 0.80
B) 0.96
C) 0.90
D) 0.86

81- An aircraft flies 154 NM in 01 hour and 20 minutes. Calculate the Ground Speed.

A) 105 Kts
B) 115 Kts
C) 120 Kts
D) 125 Kts

82- Given:

Climb/mile: **380 ft/NM**

Ground Speed: **120 Kts**

Find the Climb/min.

A) 730 ft/min
B) 760 ft/min
C) 780 ft/min
D) 740 ft/min

83- Given:

Mach Number: **0.85**

Indicated Air Temperature: **+10 °C**

C_T: **0.80**

Find the True Air Temperature (OAT).

A) +27 °C
B) -20 °C
C) -37 °C
D) +20 °C

84- If surface wind is reported: 290° / 20 knots and RWY 18 is cleared to land. Calculate the Head (or Tail) wind component.

A) Tailwind 11 knots
B) Headwind 7 knots
C) Tailwind 7 knots
D) Headwind 11 knots

85- Given:

Pressure Altitude: **24000 ft**

Outside Air Temperature: **-20 °C**

Calibrated Altitude: **23200 ft**

Find True Altitude.

A) 24400 ft
B) 23800 ft
C) 25200 ft
D) 22600 ft

86- 210 Km is equal to ……. Statute miles.

A) 145
B) 125
C) 130
D) 140

87- If Density Altitude is 31,000 ft and Outside Air Temperature is -46 °C, find the pressure altitude.

A) 30,000 ft
B) 29,500 ft
C) 32,500 ft
D) 31,000 ft

88- Given:

True Course: **230°**

True Air Speed: **105 Kts**

Wind: **260°/ 30 kts**

Find the True Heading and Ground Speed.

A) TH= 222° - G/S= 131 Kts
B) TH= 238° - G/S= 79 Kts
C) TH= 243° - G/S= 89 Kts
D) TH=217° - G/S= 131 Kts

89- What is the pressure altitude if outside air temperature is – 36 °C and density altitude equals 31000 ft?

A) 32000 ft
B) 33000 ft
C) 30000 ft
D) 29000 ft

90- 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

91- An aeroplane flies at FL330 and Mach number is 0.77, what is required calibrated airspeed?

A) 253 Kts
B) 271 Kts
C) 302 Kts
D) 311 Kts

92- 121 Mph is equal to …….. knots.

A) 141
B) 115
C) 131
D) 105

93- If the Effective True Airspeed is obtained 145 knots by 19° wind correction angle to the left, determine the TAS?

A) 136 Kts
B) 153 Kts
C) 140 Kts
D) 139 Kts

94- Given:

True Course: **200 °**

True Air Speed: **115 Kts**

Wind: **260° (T) / 30 kts**

Calculate the ground speed?

A) 130 Kts
B) 127 Kts
C) 107 Kts
D) 97 Kts

95- Determine the fuel volume if the mass is 220.5 pounds and its SG is 0.78?

A) 34 Liters
B) 43 US Gallon
C) 34 US Gallon
D) 43 Liters

96- Given:

Pressure Altitude: **28000 ft**

Outside Air Temperature: **-30°C**

Calibrated Altitude: **27800 ft**

Find True Altitude?

A) 29800 ft
B) 29000 ft
C) 27800 ft
D) 27000 ft

97- Given:

Indicated Air Temperature: **+10 C**

Calibrated Air Speed: **280 Kts**

Pressure Altitude: **23000 ft**

C_T= 0.8

Find the TAS?

A) 411 Kts
B) 391 Kts
C) 441 Kts
D) 381 Kts

98- Given:

True Course: **200 °**

True Air Speed: **125 Kts**

True Heading: **214 °**

Ground Speed: **141 Kts**

Calculate wind direction and velocity?

A) 302° / 26 Kts
B) 232° / 26 Kts
C) 323° / 36 Kts
D) 282° / 35 Kts

99- How long does it take to fly 240 NM at 115 knots ground speed?

A) 125 minutes
B) 100 minutes
C) 105 minutes
D) 135 minutes

100- Given:

Mach Number: 0.70

Indicated air temperature: -30 °C

C_T: 0.80

Calculate the outside air temperature?

A) +47.6 °C
B) -17.6 °C
C) -47.6 °C
D) +17.6 °C

101- Determine the compass heading:

True Course: 225°

Variation: 6° W

Drift Angle: 8° Right

Deviation: +5°

A) 228°
B) 218 °
C) 206°
D) 216°

102- 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

103- Determine the Time to turn, if:

True Air Speed: **105 Kts**

True Course: **080 °**

Wind: **230 ° (T) / 35 Kts**

Fuel Available: **2.75 Hours**

A) 01:46’
B) 01:20’
C) 00:59’
D) 01:25’

104- Find the Calibrated Air Speed, if:

True Air Speed: **450 Kts**

OAT: **-40 ° C**

Pressure Altitude: **FL340**

A) 262 Kts
B) 292 Kts
C) 450 Kts
D) 405 Kts

105- Given:

True Course: **305 °**
True Air Speed: **145 Kts**
Wind: **110° (T) / 30 Kts**
Variation: **3 ° W**
Deviation: **-2 °**
Determine the Magnetic Heading.

A) 311°
B) 300°
C) 321°
D) 291°

106- If density altitude is 30,000 ft and ambient air temperature is 0°C, what is the approximate pressure altitude?

A) FL280
B) FL290
C) FL260
D) FL310

107- Calculate the leg time if the planned ground speed is 154 Knots and distance is 100 NM?

A) 44 minutes
B) 48 minutes
C) 28 minutes
D) 39 minutes

108- 11000 meters equals to …… feet.

A) 35090
B) 36090
C) 3590
D) 3690

109- An aircraft travels 2.4 statute miles in 47 seconds, What is its ground speed?

A) 183 kts
B) 13 kts
C) 209 kts
D) 160 kts

110- Given:
IAS 120 knots, FL080, OAT +20°C, what is the TAS?

A) 132 kts
B) 141 kts
C) 102 kts
D) 120 kts

111- Given: TAS 200 kts, Track 110°(T), W/V 015/40 kts, calculate heading°(T) and groundspeed.

A) 097° - 201 kts
B) 099° - 199 kts
C) 121° - 207 kts
D) 121° - 199 kts

112- Given: True HDG 145°, TAS 240 kts, True Track 150°, G/S 210 kts, calculate the W/V.

A) 360˚/35
B) 295˚/35
C) 180˚/35
D) 115˚/35

113- Given: TAS 140 kts, HDG 005°(T), W/V 265˚/25, calculate the drift and ground speed.

A) 11R - 140 kts

B) 10R - 146 kts

C) 9R - 140 kts

D) 11R - 142 kts

114- Given: FL 120, OAT is ISA, CAS = 200 knots, Track = 222°(M),
Heading = 215°(M), Variation = 15°W.
If the time to fly 105 NM is 21 minutes, what is the W/V?

A) 040T / 105 kts

B) 055T / 105 kts

C) 050T / 70 kts

D) 065T / 70 kts

115- Given: Airport elevation = 1000 feet, QNH = 988 hPa, what is the approximate airport pressure altitude? (Assume 1 hPa = 27 feet)

A) -320 feet

B) 1680 feet

C) 320 feet

D) 680 feet

116- Given: TAS = 487, FL330, OAT = ISA+15, calculate the Mach No?

A) 0.81

B) 0.78

C) 0.84

D) 0.76

117- Given:
AD = Air distance

GD = Ground distance

TAS = True Airspeed

GS = Groundspeed

Which of the following is the correct formula to calculate ground distance (GD) gone?
A) GD = TAS / (GS x AD)
B) GD = (AD x GS) / TAS
C) GD = AD x (GS-TAS) / GS
D) GD = (AD-TAS) / TAS

118- Given: Aircraft height = 2500 feet, ILS GP angle = 3°, at what approximate distance from the threshold can you expect to intercept the glide path?
A) 8.0 NM
B) 14.5 NM
C) 13.1 NM
D) 7.0 NM

119- An aircraft is planned to fly from position A to position B, distance 480 NM, at an average groundspeed of 240 knots. It departs A at 1000 UTC. After flying 160 NM along track from A, the aircraft is 2 minutes behind the planned time. Using the actual groundspeed experienced, what is the revised ETA at B?
A) 1153
B) 1203
C) 1206
D) 1157

120- The distance between two waypoints is 200 NM. To calculate compass heading, the pilot used 2°E magnetic variation instead of 2°W. Assuming that the forecast W/V applied, what will the off track distance be at the end of the second waypoint?
A) 7 NM
B) 14 NM
C) 0 NM
D) 21 NM

121- An aircraft at FL140, IAS 210 knots, OAT -5°C and wind component – 35 knots, is required to reduce speed in order to cross a reporting point 5 minutes later than planned. Assuming that flight conditions do not change, when the aircraft is 150 NM from the reporting point, the IAS should be reduced by:

A) 15 kts

B) 20 kts

C) 30 kts

D) 25 kts

122- Pressure Altitude is 27000 feet, OAT = -35°C, Mach No = 0.45, W/V = 270˚/85, Track = 200°T. What is drift and groundspeed?

A) 18˚L / 252 knots

B) 15˚R / 310 knots

C) 17˚L / 228 knots

D) 17˚R / 287 knots

123- G/S = 240 knots, Distance to go = 500 NM, What is time to go?

A) 20 minutes

B) 29 minutes

C) 2 h 05 minutes

D) 2 h 12 minutes

124- OAT = +35°C, Pressure alt = 5000 feet, What is true altitude?

A) 4550 feet

B) 5550 feet

C) 4290 feet

D) 5320 feet

125- Course 040°T, TAS 120 kts, Wind speed = 30 knots. From which direction will the wind give the greatest drift?

A) 215°T

B) 230°T

C) 235°T

D) 240°T

126- Required course 045°T, W/V = 190˚ /30, FL055 at ISA, Variation = 15°E, CAS = 120 knots, what is the magnetic heading and G/S?

A) 052°M/ 154 kts

B) 067°M/ 154 kts

C) 037°M/ 154 kts

D) 037°M/ 113 kts

127- On a 2.8 % glide slope, your groundspeed is 300 knots. What is your rate of descent?

A) 850 ft/min

B) 620 ft/min

C) 970 ft/min

D) 710 ft/min

128- An airfield has runways 18/36 and 07/25, all of equal length. The TAF W/V is 310˚/25 kts. Variation is 20°E. Which will be the best runway for take-off and landing?

A) 18

B) 36

C) 07

D) 25

129- An airfield has runways 18/36 and 07/25, all of equal length. The TAF W/V is 310˚/25 kts. Variation is 20°E. What will be the head and cross wind components on the best runway for landing?

	Head	**Cross**
A)	24	17
B)	13	19
C)	19	16
D)	17	12

130- An aircraft requires 10 knots headwind component for take-off. The crosswind limit for the aircraft is 20 knots. The only runway available is 25. The ATIS W/V is 290˚/10G40. What are the minimum and maximum wind speeds for take-off?

	Min	**Max**
A)	17	31
B)	13	17
C)	13	31
D)	17	26

131- On a particular take-off, you can accept up to 10 knots tailwind. The runway QDM is 047, the variation is 17˚E and the ATIS gives the wind direction as 210˚. What is the maximum wind strength you can accept?

A) 18 knots

B) 11 knots

C) 8 knots

D) 4 knots

132- (Refer to figure C-37) Which of the aeronautical chart symbols indicates a VORTAC?

A) 6

B) 7

C) 3

D) 5

133- (Refer to figure C-37) Which of the aeronautical chart symbols indicates a VOR?

A) 1

B) 2

C) 3

D) 7

134- (Refer to figure C-37) Which of the aeronautical chart symbol indicates a DME?

A) 2

B) 1

C) 6

D) 3

135- (Refer to figure C-38) Which of the aeronautical chart symbol indicates a lighted obstacle?

A) 9

B) 10

C) 15

D) 16

136- (Refer to figure C-38) Which of the aeronautical chart symbol indicates a Flight Information Region (FIR) boundary?

A) 5

B) 3

C) 4

D) 1

137- (Refer to figure C-37) Which of the aeronautical chart symbol indicates a VOR/DME?

A) 3

B) 1

C) 4

D) 7

138- (Refer to figure C-37) Which of the aeronautical chart symbol indicates a NDB?

A) 5
B) 4
C) 2
D) 3

139- (Refer to figure C-38) Which of the aeronautical chart symbol indicates an unlighted obstacle?

A) 9
B) 10
C) 8
D) 15

140- (Refer to figure C-38) Which of the aeronautical chart symbol indicates a compulsory reporting point?

A) 8
B) 15
C) 6
D) 7

141- Given:

TAS: 465 kts

HDG: 124 °(T)

W/V: 170°/80 Kts

Calculate the drift and G/S.

A) 8°L - 415 kts.
B) 3°L - 415 kts.
C) 4°L - 400 kts.
D) 6°L - 400 kts.

142- Given:

Actual HDG: 290°

TAS: 250 kts

Wind: 135˚/75kts

What is the ground speed?

A) 320 kts
B) 300 kts
C) 175 kts
D) 200 kts

143- Given
TAS: 440 Kts
HDG: 349° (T)
W/V: 040°/40 Kts
Calculate the drift and G/S.
A) 4°L - 415 kts.
B) 2°L - 420 kts.
C) 6°L - 395 kts.
D) 5°L - 385 kts.

144- Given
True heading: 090°
TAS: 200 kts
W/V: 220°/30kts
Calculate the G/S.
A) 180 kts
B) 230 kts
C) 220 kts
D) 200 kts

145- Given magnetic heading 075°, variation 4°W Drift angle 12°R, relative bearing to the station 270°. What is the true bearing of the aircraft from the station?
A) 149°
B) 173°
C) 169°
D) 161°

146- Given:
True track: 070°
Variation: 30°W
Deviation: +1°
Drift: 10°R
Calculate the compass heading.
A) 100°
B) 091°
C) 089°
D) 101°

147- Given the following:
Magnetic heading: 060°
Magnetic variation: 8° W
Drift angle: 4° right
What is the true track?
A) 048°
B) 064°
C) 056°
D) 072°

148- Course 040°T, TAS 120 kts, wind speed 30 kts. From which direction will the wind give the greatest drift:
A) 215° (T)
B) 230° (T)
C) 235° (T)
D) 240° (T)

149- Given:
True heading: 310°
TAS: 200 kts
G/S: 176 kts
Drift angle: 7° right
Calculate the W/V.
A) 090°/33 kts.
B) 360°/33 kts.
C) 270°/33 kts.
D) 180°/33 kts.

150- Given:
FL310
M 0.76
What is the CAS?
A) 280 kts
B) 274 kts
C) 292 kts
D) 287 kts

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

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	B	114	C	127	A	140	D
102	B	115	B	128	D	141	A
103	C	116	A	129	C	142	A
104	A	117	B	130	C	143	A
105	A	118	A	131	B	144	C
106	C	119	C	132	B	145	D
107	D	120	B	133	C	146	C
108	B	121	B	134	A	147	C
109	D	122	C	135	B	148	D
110	B	123	C	136	D	149	C
111	B	124	B	137	B	150	A
112	D	125	D	138	B		
113	B	126	C	139	A		

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Human Performance

1- A problem caused by the lack of visual references is known as:
A) Autokinesis.
B) Flicker vertigo.
C) Empty field myopia.
D) Somatogravic illusion.

2- 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.

3- 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.

4- 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.

5- 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.

6- 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.

7- 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.

8- 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.

9- 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.

10- A turn is detected by the ……. canal in the inner ear.

A) Lateral
B) Horizontal
C) Vertical
D) Static

11- 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.

12- 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

13- 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.

14- 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

15- 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

16- 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.

17- 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

18- 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

19- …….. drugs generally excite the central nervous system and produce an increase in alertness and activity.

A) Depressant
B) Stimulant
C) Tranquilizer
D) Anesthetic

20- Which gas 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.

21- 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.

22- 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.

23- 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.

24- Most accidents are mainly caused by lack of:

A) good maintenance of aircraft.
B) Good judgment.
C) Physical skills.
D) Interpersonal relations.

25- The trend in aeroplane null-toss (complete aeroplane damage/write-off) rate over the last three decades seems to be related to:

A) The number of engines.
B) The manufacturer
C) The crew.
D) The year of manufacture.

26- How long must you wait before you can fly after donating blood?

A) 24 hours
B) 48 hours
C) 72 hours
D) 96 hours

27- Empty field myopia is corrected with:

A) Convex lenses.
B) Concave lenses.
C) It cannot be correct.
D) Adequate intake of the vitamin A.

28- Who in the Aviation Industry is responsible for flight safety?

A) Aircrew.
B) Everyone involved.
C) Aircrew and Ground crew.
D) Management, Aircrew, Ground crew and ATC personnel.

29- What does the vestibular system consist of?

A) The semi-circular canals, the otolith organs and the ears
B) The semi-circular canals and the otolith organs
C) The otolith organs
D) Proprioceptive organs

30- The following applies for the physical properties of gases:

A) At sea-level a gas has 1/3 of the volume it would have at 27000 ft.
B) At an altitude of 18000 ft a gas volume is three times as large as it would be at sea-level.
C) A water vapor saturated gas at 34000 ft has 6 times its volume as it would have at sea-level.
D) At an altitude of 63000 ft water will boil at temperature of 65°C.

31- You can overcome hyperventilation by breathing into a plastic or paper bag, The intention is:

A) To raise the level of CO_2 in the blood as fast as possible.
B) To prevent you from exhaling too much oxygen.
C) To increase the amount of nitrogen in the lung.
D) To reduce blood pressure.

32- In order to get rid of excess nitrogen following scuba diving, subsequent flights should be delayed:

A) 3 hours after non decompression diving.
B) 24 hours.
C) 36 hours after any scuba diving.
D) 48 hours after a continuous ascent in the water has been made.

33- The symptoms of hyperventilation are caused by a:

A) Surplus of CO_2 in the blood.
B) Surplus of O_2 in the blood.
C) Shortage of CO in the blood.
D) Shortage of CO_2 in the blood.

34- After a rapid decompression (pilot seated at the controls) at 35000 feet, the time of useful consciousness is about:

A) 5 minutes.
B) 15 seconds or less.
C) 30 to 45 seconds.
D) 10 minutes.

35- A pilot who is hyperventilating for a prolonged period of time may even get unconscious. Hyperventilation is likely to occur when:

A) there is an increased blood flow to the brain.
B) there is a low CO pressure in the blood.
C) he is flying a tight turn.
D) the pilot is emotionally aroused.

36- Which symptom conducting safe flight?

A) Dizziness.
B) The interference of reasoning and perceptive functions.
C) Lack of adaptation.
D)Lack of accommodation.

37- After a cabin pressure loss in approximately 35000 ft the TUC (Time of Useful Consciousness) will be approximately:

A) 10 -15 seconds.
B) 30 - 60 seconds.
C) 3 - 4 minutes.
D) 5 minutes or more.

38- Hyperventilation causes:

A) Acidosis.
B) An excess of carbon dioxide in the blood.
C) Hypochondria.
D) A lack of carbon dioxide in the blood.

39- In relation to hypoxia, which of the following paraphrase is correct?

A) This is a physical condition caused by a lack of oxygen saturation in the blood while hyperventilating.

B) This is a condition of lacking oxygen in the brain causing the circulatory system to compensate by decreasing the heart rate.

C) Hypoxia is often produced during steep turns when pilots turn their heads in a direction opposite to the direction in which the aircraft is turning.

D) This is a physical condition caused by a lack of oxygen to meet the needs of the body tissues, leading to mental and muscular disturbances, causing impaired thinking, poor judgment and slow reactions.

40- Pain in the joints caused by gas bubbles following a decompression is called:

A) chokes

B) bends

C) creeps

D) leans

41- Why is hypoxia especially dangerous for pilots flying solo?

A) The pilot may lose control when he is using the oxygen mask.

B) Hypoxia does not cause a loss of control in steering the plane.

C) Hypoxia improves vision at night, so the pilot will have no indication of danger.

D) Since the first signs of hypoxia are generally hard to detect (hypoxia of the brain), the solo pilot may not be able to react in time (i.e. activate his emergency oxygen system).

42- The Effective performance Time or Time of Useful Consciousness after a decompression at 35000 ft is:

A) Approximately 3 minutes.

B) Between 30 and 60 seconds.

C) Approximately 5 minutes.

D) Less than 20 seconds.

43- What could be symptoms of hypoxia (when flying without oxygen) above 12000 ft?

A) Headache, thirst, somnolence, collapse.

B) Headache, fatigue, dizziness, lack of coordination.

C) Euphoria, headache, improvement in judgment, loss of consciousness.

D) Trembling, increase in body temperature, convulsions, slowing of the rate of breathing

44- Which of the following gases is the main by product of the cellular energy production?

A) Oxygen

B) Nitrogen

C) Carbon dioxide

D) Carbon monoxide

45- During a final approach under bad weather conditions, you feel dizzy, get tingling sensations in your hands and, a rapid heart rate. These symptoms could indicate:

A) Hypoxia.
B) Disorientation.
C) Hyperventilation.
D) Carbon monoxide poisoning.

46- You can survive at any altitude, provided that:

A) 21% oxygen is available in the air you breathe in.
B) pressure respiration is guaranteed for that altitude.
C) the temperature in the cabin does not drop below 10°C.
D) enough oxygen, pressure and heat is available.

47- The volume percentage of oxygen in the atmosphere is 21% which:

A) increases with increasing altitude.
B) is dependent on the present air pressure.
C) is constant for all altitudes conventional airplanes can reach.
D) decreases with increasing altitude.

48- In the alveoli gas exchange takes place (external respiration). Which gas will diffuse from the blood into the lungs?

A) Carbon monoxide.
B) Carbon dioxide.
C) Ambient air.
D) Oxygen.

49- Choose the best answer: As altitude increases. . .

A) The partial pressure of oxygen decreases.
B) The partial pressure of carbon dioxide increases.
C) The partial pressure of oxygen and carbon dioxide decreases.
D) The partial pressure of nitrogen increases.

50- With hyperventilation, caused by high levels of arousal or overstress:

A) finger nails and lips will turn blue (cyanosis).
B) more oxygen will reach the brain.
C) Peripheral and scotopic vision will be improved.
D) an increased amount of carbon dioxide is exhaled causing muscular spasms and even unconsciousness.

51- One of the most frequent symptom(s) of decompression sickness emerging after a decompression in airline operation:

A) Are the bends.
B) Are the chokes.
C) Is a shock.
D) Are neurological damages to the CNS.

52- Flying immediately following a dive with scuba diving equipment (> 10 m depth):
A) Is forbidden for the flight crew, because it leads to hypoxia.
B) Can cause decompression sickness even when flying at pressure altitudes below 18000 ft.
C) Prevents any dangers caused by aeroembolism (decompression sickness) when climbing to altitudes not exceeding 30,000 ft.
D) Has no influence on altitude flights.

53- After a decompression at high altitude:
A) Temperature in the cockpit will increase.
B) Pressure differentials will suck air into the cabin.
C) Nitrogen gas bubbles can be released in the body fluids causing gas embolism, bends and chokes.
D) Automatically oxygen is deployed into the cabin.

54- One of the most dangerous symptoms of hypoxia concerning flight safety is:
A) Hyperventilation, causing emotional stress.
B) Reduced coordination of limb movements, causing the pilot to spin.
C) Cyanosis, reducing then pilot's ability to hear.
D) Impaired judgment, disabling the pilot to recognize the symptoms.

55- Carbon monoxide, a product of incomplete combustion, is toxic because:
A) It disturbs gaseous diffusion at the alveoli capillary membrane.
B) It competes with oxygen in its union with hemoglobin.
C) It prevents the absorption of food from the digestive tract.
D) It prevents the excretion of catabolites in the kidneys.

56- What are the vessels called that are very fine and found inside tissues?
A) Arteries
B) Veins
C) Capillaries
D) Aorta

57- 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.

58- Which lenses are used to correct presbyopia?
A) Concave.
B) Convex.
C) Various depending on the eye itself.
D) It cannot be correct.

59- 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.

60- 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) An sickness resulting from the formation of nitrogen bubbles in bodily tissues and fluids after a cabin pressure loss at high altitude.

61- 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.

62- 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.

63- Flying Immediately after scuba diving involves the risk of getting:
A) Decompression sickness without having a decompression.
B) Hyperventilation.
C) Hypoxia.
D) Stress.

64- How much of the air is occupied by oxygen?
A) 78%
B) 78.08%
C) 17%
D) 20.94%

65- How much of the air is occupied by nitrogen?
A) 76%
B) 21%
C) 78.08%
D) 20.94%

66- What is the medical condition where the airways to the lungs are narrowed due to inflammation?

A) Asthma
B) Bronchitis
C) Pleurisy
D) Angina

67- 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.

68- 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.

69- 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.

70- 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.

71- 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.

72- 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 tranquillizers.
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 tranquillizers.

73- A pilot should not fly immediately after donating blood because:
A) Your heart rate is too low after 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) You have an increased susceptibility to fainting.

74- 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.

75- 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 10,000 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.

76- High blood pressure is also known as:
A) Hypertension
B) Hypotension
C) Angina
D) Hypoglycemia

77- 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%.

78- 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.

79- 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 th middle ear.
D) During descent to decrease the higher pressure in the sinuses.

80- 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

81- Which of the following gases is fundamentally responsible for decompression sickness?

A) Oxygen
B) Nitrogen
C) Carbon dioxide
D) Sodium

82- the following group of drugs generally are not classified as stimulants or suppressants:

A) Caffeine
B) Alcohol
C) Antibiotics
D) Antihistamines

83- Airsick passengers can safely take motion sickness medication.

A) True
B) False

84- 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.

85- The following medications is not prohibited before flying:

A) Cold and allergy pills
B) Alcohol
C) Tranquilizers
D) Nicotine

86- Alcohol has stimulating effect on:

A) Central nervous system
B) Heart rate
C) Respiratory rate
D) Both B and C

87- 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 above mentioned signs or symptoms.

88- 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 CO_2 production.

89- 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.

90- 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.

91- 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.

92- 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.

93- 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 the

94- 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.

95- 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.

96- The seat of-the-pants sense is including receptors in the:
A) Utricles and saccules.
B) Semicircular canals.
C) Muscles, tendons and joints sensitive to the position and movement of body parts.
D) Skin of the breech only.

97- Which one of the answers is responsible for the sensation of yaw movement in flight?
A) Horizontal canal
B) Vertical canal
C) Lateral canal
D) Saccule

98- Spatial disorientation will be most likely to occur during flight:
A) When flying in and out of clouds and the pilot maintains good instrument cross check.
B) If the brain receives conflicting information and the pilot does not believe the instruments.
C) When flying in light rain below the ceiling.
D) When flying in bright sunlight above a cloud layer.

99- The fovea:
A) Is an area in which rods predominate.
B) Is sensitive to very low intensities of light.
C) Is an area in which cones predominate.
D) Is the area responsible for night vision.

100- Coriolis illusion, causing spatial disorientation is the result of:
A) Undergoing positive G.
B) Simultaneous head movements during aircraft maneuvers.
C) Gazing in the direction of a flashing light.
D) Normal deterioration of the semicircular canals with age.

101- The risk of getting a spatial disorientation is growing when:

A) The pilot is buckled too tight to his seat and cannot sense the attitude changes of the aircraft by his seat -of-the-pants sense.
B) There is contradictory information between the instruments and the vestibular organs.
C) The pilot is performing an effective instrument crosscheck and is ignoring illusions.
D) Information from the vestibular organ in the inner ear are ignored.

102- The amount of light which strikes the retina is controlled by:

A) The lens.
B) The ciliary body.
C) The cornea.
D) The pupil.

103- You fly VFR from your home base (runway width 27 m), to an international airport (runway width 45 m). On reaching your destination there is a risk of performing a:

A) High approach with overshoot.
B) High approach with undershoot.
C) Low approach with overshoot.
D) Low approach with undershoot.

104- The most probable reason for spatial disorientation is:

A) To rely on instruments when flying in and out of clouds.
B) The lack of attention to the vertical speed indicator.
C) A poor instrument cross-check and permanently transitioning back and forth between instruments and visual references.
D) To believe the attitude indicator.

105- Approaches at night without references on the ground and no landing aids (e.g. VASIS) can make the pilot believe of being:

A) Higher than actual altitude with the risk of overshooting.
B) Higher than actual altitude with the risk of landing short (ducking under).
C) Lower than actual altitude with the risk of overshooting.
D) Lower than actual altitude with the risk of ducking under.

106- A pilot, trying to pick up a fallen object from the cockpit floor during a tight turn, experiences:

A) Autokinetic illusion.
B) Coriolis illusion.
C) Barotrauma.
D) Pressure vertigo.

107- Empty field myopia is caused by:
A) Lack of distant focal points.
B) Atmospheric perspective.
C) Ozone at altitude.
D) Flying over mountainous terrain.

108- What impression do you have when outside references are fading away (e.g. fog, darkness, snow and vapor)?
A) Objects seem to be much bigger than in reality.
B) Objects seem to be closer than in reality.
C) It is difficult to determine the size and speed of objects.
D) There is no difference compared with flying on a clear and sunny day.

109- Although we have a field of vision of more than 180 degree it is important during flight to use the scanning technique, because:
A) It is tiring to look continually in the same direction.
B) Only in the fovea area resolution is good enough to see an object clearly.
C) Only in the peripheral area of the retina resolution is good enough to see an object clearly.
D) The reduction in the field of vision with decreasing altitude is due to a lack of vitamin A

110- Which problem may occur when flying in an environment of low contrast (fog, snow, darkness, haze)? Under these conditions it is:
A) Difficult to estimate the correct speed and size of approaching objects.
B) Impossible to detect objects.
C) No problem to estimate the correct speed and size of approaching objects.
D) Improbable to get visual illusions.

111- The vestibular system is composed of:
1) Two ventricles
2) A saccule
3) An utricle
4) Three semicircular channels
A) 2,3
B) 1,4
C) 2,3,4
D) 1,3,4

112- Hypoxia will effect night vision:
A) At 5000 ft.
B) Less than day Vision.
C) And causes the autokinetic phenomena.
D) And causes hyperventilation.

113- The impression of an apparent movement of light when stared at for a relatively long period of time in the dark is called:

A) Oculogravic illusion.
B) White out.
C) flicker vertigo illusion.
D) Autokinesis.

114- Sensory input to the seat-of-the-pants sense is given by:

A) Subcutaneous pressure receptors and kinesthetic muscle activity sensors.
B) Pressure of the heart on the diaphragm.
C) Blood rushing into legs.
D) Acceleration of the stomach (nausea).

115- Why does a deficiency in vitamin A cause night-blindness?

A) Vitamin A deficiency interrupts the oxygen supply to the photosensitive cells.
B) Accommodation is destroyed.
C) Vitamin A is essential to the regeneration of visual purple.
D) The transfer of light stimulus from the rods to a nerve impulse depends on vitamin A.

116- To prevent vertigo in flight we should:

A) Keep breathing normally.
B) Look towards the sides when we make a turn.
C) Breathe deeply but control the respiratory frequency.
D) Not move the head suddenly while we are turning.

117- The proprioceptive senses (seat-of-the-pants sense):

A) Can neither be used for motor coordination in IMC and VMC.
B) Is a natural human instinct, always indicating the correct attitude.
C) Can be used, if trained, to avoid spatial disorientation in IMC.
D) Give wrong information, when outside visual reference is lost.

118- What can a pilot to avoid flicker vertigo when flying in the clouds?

A) Engage the autopilot until breaking the clouds.
B) Dim the cockpit lights to avoid reflections.
C) Switch strobe-lights off.
D) Fly straight and level and avoid head movements.

119- The requirement of good sunglasses is to:

A) Eliminate distortion in aircraft windshields.
B) Fit to the pilot's individual taste.
C) Absorb enough visible light to eliminate glare without decreasing visual acuity, absorb UV radiation and absorb all colors equally.
D) Increase the time for dark adaptation.

120- Which procedure is recommended to prevent or overcome spatial disorientation?
A) Tilt your head to the side to get better information from the semicircular canals.
B) Rely entirely on the indications of the flight instruments.
C) Rely on the seat-of-the-pants sense.
D) Get adapted to low levels of illumination before flying and use off-center vision all the time.

121- The proprioceptive senses (seat-of-the-pants sense) are important for motor coordination. They:
A) Allow the pilot to determine the absolute vertical at flight condition.
B) Are important senses for flight training in IMC.
C) Are completely unreliable for orientation when flying in IMC.
D) Indicate the difference between gravity and G-forces.

122- A pilot approaching an upslope runway:
A) Is performing a steeper than normal approach, landing long.
B) Establishes a higher than normal approach speed.
C) Establishes a slower than normal approach speed with the risk of stalling out.
D) May feel that he is higher than actual. This illusion may cause him to land short.

123- What misjudgment may occur if an airplane is flying into fog, snow or haze?
A) Objects will appear bigger in size than in reality.
B) Objects seem to move slower than in reality.
C) Objects seem to be farther away than in reality.
D) Objects will appear closer than they really are.

124- A pilot is used to land on wide runways only. When approaching a smaller and/or narrower runway, the pilot may feel he is at a:
A) Greater height and the impression of landing short.
B) Lower height and the impression of landing slow.
C) Greater height than he actually is with the tendency to land short.
D) Lower than actual height with the tendency to overshoot.

125- Through which part of the ear does the equalization of pressure take place, when altitude is changed?
A) External auditory canal
B) Eustachian tube.
C) Cochlea.
D) Tympanic membrane.

126- How can spatial disorientation in IMC be avoided? By:
A) Maintaining a good instrument cross check.
B) Believing your body senses only.
C) Moving the head into the direction of the resultant vertical.
D) Looking outside whenever possible ignoring the attitude indicator.

127- A pilot is prone to get vertigo, as visibility is impaired (dust, smoke, snow). What is the correct action to prevent vertigo?

A) Concentrate on the vertical speedometer.
B) Depend on information from the semicircular canals of the inner ear, because those are the only ones giving correct information.
C) Depend on the instruments.
D) Reduce rate of breathing until all symptoms disappear, then breathe normal again.

128- When decelerating in level flight we could experience the sensation of a:

A) Climb
B) Descent
C) Turn
D) Spin

129- Autokinetic illusion is:

A) An illusion in which a stationary point of light if stared at for several seconds in the dark, may - without a frame of reference - appear to move.
B) The sensation during a radial acceleration of seeing a fixed reference point moving into the opposite direction of the acceleration.
C) A conflict between the visual system and bodily sensations.
D) Poor interpretation of the surrounding world.

130- During flight in IMC, the most reliable sense which should be used to overcome illusions is the:

A) Visual sense, interpreting the attitude indicator.
B) Seat-of-the-pants sense.
C) Vestibular sense.
D) Visual sense by looking outside.

131- What would be the effect if in a tight turn one bends down to pick up a pencil?

A) Coriolis effect.
B) Barotrauma.
C) Vertigo.
D) Inversion illusion.

132- The retina allows for the acquisition of colours as a result of the:

A) Rods located in its central par.
B) Crystalline lens.
C) Rods located in its peripheral zone.
D) Cones located in its central part.

133- The peripheral vision is important for:
A) Detecting moving objects.
B) Color vision.
C) Visual acuity.
D) Binocular vision.

134- The iris main purpose is to:
A) Control the size, or diameter of the pupil.
B) Initiate nerve impulses.
C) Transmit impulses via the optic nerve.
D) Let light into the eye.

135- What is the day blind spot?
A) The optic nerve has no rods and cones which creates a blind spot.
B) The fovea has no rods and cones which creates a blind spot.
C) An area around the fovea is overstimulated by bright daylight which creates a day blind spot.
D) The day blind spot is caused by the lack of rods on the iris.

136- Select the angular acceleration that can be sensed by the semicircular canals:
A) Climb or descent.
B) Acceleration or deceleration.
C) Roll.
D) Roll, pitch or yaw.

137- A "Graveyard spin" is:
A) A spin maneuver that should only be performed by well-trained pilots.
B) A fatal accident caused by a state of spinning the fluid in the brain.
C) A spin in which the pilot, on recovery, tends to re-enter the spin due to the somatogyral illusion where the vestibular system no longer senses radial acceleration.
D) An illusion caused by misperception of being higher than you really are when performing a spin. Thus the recovery tends to be dangerously low.

138- A pilot accustomed to landing on a wide runway may find, when approaching to a narrow runway that he/she is at a:
A) Lower height and the impression of landing slow.
B) Lower than actual height with the tendency to overshoot.
C) Greater height and the impression of landing short.
D) Greater height than he/she actually is with the tendency to land short.

139- A pilot may get the illusion of low altitude on approach although the aircraft is on the correct glide path:
A) On night approaches only.
B) When the runway is unusually narrow.
C) When the runway is wider than he is used to.
D) Depending on the approach speed of the aircraft.

140- How can vertigo be prevented in conditions of good visibility?
A) By looking at the horizon.
B) By closing the eyes momentarily.
C) By looking approximately 5° to one side of an object.
D) By avoiding blinking.

141- On experiencing vestibular illusion in straight and level flight, it is recommended that:
A) You avoid head movements and rely on your instruments.
B) You tilt your head to the side opposite to the turn to nullify the stimulus causing the illusion.
C) You close your eyes for a moment so that the oculovestibular conflict disappears.
D) You rely on your sensations only, as humans are much more reliable than flight instruments.

142- The "seat-of-the-pants- sense":
A) Can be used, if trained, to avoid disorientation in space.
B) Is a natural human instinct which will always indicate the correct body position in space.
C) Can give false inputs to body orientation when visual reference is lost.
D) Can be used as a reference for determining attitude when operating in visual and instrument meteorological conditions.

143- Which scanning techniques should be used when flying at night?
A) Look directly at the object.
B) Look to the side (10° - 15°) of the object.
C) Blink your eyes.
D) Look with one eye.

144- You fly VFR from your home base (runway width 45 m) to a small airfield (runway width 25 m). 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.

145- 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.

146- 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.

147- The following statements are true except:

A) Cones are responsible for night vision and are most densely in the fovea centralis.
B) Rods are responsible for night vision and have a poor ability to discriminate.
C) Cones are most densely located in the fovea centralis 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.

148- 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.

149- 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.

150- 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.

151- 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.

152- 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

153- On ascent the gases in the digestive tract will:
A) Expand.
B) Be absorbed by tissues and blood.
C) Stay the same.
D) Shrink.

154- 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.

155- 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.

156- 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.

157- 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.

158- 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.

159- 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.

160- 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.

161- 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.

162- 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.

163- Even at normal cabin altitudes (i.e. 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.

164- 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.

165- 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.

166- The organ which metabolizes alcohol from the body is the:
A) Liver
B) Spleen
C) Pancreas
D) Kidneys

167- 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.

168- 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.

169- 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.

170- 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.

171- 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.

172- 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

173- Which factors can influence effective communications?
A) Noise and voice.
B) Workload, noise and voice.
C) Voice.
D) Workload and voice.

174- What is meant by the term CRM today?
A) Cockpit resource management.
B) Crew resource management.
C) Company resource management.
D) Crew reliability measurement.

175- "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

176- Which of the following is not a hazardous attitude?
A) Domination
B) Macho
C) Anti-authority
D) Impulsivity

177- 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.

178- 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.

179- 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.

180- 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.

181- 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.

182- 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.
B) Rising of the blood pressure, pupils narrowing, stabbing pain around the heart.

183- The two types of fatigue are:
A) Chronic and acute.
B) Short-term and oppressive.
C) Oppressive and negative.
D) Heavy and light.

184- 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.

185- Blood pressure may be too high due to:
A) Age.
B) Stress.
C) Smoking.
D) All answers are correct.

186- 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.

187- 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.

188- Which organ controls all other bodily functions?
A) The heart.
B) The brain.
C) The lungs.
D) The spinal cord.

189- 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.

190- The effects of Hypoxia can be increased by:
A) Increased altitude.
B) Increased temperature.
C) Alcohol.
D) All answers are correct.

191- 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.

192- 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.

193- 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.

194- When flying solo, a pilot who suspects he is suffering from spatial disorientation should:
A) Blink rapidly several times.
B) Believe the indications of his instruments.
C) Believe his somatosensory senses.
D) Swallow hard, pinch the nostrils and blow down the nose to clear the Eustachian tube.

195- What is the purpose of the Eustachian tube?
A) To pass sound waves across the middle ear to the auditory nerve.
B) To allow ambient pressure to equalize on both sides of the ear drum.
C) To allow ambient pressure to equalize on the middle ear side of the ear drum.
D) To allow ambient pressure to equalize on both sides of the vestibular apparatus.

196- One of the main contributory factors to the onset of motion sickness is:
A) Stalling.
B) Rolling quickly into turns.
C) Performing high G maneuvers.
D) The mismatch between visual and vestibular sensory inputs.

197- During straight and level flight any pronounced linear acceleration may produce sensation of the nose pitching up. In such a situation, the pilot should:
A) Ignore vestibular information and believe what the instruments are indicating.
B) Correct the pitching movement by moving the control column slightly forward.
C) Rely on information from the vestibular apparatus to maintain orientation.
D) Rely on his "seat of the pants" feeling to make any necessary correction.

198- If an aircraft accelerates, what do the otoliths indicate to the brain?
A) That the aircraft is turning.
B) That the aircraft is pitching down.
C) That the aircraft is pitching up.
D) That the aircraft is climbing and turning.

199- Which of the following will give the illusion that the aircraft is too low during an approach?
A) A down-sloping runway.
B) An up-sloping runway.
C) A brightly lit aerodrome in an otherwise dark area.
D) A narrower than normal runway.

200- In which part of the eye is visual acuity at its highest?
A) The Fovea.
B) The Retina.
C) The Pupil.
D) The Cornea.

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

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

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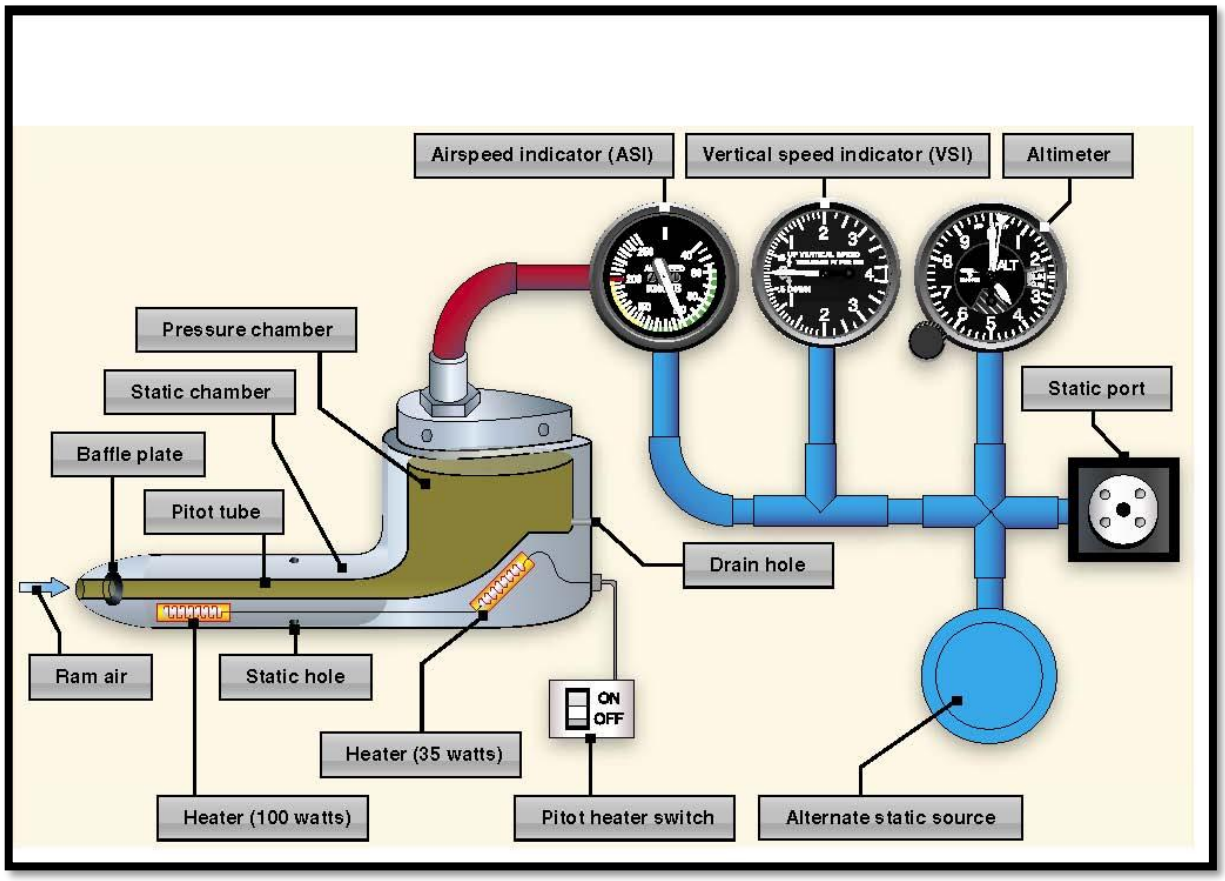
Instrumentation



1- The pitot system is connected to:
A) Airspeed indicator.
B) Altimeter.
C) Vertical speed indicator.
D) All answers are correct.

2- A pitot tube covered by ice which blocks the ram air inlet will affect the following instrument(s):
A) Altimeter only.
B) Airspeed indicator only.
C) Vertical speed indicator only.
D) Airspeed indicator, altimeter and vertical speed indicator.

3- 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.

4- The pressure measured at the forward facing orifice of a pitot tube is the:
A) Static pressure.
B) Total pressure.
C) Total pressure plus static pressure.
D) Dynamic pressure.

5- 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 1.013,25 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.

6- 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.

7- An aircraft is equipped with one altimeter that is compensated for position error and another one altimeter that is not. Assuming all other factors are equal, during a straight symmetrical flight:

A) The greater the speed, the greater the error between the two altimeters.
B) The greater the speed, the lower the error between the two altimeters.
C) The lower the speed, the greater the error between the two altimeters.
D) The error between the two altimeters does not depend' on the speed.

8- Given:
P_T = total pressure
P_S = static pressure
P_D = dynamic pressure
A) $P_D=P_T+P_S$
B) $P_T=P_D+P_S$
C) $P_s = P_T + P_D$
D) $P_D = P_T / P_s$

9- 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) $P_T - P_S$

10- 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

11- 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

12- 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.

13- 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.

14- The total pressure probe (pitot tube) comprises a mass 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.

15- 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

16- If the static vent becomes blocked due to ice on an unpressurized aircraft, what can you do?
A) Select standby pitot source.
B) Break the VSI glass.
C) The altimeter will function as airspeed indicator, an increase in airspeed will be indicated as a climb; decrease in airspeed as a descent.
D) The altimeter will function as airspeed indicator, an increase in airspeed will be indicated as a descent; decrease in airspeed as a climb.

17- Which Instrument does not connect to the static system?

A) Altimeter.
B) Vacuum gauge.
C) Airspeed indicator.
D) Vertical speed indicator.

18- 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.

19- 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.

20- 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.

21- 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.

22- 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.

23- On board an aircraft the altitude is measured from the:
A) Density altitude.
B) Pressure altitude.
C) Temperature altitude.
D) Standard altitude.

24- 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.

25- 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.

26- 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

27- 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.

28- The altitude indicated on board an aircraft flying in an atmosphere where all atmosphere layers below the aircraft are warm is:
A) Higher than the real altitude.
B) Lower than the real altitude.
C) Equal to the standard altitude.
D) The same as the real altitude.

29- The altimeter consists of one or several aneroid capsules located in a sealed casing. The pressures in the aneroid capsule (i) and casing (ii) are respectively:

A) (i) Static pressure; (ii) total pressure.
B) (i) Static pressure at time t; (ii) static pressure at time.
C) (i) Total pressure; (ii) static pressure.
D) (i) Vacuum (or a very low pressure); (ii) static pressure**.**

30- The altimeter is supplied with:

A) Differential pressure.
B) Static pressure.
C) Dynamic pressure.
D) Total pressure.

31- 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

32- 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.

33- 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.

34- Due to its conception, the altimeter measures a:

A) Temperature altitude.
B) Density altitude.
C) Pressure altitude.
D) True altitude.

35- The altimeter indicates true altitude:

A) When the temperature on the ground is +15°C with a lapse rate of 2°C per 1000 feet, and correct QNH is set.
B) In ISA conditions only.
C) When the temperature on the ground is +15°C with a lapse rate of 2°C per 1000 feet, and correct QFE is set.
D) When pressure at mean sea level is 1013.25 hPa, with a ground temperature of +15°C and a density equal to 1.225 kg/m^3.

36- The altimeter is supplied with:

A) Static pressure.
B) Dynamic pressure.
C) Total pressure.
D) Differential pressure.

37- The altimeter of your aircraft indicates 10000 ft with a subscale-setting of 1013.25 mb, OAT is +5° C, the pressure altitude of the aircraft is:

A) 697 hPa
B) 10400 ft
C) 9600 ft
D) 10000 ft

38- 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

39- 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%

40- If you change the altimeter setting from 30.45 in.Hg to 29.85, 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.

41- A pilot changes the altimeter setting from 29.72 in.Hg to 30.17, 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.

42- 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

43- The QNH 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.

44- 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.

45- When flying in cold air (colder 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.

46- When flying in warm air (warmer than standard atmosphere), indicated altitude is:

A) Higher than the true altitude.
B) The same as the true altitude.
C) Lower than the true altitude.
D) Equal to the standard altitude.

47- QNH is:

A) The airfield barometric pressure.
B) The setting that will give zero indication on the airfield.
C) The equivalent sea level pressure at the airfield.
D) The standard pressure setting of 1013 hPa.

48- What is density altitude?

A) Pressure altitude corrected for non-standard temperature.
B) Indicated altitude corrected for non-standard temperature.
C) Temperature altitude.
D) Pressure corrected.

49- What will the altimeter read if the layers beneath the aircraft are all colder than standard?

A) Read lower than the real altitude.
B) Read higher than the real altitude.
C) Read the correct altitude.
D) Readings will fluctuate.

50- Pressure altitude may be defined as;

A) The lowest forecast regional pressure.
B) Altitude indicated with QNE set on the altimeter.
C) Altitude indicated with QFE set on the altimeter.
D) Altitude indicated with QNH set on the altimeter.

51- What is the effect on an altimeter reading if variations in static pressure occur near to the pressure source?

A) A change in hysteresis error.
B) A change in the instrument error.
C) A change in the position error.
D) A change in the compressibility error.

52- In an altimeter, what pressure is fed to the capsule and the case?

A) Static-dynamic.
B) Static-static.
C) Static-vacuum.
D) Vacuum-static.

53- The altitude given by an altimeter is:

A) A pressure altitude.
B) A density altitude.
C) A temperature altitude.
D) A true altitude.

54- If the alternate static source in non-pressurized aircraft is used, the resulting reading will be:
A) Too low reading of altitude.
B) Too high reading of altitude.
C) Too low reading of airspeed.
D) No reading of airspeed.

55- When flying with an indicated altitude of 3000 ft into a low pressure area, the actual altitude:
A) Will decrease.
B) Will increase.
C) Will be the same as indicated altitude.
D) Will be as before entering a low-pressure area.

56- 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.

57- When the barometric subscale of the altimeter is adjusted to 1013.25 hPa, what type of altitude is being measured?
A) Relative height.
B) Pressure altitude.
C) Indicated altitude.
D) True altitude.

58- When the sea level OAT is +25 °C, the deviation from standard temperature for aerodynamic computations is:
A) 0° C
B) +15° C
C) -10° C
D) +10° C

59- Without re-adjusting the barometric setting of the altimeter, it will under-read when:
A) Flying from a low pressure area into a high pressure area.
B) Flying from a high pressure area into a low pressure area.
C) Flying in headwind with constant barometric pressure.
D) Flying in tailwind with constant barometric pressure

60- We are maintaining a constant flight level. That means:

A) The altitude above sea level is constant.
B) The outside air pressure is constant.
C) The altitude is constant when the sea level pressure is constant.
D) The outside air pressure is constant if the temperature remains constant.

61- 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

62- 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

63- 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.

64- 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.

65- 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.

66- 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.

67- 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.

68- What happens when the static pressure supply to a Vertical Speed Indicator becomes blocked during a descent?

A) Reading gradually reduces to zero.
B) Over-reads.
C) Under-reads.
D) Indicates altitude at which blockage occurred.

69- 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 or 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.

70- 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

71- Which statement is correct for the Vertical Speed indicator (VSI) during a climb?

A) The pressure inside the capsule equalizes the pressure inside the case.
B) The pressure inside the capsule drops faster than the pressure inside the case.
C) The pressure inside the case drops faster than the pressure inside the capsule.
D) The pressure inside the capsule drops slower than the pressure inside the case.

72- V_{NO} is the maximum speed:

A) Which must never be exceeded.
B) Maximum structure cruising speed.
C) At which the flight controls can be fully deflected.
D) With flaps extended in landing position.

73- A pitot blockage of both the ram air input and the drain hole with the static port open causes the airspeed indictor to:

A) React like an altimeter.
B) Read a little high.
C) Read a little low.
D) Freeze at zero.

74- 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).

75- V_{LO} is the maximum:

A) Flight speed with landing gear down.
B) Speed at which the landing gear can be operated with full safety.
C) Speed with flaps extended in a given position.
D) Cruising speed not to be exceeded except in still air with caution.

76- The limits of the green scale of an airspeed indicator are:

A) V_{S1} for the lower limit and V_{NE} for the upper limit.
B) V_{S0} for the lower limit and V_{N0} for the upper limit.
C) V_{S1} for the lower limit and V_{N0} for the upper limit.
D) V_{S1} for the lower limit and V_{L0} for the upper limit.

77- The limits of the yellow scale of an airspeed indicator are:

A) V_{FE} for the lower limit and V_{NE} for the upper limit.
B) V_{LO} for the lower limit and V_{NE} for the upper limit.
C) V_{LE} for the lower limit and V_{NE} for the upper limit.
D) V_{NO} for the lower limit and V_{NE} for the upper limit.

78- The calibrated airspeed (CAS) is obtained by applying to the indicated airspeed (IAS):

A) An instrument and density correction.
B) An antenna and compressibility correction.
C) An instrument and position/pressure error correction.
D) A compressibility and density correction.

79- A pressure head is subject to the following errors:

A) Position, maneuver induced, temperature.
B) Position, maneuver induced.
C) Position, maneuver induced, density.
D) Position, maneuver induced, instrument.

80- When descending through an isothermal layer at a constant calibrated airspeed (CAS), the true airspeed (TAS) will:

A) Increase at a linear rate.
B) Decrease.
C) Increase at an exponential rate.
D) Remain constant.

81- With a pitot probe blocked due to ice buildup, the aircraft airspeed indicator will indicate in descent a:

A) Decreasing speed.
B) Constant speed.
C) Increasing speed.
D) Fluctuating speed.

82- The airspeed indicator circuit consists of pressure sensors. The pitot tube directly supplies:

A) The total pressure.
B) The total pressure and the static pressure.
C) The static pressure.
D) The dynamic pressure.

83- If the static source to an airspeed indicator (ASI) becomes blocked during a descent the instrument will:

A) Under-read.
B) Read zero.
C) Continue to indicate the speed applicable to that at the time of the blockage.
D) Over-read.

84- V_{NE} is the maximum speed:

A) At which the flight controls can be fully deflected.
B) Not to be exceeded except in still air and with caution.
C) Which must never be exceeded.
D) With flaps extended in landing position.

85- For a constant calibrated airspeed (CAS) and a level flight, a fall in ambient temperature will result in a:

A) Lower true airspeed (TAS) due to an increase in air density.
B) Higher true airspeed (TAS) due to a decrease in air density.
C) Higher true airspeed (TAS) due to an increase in air density.
D) Lower true airspeed (TAS) due to a decrease in air density.

86- A leak in the pitot total pressure line of a non-pressurized aircraft to an airspeed indicator would cause it to:

A) Over read.
B) Under read.
C) Indication will drop to zero.
D) Freeze on the value it indicated at the time of failure.

87- The limits of the white scale of an airspeed indicator are:

A) V_{S0} for the lower limit and V_{FE} for the upper limit.
B) V_{S1} for the lower limit and V_{LE} for the upper limit.
C) V_{S0} for the lower limit and V_{LE} for the upper limit.
D) V_{S1} for the lower limit and V_{FE} for the upper limit.

88- During a climb after takeoff from a contaminated runway if the total pressure probe of the airspeed indicator blocked, the pilot finds that indicated airspeed:

A) Decreases abruptly towards zero.
B) Increases steadily.
C) Increases abruptly towards V_{NE}.
D) Decreases steadily.

89- A blocked pitot head with a clear static source causes the airspeed indicator to:

A) Read like a vertical speed indicator.
B) React like an altimeter.
C) Operate normally.
D) Freeze at zero.

90- An airspeed indicator displays:

A) IAS
B) EAS
C) CAS
D) TAS

91- An airspeed indicator includes a capsule; inside this capsule is:

A) A very low residual pressure and outside is static pressure.
B) Static pressure and outside is dynamic pressure.
C) Dynamic pressure and outside is static pressure.
D) Total pressure and outside is static pressure.

92- Assuming that the CAS remains constant, if the total pressure probe is blocked, the IAS;

A) Remains constant during level flight, decreases during a climb and increases during a descent.
B) Remains constant during level flight, increases during a climb and decreases during a descent.
C) Increases during level flight, remains constant during a climb and a descent.
D) Remains constant during all phases of the flight.

93- Calibrated airspeed (CAS) is obtained from indicated airspeed (IAS) by correcting for the following errors:

1) Position

2) Compressibility

3) Instrument

4) Density altitude

The combination regrouping all the correct statements is:

A) 2,3,4

B) 3,4

C) 1,3,4

D) 1,3

94- Static vents are usually fitted to both sides of the aircraft fuselage. This will:

A) Reduce the position error.

B) Balance out errors caused by side slipping or yawing.

C) Require a calibration card for each static vent.

D) Enable a greater number of instruments to be fitted.

95- CAS can be obtained from the following data:

A) TAS and pressure altitude.

B) EAS and density altitude.

C) EAS and pressure altitude.

D) TAS and density altitude.

96- Concerning the airspeed indicator, IAS is:

A) The indicated reading on the instrument.

B) The indicated reading on an instrument presumed to be perfect.

C) The indicated airspeed corrected for instrument and position errors.

D) The indicated airspeed corrected for instrument error only.

97- Considering the relationship between CAS and EAS:

A) EAS may be lower or greater than CAS, depending on density altitude.

B) EAS is always greater than or equal to CAS.

C) EAS may be lower or greater than CAS, depending on pressure altitude.

D) EAS is always lower than or equal to CAS.

98- 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.

99- Equivalent airspeed (EAS) is obtained from calibrated airspeed (CAS) by correcting for the following errors:

1) Position

2) Compressibility

3) Instrument

4) Density

The combination regrouping all the correct statements is

A) 2,4

B) 4

C) 2

D) 1,2,3,4

100- Equivalent airspeed (EAS) is obtained from indicated airspeed (IAS) by correcting for the following errors:

1) Instrument

2) Position

3) Density

4) Compressibility

The combination regrouping all the correct statements is:

A) 1,2,3

B) 1,2,4

C) 1,2

D) 1,2,3,4

101- Equivalent airspeed (EAS) is:

A) Calibrated airspeed (CAS) corrected for compressibility error.

B) Calibrated airspeed (CAS) corrected for density error.

C) True airspeed (TAS) corrected for compressibility error.

D) True airspeed (TAS) corrected for compressibility and density errors

102- Given:

P_T = total pressure

P_D = dynamic pressure

P_S = static pressure

P_{SO} = static pressure at sea level

Calibrated airspeed (CAS) is a function of:

A) $P_T - P_D$

B) $P_T – P_{SO}$

C) $P_T - P_S$

D) $(P_T – P_{SO}) / P_S$

103- Given:
P_T = total pressure
P_S = static pressure
P_D = dynamic pressure
The airspeed indicator is fed by:
A) P_S- P_T
B) P_D
C) P_T-P_D
D) P_D-P_S

104- If an aircraft maintaining a constant CAS and flight level is flying from a cold air mass into warmer air:
A) Mach number increases.
B) TAS decreases.
C) TAS increases.
D) Mach number decreases.

105- If an aircraft maintaining a constant CAS and flight level is flying from a warm air mass into colder air:
A) Mach number increases.
B) TAS increases.
C) TAS decreases.
D) Mach number decreases.

106- In a standard atmosphere and at the sea level, the equivalent airspeed (EAS) is:
A) Lower than the true airspeed (TAS).
B) Independent of the true airspeed (TAS).
C) Higher than the true airspeed (TAS).
D) Equal to the true airspeed (TAS).

107- In standard atmosphere, when descending at constant CAS:
A) TAS remains constant.
B) TAS decreases.
C) TAs increases.
D) TAS first increases and then remains constant below the tropopause.

108- In the absence of position and instrument errors, CAS is equal to:
A) IAS
B) EAS
C) TAS
D) IAS and EAS

109- Maintaining CAS and flight level constant, a fall in ambient temperature results in:

A) Lower TAS because air density increases.
B) Lower TAS because air density decreases.
C) Higher TAS because air density increases.
D) Higher TAS because air density decreases.

110- TAS can be obtained from the following data:

A) CAS and pressure altitude.
B) EAS and pressure altitude.
C) CAS and density altitude.
D) EAS and density altitude.

111- The parameter that determines the relationship between EAS and TAS is:

A) Mach number.
B) Pressure altitude.
C) OAT.
D) Density altitude.

112- The pressure capsule of an airspeed indicator is sensitive to the difference:

A) (Total Pressure - Dynamic Pressure), called Static Pressure.
B) (Dynamic Pressure - Static Pressure), called Total Pressure.
C) (Total Pressure - Static Pressure), called Dynamic Pressure.
D) (Dynamic Pressure - Total Pressure), called Static Pressure.

113- True airspeed (TAS) is obtained from calibrated airspeed (CAS) by correcting for the following errors:

1) Instrument
2) Compressibility
3) Position
4) Density altitude

The combination regrouping all the correct statements is

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

114- True airspeed (TAS) is obtained from indicated airspeed (IAS) by correcting for the following errors:

1) Instrument

2) Position

3) Compressibility

4) Density altitude

The combination regrouping all the correct statements is:

A) 3,4

B) 1,2,3,4

C) 1,2

D) 1,3,4

115- 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.

116- When climbing at a constant CAS:

A) EAS decreases.

B) EAS increases.

C) EAS remains constant.

D) EAS does not depend on altitude.

117- When descending at a constant CAS:

A) EAS increases.

B) EAS decreases.

C) EAS remains constant.

D) EAS does not depend on altitude.

118- With EAS and density altitude, we can deduce:

A) CAS and TAS

B) CAS

C) TAS

D) IAS

119- With EAS and pressure altitude, we can deduce:

A) TAS

B) CAS

C) CAS and TAS

D) IAS

120- 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.

121- If the static pressure port iced over while descending from altitude, the airspeed indicator would read:

A) Zero
B) High
C) Low
D) Correctly

122- 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.

123- At constant weight, regardless of altitude, an aircraft always lifts off at a constant:

A) EAS
B) TAS
C) Ground speed
D) CAS

124- 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.

125- If a pitot source is blocked in an airspeed indicator (ASI), the drain hole is blocked, but the static source is open, what will happen?

A) ASI reading goes to zero.
B) ASI under-reads
C) ASI over-reads.
D) ASI behaves like an altimeter.

126- If a pitot tube and drains are blocked at altitude by icing, during a descent the airspeed indicator will:

A) Read constant airspeed.
B) Under-read.
C) Over-read.
D) Show zero.

127- What happens when the static vent supplying an airspeed indicator (ASI) is blocked, and the ram air inlet remains clear?

A) ASI acts opposite to an altimeter.
B) ASI always over-reads/reads a higher value.
C) ASI always under-reads/reads a lower value.
D) ASI acts like an altimeter.

128- The green arc on the ASI is used to identify which speed range?

A) V_{S0} to V_{N0}.
B) V_{S1} to V_{FE}.
C) V_{S1} to V_{N0}.
D) V_{S1} to V_{LO}.

129- During a climb, if the total pressure probe of the airspeed indicator is blocked, the indicated airspeed:

A) Is underestimated.
B) Is overestimated.
C) Increases abruptly towards VNE.
D) Decreases abruptly towards zero.

130- The airspeed indicator measures:

A) Absolute pressure.
B) Total pressure.
C) Differential pressure.
D) Relative pressure.

131- What is the significance of the yellow arc in an airspeed indicator?

A) Flap operating range.
B) Never exceed range.
C) Structural warning range.
D) Normal operating range.

132- What corrections must be applied to indicated airspeed to produce true airspeed?

A) Correction for heading and altitude.
B) Correction for wind and temperature.
C) Correction for altitude and wind.
D) Correction for altitude and temperature.

133- The upper airspeed limit of the green arc on the airspeed indicator represents:

A) Maximum structural cruising speed (V_{N0}).
B) Landing gear lowering speed (V_{LE}).
C) Design maneuvering speed (V_A).
D) Maximum allowable speed for smooth-air operations (V_{NE})·

134- As an airplane climbs higher, the true airspeed for a given indicated airspeed will:
A) Be lower than indicated.
B) The true airspeed and the indicated will be the same.
C) Decrease.
D) Increase.

135- Indicated airspeed (as read on the airspeed indicator) will:
A) Increase in headwind.
B) Increase in tailwind.
C) Decrease in tailwind.
D) Remain unchanged in headwind and tailwind.

136- Match true airspeed (TAS) with the associated definition:
A) The airspeed you read directly from the airspeed indicator.
B) Calibrated airspeed corrected for altitude and nonstandard temperature.
C) Actual speed of an aircraft over ground.
D) Indicated airspeed corrected for installation and instrument errors.

137- Match ground speed (GS) with the associated definition:
A) Indicated airspeed corrected for installation and instrument errors.
B) Calibrated airspeed corrected for altitude and nonstandard temperature.
C) Actual speed of an aircraft over ground.
D) The airspeed you read directly from airspeed indicator.

138- Correcting an EAS value of 150 kts, a TAS value of 146 kts is obtained, when:
A) An error must have been made in the calculation.
B) No allowance has been made for compressibility.
C) The density of the atmosphere must be greater than the ISA mean sea level air density.
D) No allowance has been made for position error.

139- TAS is:
A) Ground speed.
B) The reading on the ASI.
C) The aircraft's true airspeed which is EAS corrected for altitude and temperature.
D) True airspeed of the aircraft which is IAS corrected for altitude and temperature.

140- 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.

141- 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.

142- 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.

143- 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.

144- 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

145- 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.

146- 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

147- 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.

148- 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 apply ing force to the spinning wheel.
D) The tendency it has to remain in its plane of rotation and resist attempts to alter its position.

149- 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.

150- 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 of the above.

151- 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.

152- What is the main cause of precession?

A) Magnetic variation.
B) Magnetic declination.
C) Bearing friction.
D) The Earth's rotation.

153- 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

154- 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°

155- On the ground, during a right turn, the turn indicator indicates:

A) Needle to the right, ball to left.
B) Needle to the right, ball to right.
C) Needle in the middle, ball to right.
D) Needle in the middle, ball to left.

156- 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

157- 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.

158- 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.

159- 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.

160- 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.

161- 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.

162- In a turn at a constant angle of bank, the turn indicator reading is:
A) Independent to the aircraft true airspeed.
B) Proportional to the aircraft true airspeed.
C) Inversely proportional to the aircraft true airspeed.
D) Proportional to the aircraft weight.

163- When in flight, the needle and ball of a turn and slip indicator are on the right, the aircraft is:
A) Turning left with too much bank.
B) Turning right with not enough bank.
C) Turning right with too much bank.
D) Turning left with not enough bank.

164- 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.

165- Under normal operating conditions, when an aircraft is in a banked turn, the rate-of-turn indicator is a valuable gyroscopic flight control instrument. When it is used together with an attitude indicator, the rate-of-turn indicator provides information on:

1) The angular velocity of the aircraft about the yaw axis
2) The bank of the aircraft
3) The direction of the aircraft turn
4) The angular velocity of the aircraft about the real vertical

The combination of correct statements is:

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

166- 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

167- 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.

168- 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

169- 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°

170- What is an operational difference between the turn coordinator and the turn and slip indicator?

A) The turn coordinator is always electric; the turn and slip indicator is always vacuum-driven.
B) The turn coordinator indicates bank angle only; the turn and slip indicator indicates rate of turn and coordination.
C) The turn coordinator indicates roll rate, rate of turn, and co-ordination; the turn and slip indicator indicates rate of turn and co-ordination.
D) The turn coordinator indicates angle of bank; the turn and slip indicator indicates turn rate in coordinated flight.

171- The needle of the Turn and Bank indicator shows:

A) The bank angle at which the aircraft is turning about the roll axis.
B) The rate at which the aircraft is turning about the yaw axis.
C) The pitch angle during a turn.
D) The rate at which the aircraft is rolling into a turn.

172- 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.

173- 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.

174- When an aircraft has turned 360° with a constant attitude and bank, the pilot observes the following on a classic (air driven) artificial horizon:

A) Too much nose up and bank too low.
B) Too much nose up and bank correct.
C) Too much nose up and bank too high.
D) Attitude and bank are correct.

175- 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.

176- 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.

177- 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.

178- 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.

179- The magnetic heading can be derived from the true heeding by means of a:

A) Map showing the isoclinic lines.
B) Map showing the isogonal lines.
C) Deviation correction curve.
D) Compass swinging curve.

180- 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.

181- 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.

182- 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.

183- 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.

184- 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) Compass swinging curve.

185- Magnetic compass swinging is carried out to reduce as much as possible:
A) Variation.
B) Deviation.
C) Regulation.
D) Acceleration.

186- 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

187- 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.

188- Concerning magnetic compass, deviation is:
A) The angular difference between Magnetic North and True North.
B) The angular difference between Magnetic North and Compass North.
C) The angular difference between Compass North and True North.
D) A card in the cockpit showing compass heading errors.

189- 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.

190- 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°

191- 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°.

192- 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.

193- 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°

194- 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.

195- 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°.

196- 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°.

197- 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.

198- 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**°**

199- 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.

200- 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°

201- 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

202- In the southern hemisphere, during deceleration following a landing in a westerly direction, the magnetic Compass will indicate:

A) No apparent turn.
B) A heading fluctuation about 270°.
C) An apparent turn to the north.
D) An apparent turn to the south.

203- In northern hemisphere, an aircraft takes off on a runway with an alignment of 45°. The isogonic line on the area chart indicates 0°. The compass deviation is 0°. On a takeoff with zero wind, the compass error:

A) Will be null.
B) Is such that the compass will indicate a value noticeably below 045°.
C) Is such that the compass will indicate a value noticeably above 045°.
D) Will be null if the wings are kept level.

204- 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.

205- 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.

206- The direct indicating 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

207- 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.

208- A factor giving an error on a direct indicating compass would be:

A) Crosswinds - particularly on east/west headings.
B) Parallax due to oscillations of the compass rose.
C) Acceleration on east/west headings.
D) Turning through east/west headings.

209- An aircraft turns to the right, through 90° heading, onto a heading of North, at 48°N, using a direct indicating compass. The aircraft bank angle is 30°. What heading should the aircraft roll out on?

A) 010°
B) 030°
C) 330°
D) 350°

210- You commence a turn from south-east to southwest, in the northern hemisphere. On what heading do you stop the turn?

A) 215°
B) 255°
C) 225°
D) 205°

211- An aircraft lands on a southerly direction in the northern hemisphere. The compass indication will:

A) Oscillate about 180°.
B) Not change.
C) Increase.
D) Decrease.

212- About a magnetic compass:

A) Turning error is due to the angle of dip.
B) Acceleration errors are due to crosswind and gusts.
C) Acceleration errors are due to Schuler oscillations.
D) Errors of parallax are due to the oscillation of the compass rose.

213- In the northern hemisphere, a magnetic compass will normally indicate a turn towards north if:

A) An aircraft is accelerated while on an east or west heading.
B) An aircraft is decelerated while on an east or west heading.
C) A left turn is entered from a west heading.
D) A right turn is entered from an east heading.

214- At which altitude the pressure decrease approximately more than half?

A) 16000 ft
B) 15000 ft
C) 18000 ft
D) 12000 ft

215- What is the value of standard pressure based on PSI at sea level?

A) 14.7
B) 2116
C) 1013.2
D) A and B are correct

216- Which one of the following statement is not correct?

A) Warm air has less dense than cold air.
B) Density varies with both temperature & pressure.
C) Humidity affects the density of the air in higher degree.
D) Humid air has less dense than dry air.

217- What is the maneuvering speed?

A) V_{LE}
B) V_{LO}
C) V_{NO}
D) V_A

218- When operating in aerodrome at sea level you maintain 70 kts in indicated airspeed for approaching to land, how would you adjust your indicated airspeed when operate at aerodrome with 8000 ft field elevation ISA condition?

A) Increase airspeed
B) Remain constant
C) Decrease airspeed
D) None

219- What is acceptable altitude error for altimeter in?

A) 85 ft
B) 55 ft
C) 75 ft
D) 70 ft

220- Temperature has effect on …….

A) Altimeter
B) Airspeed indicator
C) VVI
D) Heading indicator

221- In which phase of flight the difference between indicated and calibrated airspeed is greatest & lowest:

A) Slow speed-cruising speed
B) Slow speed-slow speed
C) Cruising speed-slow speed
D) Cruising speed-cruising speed

222- At high altitude the airplane must fly slightly ---------- to obtain equivalent pressure on the Pitot tube as sea level.

A) Slower
B) Faster
C) As same as
D) Faster if you are flying below 10000 ft

223- Which one is of following factor effect on V_A?

A) Angle of attack
B) Weight
C) Stall speed
D) All answers are correct

224- Which one of the following statement is wrong?

A) Rigidity is a spinning mass tend to remain in fix position.
B) In precession the reaction to this force occur in the direction of rotation, approximately 90˚ ahead of point that force applied.
C) Precession cause the error in some gyroscopic instrument.
D) All answers are incorrect.

225- What is/are the source of gyroscopic instrument?

A) Vacuum
B) Electrical
C) Pitot pressure
D) A & B are correct

226- When suction pressure is too low which instrument does not provide reliable information?

A) Heading - attitude
B) Heading - altimeter
C) Attitude - altimeter
D) B and C are correct

227- Turn coordinator rotate about ……. and ……. axis

A) Vertical - lateral
B) Lateral - longitudinal
C) Vertical - longitudinal
D) A and B are correct

228- What information does show by ball in turn coordinator?

A) Bank angle
B) Quantity of turn
C) Quality of turn
D) All answers are correct

229- In standard rate turn the airplane make an orbit within:

A) 30 sec
B) 90 sec
C) 60 sec
D) 120 sec

230- How long does need to make turn from heading 360° to 180° by one-half standard coordinate turn?

A) 1 min
B) 2 min
C) 30 sec
D) 1 min 30 sec

231- Slip is .....

A) Rate of turn is too slow for bank angle
B) Rate of turn is too great for bank angle
C) Ball is in opposite direction of turn
D) B and C are correct

232- Skid is .....

A) Rate of turn is too slow for bank angle
B) Rate of turn is too great for bank angle
C) Ball is in opposite direction of turn
D) B and C are correct

233- In flight the pilot encounter to slip condition, the pilot shall:

A) Decrease bank angle
B) Increase rudder
C) Decrease weight
D) All answers are correct

234- To correct skid, the pilot shall:

A) Increase bank angle
B) Increase rudder
C) Increase weight
D) All answers are correct

235- How can pilot correct ball in turn coordinator?

A) By rudder
B) By aileron
C) By elevator
D) B and C are correct

236- Inclinometer can help to recognize torque and adverse yaw:

A) True
B) False

237- During climb which direction the ball move

A) Left
B) Right
C) Lowest part
D) A and C are correct

238- The magnetic compass:

A) Is a dependent unit uses a little electric current.
B) Is a unit called direction seeking instrument using generator magnetic field.
C) Is a self-contained unit is independent of external vacuum and use magnetism.
D) Is a reliable unit used for navigation in light airplanes and as a standby in modern jet airplanes.

239- In the northern hemisphere a magnetic compass will normally indicate a turn toward the north if:

A) The aircraft is accelerated while on an east or west heading.
B) The aircraft is decelerated while on an east or west heading.
C) A right turn is entered from an east heading.
D) A left turn is entered from a west heading.

240- In the Northern hemisphere, the magnetic compass will normally indicate a turn toward the south when:

A) Left turn is entered from an east heading.
B) A right turn is entered from a west heading.
C) The aircraft is accelerated while on an east heading.
D) The aircraft is decelerated while on a west heading.

241- In the Northern hemisphere, a magnetic compass will normally indicate initially a turn toward the east if:

A) An aircraft is decelerated while on a south heading.
B) An aircraft is accelerated while on a north heading.
C) A right turn is entered from a north heading.
D) A left turn is entered from a north heading.

242- Assume an altimeter indicates an altitude of 3500 ft MSL with an altimeter setting of 29.42", what is the approximate pressure altitude?

A) 4000 ft
B) 3550 ft
C) 3450 ft
D) 3000 ft

243- If a pilot changes the altimeter setting from 30.11" to 29.96". What is the approximate change in indication?

A) Altimeter will indicate 15 ft higher
B) Altimeter will indicate 15 ft lower
C) Altimeter will indicate 150 ft lower
D) Altimeter will indicate 150 ft higher

244- 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

245- 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

246- What is the maximum possible value of dip angle?

A) 66°
B) 180°
C) 90°
D) 45°

247- Given:

True track: 245°
Drift: 5°right
Variation: 3°E
Compass HDG: 242°

Calculate the magnetic heading.

A) 247°
B) 243°
C) 237°
D) 253°

248- Given:

Variation: 7°W
Deviation: 4°E

If the aircraft is flying a compass heading of 270°, the true and magnetic headings are:

A) 274°(T), 267°(M).
B) 267°(T), 274°(M).
C) 277° (T), 281°(M).
D) 263°(T), 259°(M).

249- Given:

True Track: 352°
Variation: 11° W
Deviation: -5°
Drift: 10° R

What is heading?

A) 078° (C)
B) 346° (C)
C) 358° (C)
D) 025° (C)

250- The value of variation:

A) Is zero at the mid-latitude.
B) Has a maximum value of 180°.
C) Has a maximum value of 45°E or 45°W.
D) Cannot exceed 90°.

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

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

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	B	214	C	227	C	240	D
202	C	215	A	228	C	241	D
203	B	216	C	229	D	242	A
204	D	217	D	230	B	243	C
205	C	218	B	231	A	244	C
206	C	219	C	232	D	245	A
207	B	220	C	233	A	246	C
208	C	221	A	234	A	247	C
209	C	222	B	235	A	248	B
210	B	223	B	236	A	249	C
211	B	224	D	237	B	250	B
212	A	225	D	238	C		
213	A	226	A	239	A		

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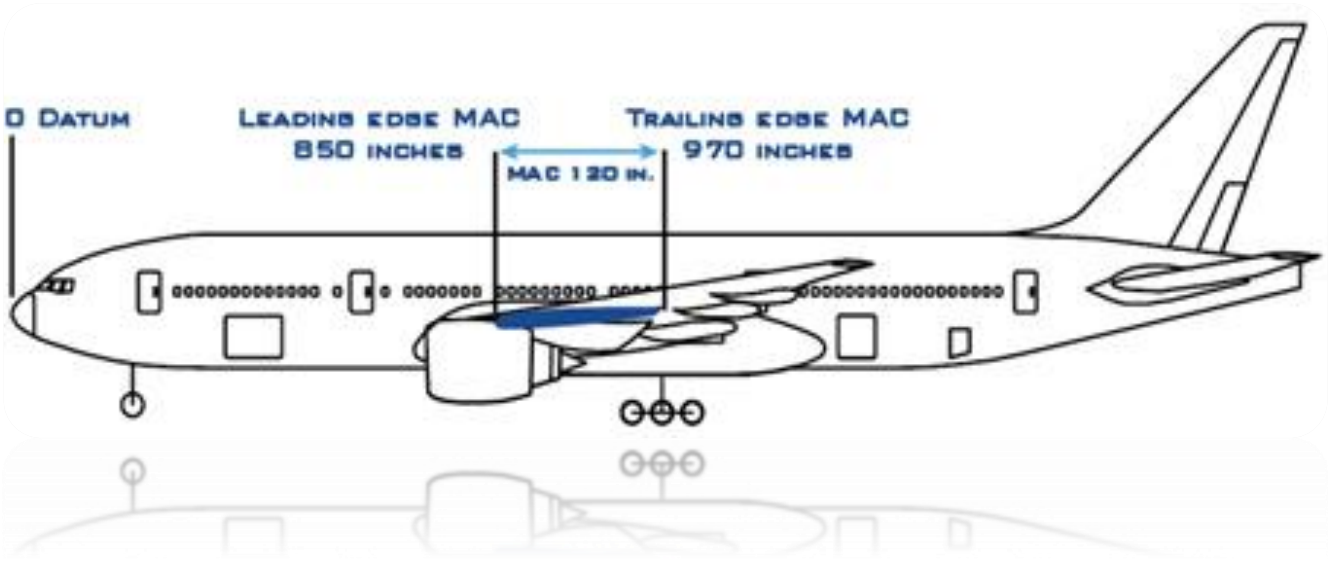
Mass And Balance



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 V1, will be increased.
B) Will not be achieved.
C) Will be greater than required.
D) Will give reduced safety margins.

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 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.

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 aeroplane 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.

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 manoeuvers.
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.

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.

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

66- How would you convert kilograms (kg) to pounds (lbs)?

A) Kg x 0.45359237 = lbs.
B) Kg x 2.20462262 = lbs.
C) lbs x 2.20462262 = kg.
D) None of the above.

67- How would you convert US gallons to liters (l)?

A) US Gal x 1.205
B) US Gal x 4.546
C) US Gal x 0.264
D) US Gal x 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

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

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

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/l)

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

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.

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 plane 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.

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) Arm = Force ÷ Moment
B) Arm = Moment ÷ Force
C) Moment = Force ÷ Arm
D) Arm = Force x 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

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.

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 C-58) For the following see-saw to be in balance:
A) Fb= A × Fa ÷ B
B) Fb= A + Fa ÷ B
C) Fb = A × B ÷ Fa
D) Fb = B × Fa ÷ A

117- (Refer to figure C-57) For the following see-saw to be in balance:
A) Fc = 3 × Fa
B) Fc = Fa ÷ 3A
C) Fc= Fa ÷ 3
D) Fc = 3 ÷ Fa

118- (Refer to figure C-60) For the following boom to be in balance:
A) B = Fa × A ÷ Fb
B) B = Fb × A ÷ Fa
C) B = - (Fa × A ÷Fb)
D) B = Fb + A ÷ Fa

119- (Refer to figure C-59) For the following boom to be in balance:
A) A= B + Fb ÷ Fa
B) A = B × Fa ÷ Fb
C) A = B (Fa + Fb)
D) A = B × Fb ÷ Fa

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.

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 m/s^2):

A) 30000 Nm
B) 50000 Nm
C) 80000 Nm
D) 130000 Nm

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

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.

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

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

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

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		

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Meteorology

1- The troposphere is the:
A) Part of the atmosphere above the stratosphere.
B) Part of the atmosphere below the tropopause.
C) Boundary between the mesosphere and thermosphere.
D) Boundary between the stratosphere and the mesosphere.

2- What is the boundary layer between troposphere and stratosphere called?
A) Tropopause
B) Ionosphere
C) Stratosphere
D) Atmosphere

3- The troposphere is a level at which:
A) Vertical currents are weakest.
B) Water vapor content is smallest.
C) Pressure remains constant
D) Temperature fall with increasing height.

4- The tropopause is lower:
A) South of the equator than north of it.
B) In summer than winter in moderate latitudes.
C) Over the North Pole than over the equator.
D) Over the equator than over the South Pole.

5- What is the approximate composition of the dry air by volume in the troposphere?
A) 21% oxygen, 78% nitrogen, and the rest other gases.
B) 10% oxygen, 89% nitrogen, and the rest other gases.
C) 88% oxygen, 9% nitrogen, and the rest other gases.
D) 50% oxygen, 40% nitrogen, and the rest other gases.

6- In which layer is most of the atmospheric humidity concentrated?
A) Troposphere
B) Tropopause
C) Stratosphere
D) Stratopause

7- The thickness of the troposphere varies with:
A) Latitude.
B) Longitude.
C) Rotation of the Earth.
D) The wind.

8- In the mid-latitudes the stratosphere extends on an average from:
A) 85 to more than 200 km.
B) 0 to 11 km.
C) 50 to 85 km.
D) 11 to 50 km.

9- The troposphere:
A) Has a greater vertical extent above the equator than above the poles.
B) Contains all oxygen of the stratosphere.
C) Is the separation layer between the stratosphere and atmosphere.
D) Reaches the same height at all latitudes.

10- which of the following gasses is the most important factor in the atmosphere make weather change?
A) Hydrogen.
B) Water vapor.
C) Nitrogen.
D) Oxygen.

11- The region of the atmosphere which is normally stable and has few clouds is known as the:
A) Tropopause
B) Troposphere
C) Stratosphere
D) Jetstream

12- What is a characteristic of the troposphere?
A) It contains all the moisture of the atmosphere.
B) There is an overall decrease of temperature with an increase of altitude.
C) The average altitude of the top of the troposphere is about 8 km.
D) All weather phenomena occur only in the troposphere.

13- 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 vapor

14- An inversion is:
A) An increase of temperature with height.
B) An increase of pressure with height.
C) A decrease of pressure with height.
D) A decrease of temperature with height.

15- Advection is:
A) The same as convection.
B) Vertical motion of air.
C) The same as subsidence.
D) Horizontal motion of air

16- An isothermal layer is a layer of air in which the temperature:
A) Increases with height at a constant rate.
B) Increases with height.
C) Decreases with height at a constant rate.
D) Remains constant with height.

17- What is the technical term for an Increase in temperature with altitude?
A) Subsidence
B) Inversion
C) Adiabatic
D) Advection

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 vapor in the air of the troposphere.
D) The surface of the Earth, which heats the air in the troposphere.

19- How does temperature vary with increasing altitude in the ICAO standard atmosphere below the tropopause?
A) Increases.
B) At first it increases and higher up it decreases.
C) Remains constant.
D) Decreases.

20- Horizontal differences in the mean temperature of a layer near the Earth surface are caused by:
A) Insolation.
B) Advection.
C) Differential heating of the Earth's surface.
D) Change of air mass.

21- Surface temperature inversions are frequently generated by:
A) Terrestrial radiation on a calm clear night.
B) An unstable air mass causing convection currents and mixing of the atmosphere at lower levels.
C) Gusting winds increasing surface friction during the day with consequent mixing at the lower levels.
D) Compression causing the release of latent heat in a layer of stratiform cloud.

22- Surface-based temperature inversions are common during:
A) Cloud-free nights in winter when the ground is dry.
B) Cloud-free days in summer when the ground is dry.
C) Cloudy days in summer when the ground is wet.
D) Cloudy days in winter when the ground is wet.

23- The temperature lapse rate of the standard atmosphere in the troposphere is:
A) -2.5 °C /1000 ft.
B) -3 °C /1000 ft.
C) -6.5 °C /1000 ft.
D) -2 °C /1000 ft.

24- Temperature variation during 24 hours is least over:
A) Sea
B) Grass
C) Mountain
D) Forest

25- Which area are connected by isobars on the surface weather chart?
A) Area with the same air pressure at a given level.
B) Area with the same temperature at a given level.
C) Area with the same wind velocity at a given level.
D) Area with the same relative pressure heights.

26- The station pressure used in surface weather charts is:
A) QNE
B) QFE
C) QNH
D) QFF

27- Which of the following is true concerning atmospheric pressure?
A) It is higher in winter than in summer.
B) It decreases with height.
C) It is higher at night than during the day.
D) It always decreases with height at a rate of 1 hPa per 8 m.

28- In which altitude of atmosphere, the barometric pressure has dropped to $\frac{1}{2}$ of the pressure at sea level?
A) 5.5 km
B) 3 km
C) 8km
D) 11 km

29- lines joining points of equal pressure are known as:
A) Isotherms
B) Isopleths
C) Isobars
D) Isotachs

30- The average change of pressure with height at sea level is:
A) 1 hPa/ 27 ft.
B) 1 hPa/20 ft.
C) 1 hPa/ 50 ft.
D) 1 hPa/ 56 ft.

31- At an airport (0 m AMSL), a QNH of 1022 hPa is observed and the temperature is unknown:
A) The QFF is higher than 1022 hPa.
B) The QFF is lower than 1022 hPa.
C) The OFF equals 1022 hPa.
D) The QFF cannot be determined.

32- What is the value for a pressure change of 1 hPa at an altitude of 5500 m?
A) Approx. 8 m (27 ft).
B) Approx. 16 m (50 ft).
C) Approx. 32 m (105 ft).
D) Approx. 64 m (210 ft).

33- At sea level, the pressure of the atmosphere on a standard day will cause the mercury in the column to rise to:
A) 92.29 inches.
B) 19.19 inches.
C) 29.29 inches.
D) 29.92 inches.

34- As altitude increases, the weight of the atmosphere above you will:
A) Decrease.
B) Remain the same.
C) Increase.
D) Increase with 1.5 kg /m^2 per 1000 ft.

35- With all other quantities being constant, the density of the atmosphere increases with increasing:
A) Relative humidity.
B) Air pressure.
C) Stability.
D) Temperature.

36- Which statement is true?
A) Air density generally increases as altitude increases.
B) Air density generally stays the same as altitude increases.
C) Air density generally decreases as altitude increases.
D) Air density initially decreases with altitude and then increases again in the stratosphere.

37- In relation to "air density" which of the following responses are correct:
A) Cold air is less dense than warm air.
B) Dry warm air is less dense than cold air.
C) If the temperature is decreasing the air density will decrease.
D) Air density is not influenced by air humidity.

38- Which of the following combinations contain the greatest air density?
A) High pressure and high temperature.
B) High pressure and low temperature.
C) Low pressure and high temperature.
D) Low pressure and low temperature.

39- Air density is mass of air per unit of volume, and is influenced by:
A) Pressure and latitude.
B) Altitude, pressure, temperature and latitude.
C) Altitude.
D) Altitude, pressure, temperature and the amount of water vapor.

40- Cumuli form clouds:
A) Smooth air for flying.
B) Produces turbulence at or below.
C) Has the greatest instability.
D) None.

41- What conditions are required for the formation of radiation fog?
A) A gentle wind moving moist air up a mountain slope.
B) Cool calm and clear nights when the humidity is high.
C) High temperature moist air and intense beating form the sun.
D) Moderate winds transporting warm moist air from the sea across a cooler land mass.

42- When a fast-moving (Ana) cold front displaces very moist unstable air it:
A) May produce wide areas of continuous rain.
B) Stratiform clouds ahead of the front.
C) A relatively wide area of frontal discontinuity.
D) A squall line of cumuliform clouds 50 to 200 miles ahead of the front.

43- Steady rain preceding a front is an indication of:
A) A broad area of frontal discontinuity
B) Cumuliform clouds with little or no turbulence
C) A rapidly approaching cold front with cumuliform type clouds
D) An approaching warm front with associated stratus and little or no turbulence

44- Mature stage of thunderstorm can be recognized by:
A) Sharp drop of temperature
B) Start rain at the surface
C) Pressure rise
D) All answers are correct

45- Which statement is correct regarding the International Standard Atmosphere?
A) At MSL temperature is 15 °C and pressure is 1013.25 hPa.
B) At MSL temperature is 15°C and the decrease in temperature with height is 1°C per 100 m.
C) At MSL temperature is 10°C and the decrease in temperature with height is 10°C per 100 m.
D) At MSL pressure is 1013.25 hPa and the decrease of temperature with height is 10°C per 100 m.

46- Which value has to be known to calculate the QNH out of the QFE?
A) Field elevation.
B) Actual temperature.
C) The relative humidity of the air.
D) The density altitude of the field.

47- Which of the following conditions would cause the altimeter to indicate a lower altitude than that actually flown?
A) Pressure altitude the same as indicated altitude.
B) Atmospheric pressure lower than standard.
C) Air temperature higher than standard.
D) Air temperature lower than standard.

48- What pressure is defined as QFE?
A) The pressure reduced to sea level using actual temperatures.
B) The pressure of the altimeter.
C) The pressure at field elevation.
D) The pressure reduced to sea level using ISA temperatures.

49- In order to calculate QFE from QNH, which of the following must be known?
A) Elevation and the temperature at the airfield.
B) Temperature at the airfield.
C) Elevation of the airfield and the temperature at MSL.
D) Elevation of the airfield.

50- Which statement is true?

A) QNH can be 1013.25 only for a station at MSL.
B) QNH cannot be 1013.25 hPa.
C) QNH is lower than 1013.25 hPa at any time.
D) QNH can be lower as well as higher than 1013.25 hPa.

51- QNH is defined as:

A) The pressure at MSL obtained using the standard atmosphere.
B) The pressure at MSL obtained using the actual conditions.
C) QFE reduced to MSL using the actual conditions.
D) QFE reduced to MSL using the standard atmosphere.

52- The QNH is equal to the QFE if:
(Note: T = temperature)

A) T actual < T standard.
B) T actual = T standard.
C) T actual> T standard.
D) The elevation = 0.

53- Before landing, an altimeter set to QFE indicates:

A) The altitude of the aircraft's wheels above the runway.
B) The height of the aircraft above the ground (AGL).
C) The flight level.
D) The aircraft's altitude above the mean sea level.

54- You are making a long-distance flight and have chosen a suitable cruising altitude for the whole flight. What is the reason that the true altitude decrease?

A) You are approaching a region of high pressure.
B) You are approaching a region of low pressure.
C) Standard pressure has dropped.
D) Temperature has increased.

55- The geostrophic wind speed is directly proportional to the:

A) Density of the air.
B) Horizontal pressure gradient.
C) Curvature of isobars.
D) Sine of latitude.

56- What is the vertical position of aircraft on the ground when set QNH?

A) Airfield elevation; airfield altitude
B) Zero.
C) Airfield height
D) Airfield elevation

57- The general circulation of air associated with a low pressure area in there is:
A) Inward, upward and counter clockwise.
B) Inward, upward and clockwise.
C) Outward, downward and clockwise.
D) Inward, downward and counter clockwise.

58- 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 equator to pole.

59- Which statement is true concerning the tropopause from the equator to the poles?
A) The tropopause height decreases, the tropopause temperature increases.
B) The tropopause height decreases, the tropopause temperature decreases.
C) The tropopause height increases, the tropopause temperature increases.
D) The tropopause height increases, the tropopause temperature decreases.

60- 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

61- If the dew point stays the same, but the air temperature decreases, then:
A) The relative humidity will decrease.
B) Water vapor will decrease.
C) Water vapor will increase.
D) The relative humidity will increase.

62- When do we have frontal inversion?
A) When cold air forced under warm air
B) When warm air spread over cold air
C) During calm, cool and clear night
D) A & B are correct.

63- When cool dense air replaces warmer rising air the process is called:
A) Coriolis
B) Convection
C) Circulation
D) Pressure gradient force

64- Fog and cloud formation takes place by:
A) Condensation.
B) Evaporation.
C) Sublimation.
D) None of the above.

65- The atmospheric layer that contains most of the earth's weather is the:
A) Troposphere
B) Stratosphere
C) Mesosphere
D) Thermosphere

66- Which statement is true?
A) QNH can be equal to QFE.
B) QNH is always lower than QFE.
C) QFE is always lower than QNH.
D) QFE can be equal to QFF only.

67- In the northern hemisphere an air mass moving above the surface of the earth is
A) Deflected to the right by the Coriolis force.
B) Deflected clockwise in areas of low pressure.
C) Deflected to the right by pressure gradient force.
D) Subject to direct movement from high to low pressure.

68- Which statement is correct concerning wind direction in the northern hemisphere?
A) Friction deflects the wind toward areas of higher pressure.
B) Wind always flows directly from areas of high to areas of low pressure.
C) Wind flows clockwise around high pressure areas and counterclockwise around low pressure areas.
D) Wind flows clockwise around low pressure areas and counterclockwise around high pressure areas.

69- With what type of cloud is DZ precipitation most commonly associated?
A) CB
B) ST
C) CC
D) CU

70- The QFF at an airfield in Ramsar located 69 meters below sea level is 1030 Hpa. The air temperature is 10°C lower than a standard atmosphere. What is the QNH?
A) It is not possible to give a definitive answer.
B) Less than 1030 hPa.
C) 1030 hPa.
D) More than 1030 hPa.

71- The severe phenomena associated with thunderstorm is:
A) Lightning
B) Icing
C) Turbulence
D) Hail

72- What is the most dangerous type of thunderstorm?
A) Air mass TS
B) Nocturnal TS
C) Frontal TS
D) Squall line TS

73- If the temperature is 55°F and slowly decreasing and the dew point is 51°F what type of weather should you expect?
A) Frost
B) Rain showers
C) Thunderstorms
D) Fog or low clouds

74- Frost will form when the surface of the aircraft is at or below the dew point and…….
A) Dew is on the aircraft structure
B) The dew point temperature is below freezing
C) The relative humidity is high
D) The dew point temperature is above freezing

75- The main factors affecting the stability of air include:
A) Moisture and temperature
B) Relative humidity and dew point
C) The lifting action of the atmosphere
D) Atmospheric pressure and surface friction

76- A wind that has changed clockwise in direction can be said to have:
A) Reduced
B) Backed
C) Veered
D) Advanced

77- In the lower layers of the atmosphere due to friction the wind changes direction towards the low pressure area because:
A) Turbulence is formed and pressure decreases.
B) The pressure gradient increases.
C) Turbulence is formed and pressure increases.
D) Wind speed decreases and therefore Coriolis force decreases.

78- What characteristics will the surface winds have in an area where the isobars on the weather map are very close together?

A) Strong and parallel to the isobars.
B) Very weak but gusty and flowing across the isobars.
C) Strong and flowing across the isobars.
D) Moderate and parallel to the isobars.

79- In the southern hemisphere what wind effect would you expect when flying from a high pressure area towards a low pressure area at FL100?

A) Wind from the left.
B) Wind from the right.
C) Tailwind with no drift.
D) Headwind with no drift.

80- Wind is caused by?

A) Mixing of fronts.
B) Horizontal pressure difference.
C) Earth rotation.
D) Surface friction.

81- In the northern hemisphere the wind at the surface blows:

A) From a low pressure area to a high pressure area.
B) Counter-clockwise around, and toward the center of, a low pressure area.
C) Clockwise around, and away from the center of, a low pressure area.
D) Counter-clockwise around, and away from the center of, a high pressure area.

82- What causes surface winds to flow across the isobars at an angle rather than parallel to the isobars?

A) Coriolis force.
B) Surface friction.
C) The greater density of the air at the surface.
D) The greater atmospheric pressure at the surface.

83- Friction between the air and the ground results in the northern hemisphere in:

A) Backing of the wind and increase of wind speed at the surface.
B) Veering of the wind and decrease of wind speed at the surface.
C) Backing of the wind and decrease of wind speed at the surface.
D) Veering of the wind and increase of wind speed at the surface.

84- In the northern hemisphere a pilot flying at 1000 ft AGL directly towards the center of a low pressure area, will find the wind blowing from:

A) About 45° to the right of directly ahead.
B) Right and behind.
C) Left and behind.
D) Directly ahead.

85- What prevents air from flowing directly from high-pressure areas to low-pressure areas?
A) The pressure gradient force.
B) Surface friction.
C) Katabatic force.
D) Coriolis force

86- The greater the pressure gradient the:
A) Further the isobars will be apart and the weaker the wind.
B) Closer the isobars and the stronger the wind.
C) Closer the isobars and the lower the temperatures.
D) Further the isobars will be apart and the higher the temperature.

87- Generally northern hemisphere winds at 5000 ft AGL are southwesterly while most of the surface winds are southerly. What is the primary reason of difference between these two wind directions?
A) A strong pressure gradient at higher altitudes.
B) Stronger Coriolis force at the surface.
C) The influence of warm air at the lower altitude.
D) Friction between the wind and the surface.

88- What relationship exists between the wind at 3000 feet and the surface wind?
A) The wind at 3000 feet is parallel to the isobars and the surface wind direction is across the isobars toward the low pressure and the surface wind is weaker.
B) They have the same direction, but the surface wind is weaker, caused by friction.
C) They are practically the same except when eddies exist, caused by obstacles.
D) The surface wind is veered compared to the wind at 3000 feet and is usually weaker.

89- The geostrophic wind speed is directly proportional to the:
A) Density of the air.
B) Horizontal pressure gradient.
C) Curvature of isobars.
D) Sine of latitude.

90- If you fly across the isobars towards a region of high pressure in the northern hemisphere, you will:
A) Drift to the right.
B) Drift to the left.
C) Experience no drift but experience a headwind.
D) Experience no drift but experience a tailwind.

91- A pressure gradient is said to exist when:
A) Two columns of air have different temperatures.
B) Surface pressure is compared at two different points on the Earth’s surface.
C) Two points at the same level have a different atmospheric pressure.
D) Two points on the Earth's surface have the same isobar passing through them.

92- For a given latitude, which of the following statements is true:

A) Coriolis force acts at right angles to the wind and affects its speed and direction.
B) Coriolis force acts at right angles to the wind and affects speed but not direction.
C) Coriolis force acts at right angles to the wind and affects direction but not speed.
D) None of the above since the geostrophic force is only an apparent force.

93- The pressure gradient force acts:

A) Parallel to the isobars with low pressure on its left (in the northern hemisphere).
B) Perpendicular to the isobars with low pressure behind it.
C) Perpendicular to the isobars and away from the high pressure.
D) Parallel to the isobars and towards the low pressure.

94- The gradient wind:

A) Blows across the isobars when there is a surface pressure gradient.
B) Is the 2.000 ft geostrophic wind.
C) Is the surface wind affected by friction.
D) Blows parallel to curved isobars due to a combination of the pressure gradient force, Coriolis force, and centrifugal force.

95- In the mid-latitudes of the northern hemisphere the wind blows:

A) Direct from high to low pressure areas.
B) Clockwise around anticyclones ones and cyclones.
C) Clockwise around cyclones and anti-clockwise around anticyclones.
D) Clockwise around anticyclones and anti-clockwise around cyclones.

96- The flow of air parallel to the straight isobars at a speed which is proportional to the pressure gradient, is known as the:

A) Equivalent Wind.
B) Thermal wind.
C) Isobaric wind.
D) Geostrophic wind.

97- The direction of the pressure gradient force is?

A) Towards high pressure.
B) Towards low pressure.
C) Parallel to the isobars.
D) Same direction as the friction force.

98- There is a natural tendency for air to flow from areas of:

A) High pressure to low pressure.
B) Low pressure to high pressure.
C) Mountainous areas to flat areas.
D) Flat terrain towards the sea.

99- Water vapor is added to the atmosphere by:
A) Condensation & sublimation
B) Evaporation & sublimation
C) Condensation
D) All answers are correct

100- Nimbostratus clouds occur at middle altitudes extend over a wide area cause moderate to heavy rain or snow.
A) True
B) False

101- What is the geostrophic wind?
A) It blows along curved isobars, and is affected by Coriolis force and centrifugal force.
B) It blows parallel to straight isobars when there are no gradient forces present.
C) It blows along curved isobars when frictional forces are present.
D) It blows parallel to straight isobars, when no friction is present.

102- List the two forces in balance in a geostrophic wind:
A) Pressure force and friction force.
B) Centrifugal force and friction force.
C) Gradient force and Coriolis force.
D) Coriolis force and centrifugal force.

103- The weather conditions associated with stable air include:
A) Showery precipitation
B) Clouds with extensive vertical development
C) Wide areas of layer clouds with little or no turbulence
D) Moderate to heavy turbulence in and near cumuliform clouds

104- In a mountain-valley wind circulation, the mountain wind blows:
A) During the day up from the valley.
B) At night up from the valley.
C) During the day down from the mountains.
D) At night down from the mountains.

105- In a land breeze and sea breeze circulation the land breeze blows:
A) During the day and is stronger than the sea-breeze.
B) During the night and is weaker than the sea-breeze.
C) During the day and is weaker than the sea-breeze.
D) During the night and is stronger than the sea-breeze.

106- The most frequent wind direction in a valley caused by thermal effects is toward the:
A) Valley during daylight hours.
B) Mountain at night.
C) Mountain during daylight hours.
D) Valley during daylight as much as at night.

107- The sea breeze is a wind from the sea:
A) Blowing at night in mid-latitudes.
B) That reaches up to the tropopause in daytime.
C) Occurring only in the lower layers of the atmosphere in daytime.
D) Occurring only in mid-latitudes and in daytime.

108- When otherwise calm and clear conditions exist a station on the shore of a large body of water will experience wind:
A) Continually from land to water.
B) From the water in daytime and from the land at night.
C) Continually from water to the land.
D) From the land in daytime and from the water at night.

109- An aircraft is approaching under visual flight rules an airfield whose runway is parallel to the coast. When downwind over the sea, the airfield is on the right. What wind effect should be anticipated on final approach and landing during a sunny afternoon?
A) Crosswind from the left.
B) Crosswind from the right.
C) Tailwind.
D) Headwind.

110- A mountain breeze (katabatic) wind blows:
A) Down the slope during the night.
B) Up the slope during the day.
C) Down the slope during the day.
D) Up the slope during the night.

111- An aircraft is approaching under visual flight rules an sirfield whose runway is parallel to the coast. When downwind over the sea, the airfield is on the left. What wind effect should be anticipated on final approach and landing during a sunny afternoon?
A) Tailwind.
B) Headwind.
C) Crosswind from the left.
D) Crosswind from the right.

112- 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.

113- 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.

114- At the top of standing waves, in mountainous regions, the cloud most likely to be encountered is:

A) Altocumulus lenticularis.
B) Cirrostratus.
C) Cirrus.
D) Cumulus mediocris.

115- Standing waves are likely when:

A) Wind speed in excess of 20 kts
B) Stable air.
C) Winds blowing perpendicular to the mountain.
D) All answers are required to forming standing waves.

116- 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.

117- Which cloud type may indicate the presence of severe turbulence?

A) Altocumulus lenticularis.
B) Stratocumulus.
C) Cirrocumulus.
D) Nimbostratus.

118- What degree of turbulence, 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 ST cloud.

119- 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.

120- Which of the following statements is true?

A) A gale has an average speed of 33 kts or more.
B) A 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.

121- 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.

122- 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 cumulus cloud.

123- 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.

124- The average slope of a warm front is approximately:

A) 1:150
B) 1:250
C) 1:500
D) 1:80

125- 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.

126- 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.

127- 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.

128- Which of the following statements is true about 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.

129- 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.

130- 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.

131- 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.

132- The difference between temperature and dew point is greater in:
A) Air with low temperature.
B) Moist air.
C) Air with high temperature.
D) Dry air.

133- 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.

134- As a parcel of air cools, its ability to hold water vapour:
A) Decreases.
B) Increases.
C) Remains unaltered.
D) Depends, whether the parcel is rising or no.

135- Moist air is:
A) Denser than dry air.
B) Warmer than dry air.
C) Less dense than dry air.
D) Colder than dry air.

136- Where is the usual location of a thermal law (convective current)?
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.

137- 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.

138- The process by which water vapor is transformed directly into ice is known as:
A) Supercoiling.
B) deposition.
C) Supersaturating.
D) Radiation cooling.

139- 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.

140- 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.

141- 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.

142- 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 10.000 ft.
D) At any time of the year.

143- 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.

144- Frontal thunderstorm occurs with:
A) Low pressure
B) Strong wind
C) Any type of front
D) All answers are correct

145- 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.

146- 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 of the above.

147- 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.

148- 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.

149- A conditionally unstable 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 dry air and unstable for moist air.

150- 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.

151- An inversion is a layer of air which is:
A) Absolutely unstable.
B) Absolutely stable,
C) Conditionally unstable.
D) Conditionally stable.

152- 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

153- The type of cloud that indicates convective turbulence is a:
A) Rotor cloud
B) Cirrocumulus
C) Cumulus or towering cumulus
D) Roll cloud and associated gust front

154- 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

155- 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

156- 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 doesn't cool as rapidly as dry air.
D) Heat is released during the condensation process.

157- In Tehran Imam Khomeini airport, the local QNH is 994 hPa. The elevation of airport is 3256 ft. The QFE adjustment in airport is: (3256 ft = 114 hPa)
A) 880 hPa
B) 1108 hPa
C) 900 hPa
D) 948 hPa

158- 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 °C/100 m.
D) Saturated parcels always cool at a rate of 0.65 °C/100 m.

159- 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.

160- 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.

161- In an air mass with no clouds the surface temperature is 15 °C and the temperature at 1,000 m AGL is 13 °C. This layer of air is:
A) Unstable.
B) Stable.
C) A layer of heavy turbulence.
D) Conditionally unstable.

162- 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: (1 hPa = 27')
A) 7650 ft
B) 8600 ft
C) 8350 ft
D) 8000 ft

163- During an adiabatic process heat is:
A) Neither added nor lost.
B) Added.
C) Lost.
D) Added but the result is an overall loss.

164- 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.

165- What is the final temperature of unsaturated surface air at 12 °C, which rises to 6.000 ft?
A) +30 °C
B) +18 °C
C) -30 °C
D) -06 °C

166- The average value of the ELR is:
A) 1.5 °C 1000 ft.
B) 2.0 °C 1000 ft.
C) 3.0 °C 1000 ft.
D) It varies daily.

167- An ELR of 2.9˚C per 1,000 ft, is by definition:
A) Stable.
B) Conditionally stable.
C) Unstable.
D) Conditionally unstable.

168- 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.

169- 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.

170- 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.

171- 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.

172- 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.

173- Which statement is correct for an absolutely unstable atmosphere?
A) Visibility is good except in shower.
B) The environmental lapse rate is less than 1 °C 1100 m.
C) Clouds are mainly of the stratiform type.
D) The dry adiabatic lapse rate is more than 1 °C 1100 m.

174- Unsaturated air moving downwards is heated at a rate of:
A) Dry adiabatic.
B) Environmental lapse rate.
C) Saturated adiabatic.
D) Ambient lapse rate.

175- The weather is clear and the temperature decreases uniformly and rapidly as you climb (approaching 3.2 °C per 1000 ft), you have an indication of:
A) Stable air.
B) Unstable air.
C) Saturation.
D) Sublimation.

176- 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

177- 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.

178- 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.

179- 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.

180- The most reliable indication that you are crossing a front is a change in:
A) Pressure
B) Wind speed
C) Temperature
D) Wind direction

181- 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.

182- 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.

183- 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.

184- 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.

185- 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.

186- Which of the following cloud types is found at high levels?
A) SC
B) CI
C) AS
D) CU

187- 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.

188- Which of the following types of cloud can extend over the low, medium and high cloud levels?

A) CB
B) AC
C) ST
D) Cl

189- Which of the following clouds may extend into more than one layer?

A) Stratus
B) Nimbostratus
C) Altocumulus
D) Cirrus

190- Which of the following cloud is classified as low level cloud?

A) ST
B) CS
C) AS
D) CC

191- Which types of clouds are typical evidence of stable air conditions?

A) ST, AS.
B) CU, CB.
C) NS, CU.
D) CB, CC.

192- Convective clouds are formed:

A) In stable atmosphere.
B) In unstable atmosphere.
C) In summer during the day only.
D) In mid-latitudes only.

193- 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.

194- 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.

195- 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.

196- 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.

197- The most hazardous type of cloud that may be encountered on a cross country flight is:
A) Cirrus
B) Stratocumulus
C) Cumulus
D) Cumulonimbus

198- Which of the following cloud types can project up into the stratosphere?
A) Cumulonimbus
B) Cirrostratus
C) Altocumulus
D) Altostratus

199- Which of the following is most correct regarding the cloud types stratus and nimbostratus?
A) Neither cloud type may give precipitation.
B) Stratus may give drizzle or snow grains and nimbostratus may give rain showers.
C) Stratus may give rain showers and nimbostratus may give drizzle or snow grains.
D) Stratus may give drizzle or snow grains and nimbostratus may give continuously falling rain or snow.

200- Lenticular clouds in mountainous areas indicate:
A) Unstable air.
B) Turbulence.
C) An inversion.
D) Light variable winds.

201- 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.

202- 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

203- 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.

204- 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 nimbo clouds.
D) High, medium and low clouds, and clouds with extensive vertical development.

205- 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

206- If a stable air mass is forced to rise, what type of cloud is most likely:
A) CU
B) NS
C) TCU
D) CB

207- 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, Cirroform.
D) Above 7000 ft, Cumuliform.

208- 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 lining occurs.
D) The atmospheric pressure lapse rate.

209- 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.

210- Which of the following are low level clouds? state the most complete answer:
A) AS, AC.
B) ST, NS.
C) CI, ST.
D) NS, CI.

211- 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.

212- Flying conditions associated with cumulonimbus cloud at summertime are:
A) Hazy weather combined with drizzle and turbulence.
B) Good visibility, intervals of fine weather and little turbulence.
C) Poor visibility, continuous rain and little turbulence.
D) Poor visibility in showers and pronounced turbulence.

213- The type of cloud formed when warm, light air rises rapidly into cooler air is a:
A) Stratus type.
B) Cumulus type.
C) Stratocumulus type.
D) Nimbostratus type.

214- 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.

215- 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.

216- 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.

217- 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.

218- Which of the following conditions is most likely to lead to the formation of steam fog (arctic smoke)?
A) Warm air moving over cold water.
B) Cold air moving over warm water.
C) The sea is warmed by strong radiation from the sun.
D) The coastal region of the sea cools at night.

219- Steam fog is formed when cold air moves over a warm water surface. convection will start and make a cloud with its base at water surface. At what time of day, or night, is steam fog most likely to occur?
A) At sunset.
B) Shortly after sunrise.
C) Late evening.
D) Shortly after midnight.

220- 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.

221- 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.

222- 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.

223- 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.

224- 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.

225- 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.

226- 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.

227- Radiation fog can be dispersed by:

A) Insolation.
B) Strong winds.
C) Replacement of moist air by drier air.
D) All of the above.

228- 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.

229- 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.

230- Which type of fog cannot be formed over water?
A) Advection fog.
B) Radiation fog.
C) Arctic smoke.
D) Frontal fog.

231- 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.

232- What enhances the growth rate of precipitation?
A) Advective action.
B) Upward currents.
C) Cyclonic movement.
D) Temperature inversions.

233- 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 let stream, associated with let streaks.
C) Gusts associated with a well-developed Bora.
D) Strong katabatic winds in mountainous areas and accompanied by heavy precipitation.

234- 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.

235- 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.

236- What type of cloud can produce hail showers?
A) CS
B) NS
C) CB
D) AC

237- What type of clouds are associated with snow showers?
A) Nimbostratus.
B) Cumulus and altostratus.
C) Altostratus and stratus.
D) Cumulonimbus.

238- 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.

239- Precipitation in the form of showers occurs mainly from:
A) Clouds containing only ice crystals.
B) Stratified clouds.
C) Cirro-type clouds.
D) Convective clouds.

240- 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.

241- Which one of the following types of cloud is most likely to produce heavy precipitation?
A) SC
B) CS
C) NS
D) ST

242- Which of the following cloud types is least likely to produce precipitation?
A) Cl
B) AS
C) CB
D) NS

243- 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.

244- 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.

245- 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) Cl

246- What type of cloud is pertinent for showers?
A) CB
B) NS
C) Cl
D) AS

247- 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.

248- 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.

249- Which of the following processes will increase the stability of an air mass?
A) Addition of water vapor in the lower layer.
B) Cooling by the underlying surface.
C) Warming of the air mass from below.
D) Advection of colder air aloft.

250- 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.

251- An air mass is a body of air that:
A) Has similar cloud formations associated with it.
B) Creates a wind shift as it moves across the Earth's surface.
C) Covers an extensive area and has fairly uniform properties of temperature and moisture.
D) Has extensive turbulence associated with it.

252- A body of air over the ocean is referred to as:
A) Polar air.
B) Subtropical air.
C) Maritime air.
D) Equatorial air.

253- 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.

254- 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.

255- The presence of standing lenticular altocumulus cloud is known as:
A) Patchy cloud
B) Lens shape cloud
C) Heavy icing cloud
D) An approaching storm

256- An aircraft lands at an airport (airport elevation 540 ft, QNH 993 hPa) with the altimeter set to 1013 hPa. What will it indicate? (1 hPa = 27')
A) 1080 ft
B) 700 ft
C) 380 ft
D) 0 ft

257- You are flying at FL130, and your true altitude is 12000 ft. what is the temperature deviation from that of the standard atmosphere at FL130 (QNH 1013 hPA)? (1 hPa = 27')

A) ISA +12 °C.
B) ISA ±0 °C.
C) ISA +20 °C.
D) ISA -20 °C.

258- What type of front usually moves the fastest?

A) Cold front.
B) Warm front.
C) Cold occlusion.
D) Warm occlusion.

259- The most frequent type of ground or surface based temperature inversion is that produced by:

A) Terrestrial radiation on a clear and 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

260- 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 setting over a warmer surface under no wind conditions

261- What is the most rapid method for water droplets to increase in size?

A) Condensation
B) Sublimation
C) Droplets colliding and merging together
D) Evaporation

262- Turbulence that is encountered above 20000 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**.**

263- If cold air is being "replaced" by warm air, the boundary between the air masses is called:

A) A warm front.
B) A cold front.
C) A polar front.
D) An arctic front.

264- The location of steam fog would most likely occur are:
A) Maritimes
B) Mountain valleys
C) Level inland areas
D) Mountain slope

265- The slope and speed of a warm front compared to the slope and speed of a cold front is in general:
A) Smaller and slower.
B) Greater and faster.
C) Greater and slower.
D) Smaller and faster.

266- Clouds fog or dew will always form when:
A) The temperature and dew point are equal
B) Water vapor condenses
C) The dew point is higher than the temperature
D) Relative humidity exceeds 100 percent

267- 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.

268- The following is true concerning a warm front:
A) The associated type of weather is mostly uniform and offers only small variations.
B) When the air is stable, the clouds are stratiform with uniform precipitation.
C) When the air is unstable, the clouds form vertically and showers will develop in the precipitation area.
D) All answers are correct

269- The weather associated with a cold front may vary from a minor change of wind to a serious thunderstorm with low cloud base, bad visibility and strong, gusty winds The type of weather depends on: .
A) The amount of humidity in the warm air
B) The stability of the warm air.
C) The speed and slope of the cold front.
D) All answers are correct.

270- The formation of high and low pressure areas is normally caused by:
A) Temperature differences.
B) Humidity.
C) Mechanical turbulence.
D) Storms.

271- You are flying at FL200. Outside air temperature is -40°C, and QNH 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.

272- The most effective way to dissipate cloud is by:

A) Convection.
B) Subsidence.
C) A decrease in temperature.
D) A decrease in pressure.

273- Subsidence is:

A) Vertically upwards motion of air.
B) Horizontal motion of air.
C) Vertically downwards motion of air.
D) The same as convection.

274- 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.

275- With respect to high and low pressure systems:

A) A high pressure area and ridge are areas of rising air.
B) A high pressure area and ridge are areas of descending air.
C) A low pressure area and trough are areas of descending air.
D) A low pressure area and ridge are areas of rising air.

276- 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.

277- 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.

278- Which statement is true regarding squall lines?
A) They are always associated with cold front.
B) They are nonfrontal and often contains sever steady state thunderstorm.
C) They form slowly but move rapidly.
D) They are associated with frontal systems only.

279- A trough is related to:
A) Low pressure area.
B) High pressure area.
C) Tropical thunderstorm.
D) Tropical wind.

280- Where is the common location of advection fog?
A) Coastal areas
B) Mountain slopes
C) Level inland areas
D) Mountain valleys

281- Define low pressure area:
A) An area with lower pressure than that of the horizontal environments.
B) An area of divergence.
C) A trough.
D) None of the above.

282- Convective activity over land in mid-latitudes is greatest in:
A) Winter in the afternoon.
B) Winter during the night and early morning.
C) Summer during the night and early morning.
D) Summer in the afternoon.

283- The Chinook is a:
A) Warm and dry wind that forms as air descends on the leeward side of the Rocky Mountains.
B) Very cold wind with blowing snow.
C) Downslope wind that occurs particularly at night as air cools along mountain slopes.
D) Warm anabatic wind up the slopes of snowfields or glaciers.

284- 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 or more.
A) Mature
B) Thermal
C) Cumulus
D) Dissipating

285- 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

286- You are planning to fly across a mountain range. The chart recommends a minimum altitude of 12000 ft above mean sea level. The air mass you will be flying through is an average 10°C warmer than ISA. Your altimeter is set to 1023 hPa (QNH of a nearby airport at nearly sea level). What altitude will the altimeter show when you have reached the recommended minimum altitude?

A) 12210 feet.
B) 11540 feet.
C) 11250 feet.
D) 11790 feet.

287- If atmospheric conditions exist such that the temperature deviation is ISA +10 °C in the lower troposphere up to 18000 ft, what is the actual layer thickness between FL060 and FL120?

A) 6240 ft
B) 6000 ft
C) 5900 ft
D) 5760 ft

288- 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.

289- What is the approximate base of cumuliform clouds if the surface temperature is 78°F and the dew point is 60°F?

A) 1800 ft AGL
B) 2900 ft AGL
C) 4000 ft AGL
D) 5000 ft AGL

290- what is the approximately indicated altitude would you expect to find the bases of cumulus clouds if the surface temperature at 2500 ft MSL is 95F and the dew point is 67 F?

A) 6200 ft MSL
B) 7400 ft MSL
C) 8800 ft MSL
D) 10500 ft MSL

291- 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.

292- 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.

293- 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.

294- The most dangerous form of airframe icing is:

A) Rime ice.
B) Hoar frost.
C) Dry ice.
D) Clear ice.

295- An instability line, which is narrow nonfrontal 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.

296- 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.

297- The most dangerous icing conditions are encountered in:

A) Icy clouds at high levels.
B) Super cooled precipitation.
C) Unstable clouds at medium levels.
D) Zones where the air temperature is below -15 °C.

298- Which of following statements is true regarding moderate to severe airframe icing?

A) It will not occur in clear-sky conditions.
B) It always occurs in altostratus cloud.
C) It is unlikely to occur in nimbostratus cloud.
D) It will occur in the anvil part of the cumulonimbus cloud.

299- The presence of ice pellets at the surface is the evidence that:

A) Temperatures are above freezing at some higher altitudes.
B) A cold front has passed.
C) There are thunderstorms in the area.
D) After takeoff you can climb to a higher altitude without

300- 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 of the above is correct.

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

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

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	B	226	A	251	C	276	A
202	B	227	D	252	C	277	B
203	D	228	B	253	A	278	B
204	D	229	A	254	C	279	A
205	A	230	B	255	B	280	A
206	B	231	C	256	A	281	A
207	C	232	B	257	D	282	D
208	A	233	A	258	A	283	A
209	A	234	C	259	A	284	A
210	B	235	A	260	B	285	D
211	C	236	C	261	C	286	B
212	D	237	D	262	D	287	A
213	B	238	B	263	A	288	B
214	B	239	D	264	A	289	C
215	B	240	D	265	A	290	C
216	B	241	C	266	B	291	B
217	D	242	A	267	A	292	D
218	B	243	A	268	B	293	D
219	B	244	A	269	D	294	D
220	D	245	A	270	A	295	C
221	D	246	A	271	B	296	B
222	B	247	A	272	B	297	B
223	D	248	B	273	C	298	A
224	D	249	B	274	B	299	A
225	B	250	C	275	B	300	C

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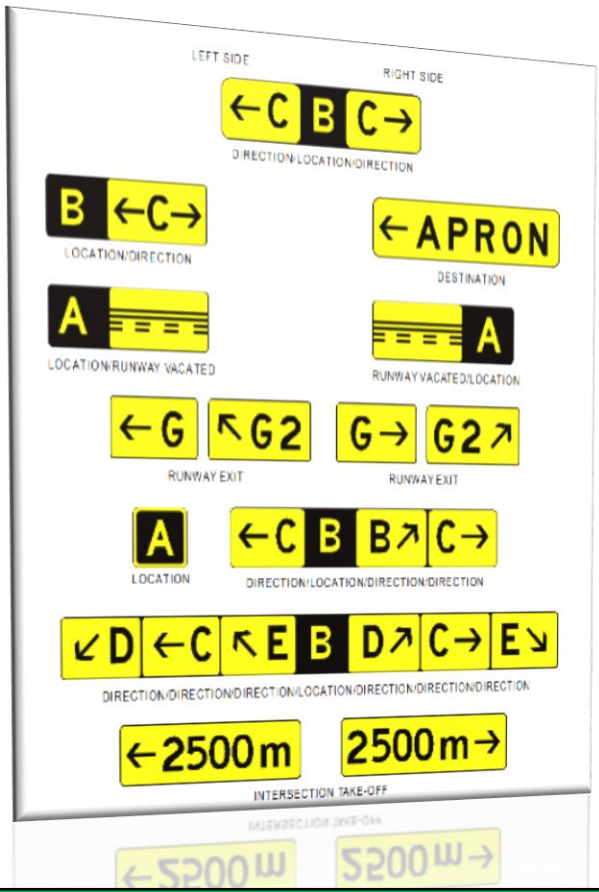
OPERATIONAL PROCEDURE



1- The commander of a public transport aircraft must ensure that passenger seat belts are secure for:

A) Takeoff and landing.
B) Takeoff, landing, taxiing and turbulence.
C) Takeoff, landing, taxiing, turbulence and during emergencies.
D) Takeoff, landing and turbulence.

2- The ICAO rules governing flight over water for a single engine aeroplane engaged in the public transport of passengers:

A) Limits such flight to a height sufficient to land safely if the engine fails.
B) Does not permit such flight in any circumstances.
C) Limits flight to up to 10 minutes flying time from the nearest shore.
D) Limits flight to up to 8 NM from the nearest shore.

3- Where an operator establishes an aerodrome operating minima, the minima:

A) Should not be lower than any that may be established for such aerodromes by the state in which the aerodrome is located.
B) Shall not be lower than any that may be established for such aerodromes by the state in which the aerodrome is located.
C) Should not be higher than any that may be established for such aerodromes by the state in which the aerodrome is located.
D) Shall not be higher than any that may be established for such aerodromes by the state in which the aerodrome is located.

4- The coverage angle of the regulatory red position light, for continuously lit in flight and located at the tip of the left wing is:

A) 140°
B) 110°
C) 70°
D) 220°

5- When refueling is being performed while passengers are boarding or disembarking the aircraft, it is necessary that:

A) All the flight crew be on board.
B) The aircraft's stairs be completely extended.
C) Refueling is prohibited while passengers are boarding and/or disembarking.
D) Communications be maintained between ground personnel and qualified personnel on board.

6- Before any flight is commenced, forms have to be completed certifying that the aeroplane is airworthy. Who has to be satisfied that the aeroplane is airworthy?

A) The commander.
B) The operator.
C) The maintenance supervisor.
D) A JAA authorized person.

7- One shall not initiate any flight made in accordance with instrument flight rules unless the available information indicates that the conditions at the aerodrome of predicted destination or, at an aerodrome of alternative destination, are:

A) At the predicted time of arrival equal to or better than the minimum conditions required for aerodrome use.
B) At the predicted time of takeoff equal to or better than the minimum conditions required for aerodrome use.
C) At the predicted time of arrival, and for a reasonable period before and after such a predicted time, equal to or better than the minimum conditions required for aerodrome use.
D) At the predicted time of arrival better than the minimum conditions required for aerodrome use.

8- During a 2D approach, the Minimum Descent Height (MDH) is referred to the runway threshold altitude and not to the aerodrome altitude if the runway threshold is at more than:

A) 4 m (14 ft) below the aerodrome elevation.
B) 2 m (7 ft) above the aerodrome elevation.
C) 2 m (7 ft) below the aerodrome elevation.
D) 4 m (14 ft) above the aerodrome elevation.

9- Who checks, before flight, that the aircraft's weight is such that flight can be safely made, and that any transported cargo is properly distributed and secured? (Annex 6, Part I)

A) The operator.
B) The pilot in command.
C) The mechanic on board, or in his absence the co-pilot.
D) The company's cargo technicians.

10- For turbo-jet aircraft, in the flight preparation stage, the landing distance at the scheduled destination aerodrome shall be less than the available landing distance multiplied by a factor of:

A) 0, 5
B) 0, 7
C) 0, 6
D) 0, 8

11- The coverage angle of the regulatory white position lights, continuously lit in flight and located at the rear of the aircraft, is:

A) 140°
B) 110°
C) 70°
D) 220°

12- The regulatory green navigation light is located on the starboard wing tip, with a coverage angle of:

A) 70°
B) 140°
C) 110°
D) 220°

13- On board a pressurized aircraft, a flight shall be undertaken only if the aircraft is provided with an oxygen reserve enabling all the crew members and part of the passengers to be supplied with oxygen in the event of a cabin depressurization, throughout the flight period, during which the pressure altitude is greater than:

A) 12000 ft
B) 11000 ft
C) 10000 ft
D) 13000 ft

14- Flight crew member on the flight deck shall keep their safety belt fastened:

A) From takeoff to landing.
B) Only during takeoff and landing.
C) Only during takeoff and landing and whenever necessary by the commander in the interest of safety.
D) While at their station.

15- Who shall provide the flight operations personnel with an Operations Manual and also issue the amendments to keep it up to date?

A) Owner of the aircraft.
B) Aircraft producer.
C) Aircraft operator
D) ATS authority of the state of registry.

16- For twin-engine aircraft, the takeoff alternate shall be located at a distance that:

A) Does not exceed the equivalent of two hour of flight time at cruising speed, all engines operating.
B) Does not exceed the equivalent of two hours of flight time, at cruising speed with only one engine operative.
C) Does not exceed the equivalent of one hour of flight time at cruising speed, all engines operating.
D) Does not exceed the equivalent of one hour of flight time, at cruising speed with only one engine operative.

17- When must a cosmic radiation indicator be carried?

A) For flights above 29000ft.
B) For flights above 39000ft.
C) For flights above 49000ft.
D) For flights above 59000ft.

18- On board of a non-pressurized aircraft, 10% of the passengers must be supplied with oxygen throughout the period of flight, reduced by 30 minutes, during which the pressure altitude is between:

A) 10000ft and 12000 ft.
B) 10000ft and 13000 ft.
C) 11000ft and 13000 ft.
D) 11000ft and 12000 ft.

19- A life jacket is mandatory for any passenger on board an aircraft flying away from the shore by more than:

A) 100 NM
B) 50 NM
C) 200 NM
D) 400 NM

20- DH is used in a:

A) Non precision approach.
B) Precision approach.
C) Unscented approach.
D) Centered approach.

21- When is MDH referenced to the threshold as opposed to the aerodrome elevation?

A) The threshold is more than 2 m above the aerodrome elevation.
B) The threshold is less than 2 m above the aerodrome elevation.
C) The threshold is less than 2 m below the aerodrome elevation.
D) The threshold is more than 2 m below the aerodrome elevation.

22- To operate an aircraft as commander a pilot must have:

A) Carried out at least 3 takeoffs and 3 landings in an aeroplane of the same type or a flight simulator in the preceding 60 days.
B) Carried out at least 5 takeoffs and 3 landings in an aeroplane of the same type or a flight simulator in the preceding 60 days.
C) Carried out at least 3 takeoffs and 3 landings in an aeroplane of the same type or a flight simulator in the preceding 90 days.
D) Carried out at least 5 takeoffs and 3 landings in an aeroplane of the same type or a flight simulator in the preceding 90 days.

23- To act as co-pilot for takeoff or landing you must have:

A) Acted as PIC or co-pilot on type in the last 90 days.
B) Acted as PIC or co-pilot on type in the last 30 days.
C) Acted as PIC or co-pilot on type in the last 60 days.
D) Been at the controls for landing in the same type recently.

24- A copy of which of the following documents must be kept on the ground by an operator for the duration of each flight?

A) The journey log.
B) The ATC (Air Traffic Control) flight plan.
C) The operational flight plan.
D) The meteorological forecast.

25- Oxygen should be supplied for all crew members and some passengers above which altitude?

A) 10000 ft
B) 12000 ft
C) 13000 ft
D) 11000ft

26- When is the oxygen required to be supplied for the crew and 100% of the passengers in an unpressurised aircraft?

A) The entire flight time at pressure altitudes> 10000 ft.
B) The entire flight time at pressure altitudes> 11000 ft.
C) The entire flight time at pressure altitudes> 12000 ft.
D) The entire flight time at pressure altitudes> 13000 ft.

27- What manuals are to be carried on board the aircraft?

A) Operations Manual in total.
B) Company instructions for all flight crew.
C) All those specified in the Certificate of Airworthiness.
D) Relevant parts of the ops manual and AFM.

28- At takeoff the maximum mass of the aeroplane shall be:

A) Not more than the Basic Empty Mass plus the payload.
B) Not more than the Maximum Landing Mass.
C) Equal to or less than that at which the takeoff run can be completed under ISA conditions and no headwind.
D) Not more than that which would enable compliance with any noise abatement procedure.

29- Who shall be satisfied, before flight that the aircraft's weight is such that flight can be safely made, and that the mass and balance limitations are met?

A) The operator.
B) The commander.
C) The flight engineer.
D) The airline's dispatcher.

30- When refueling is being performed while passengers are boarding or disembarking the aircraft, one of the requirements is:

A) The aircraft's stairs be completely extended.
B) The ground area beneath the exits intended for emergency evacuation and slide deployment areas must be kept clear.
C) Refueling is prohibited while passengers are boarding and/or disembarking.
D) All flight crew shall remain at their station.

31- The accumulation of snow or ice on an aircraft in flight induces an increase in the:

A) Tuck under.
B) Value of the stall angle of attack.
C) Stalling speed.
D) Roll rate.

32- The greatest possibility of ice build-up, while flying under icing conditions, occurs on:

A) The aircraft front areas.
B) The upper and lower wing surfaces.
C) The upper and lower rudder surfaces.
D) Only the pitot and static probes.

33- Which of the following requirements should be met when planning a flight with icing conditions?

A) The aircraft shall be equipped with approved ice-protection systems.
B) The flight should be planned so that a change of cruising level can be initiated rapidly.
C) The aircraft shall before flight be sprayed with anti-icing fluid.
D) A meteorologist shall decide whether the flight may be performed without ice-protection systems.

34- Ice acceleration depends on many factors including ambient temperature and type of precipitation. Which of the following would give the longest holdover time?

A) Steady snow.
B) Freezing fog.
C) Rain on a cold soaked wing.
D) Frost.

35- The accumulation of frost, snow or ice on an aeroplane in flight induces, amongst other serious consequences, an increase in the:

A) Tuck under.
B) Value of the stall angle of attack.
C) Stalling speed.
D) Roll rate.

36- Icing conditions are conditions in which humidity is visible and air temperature is lower than:

A) 0˚C
B) +10˚C.
C) -5˚C.
D) -10˚C.

37- While approaching to find, the tower informs you about the presence of a microburst. You will expect to encounter:

A) Wind shears (vertical and horizontal).
B) Wake turbulence.
C) Super cooled water.
D) Convection motion of air mass.

38- During a landing approach, the aircraft is subjected to wind shear with an increasing tailwind. In the absence of a pilot action, the aircraft:

1) Flies above the glide path.
2) Flies below the glide path.
3) Has an increasing true airspeed.
4) Has a decreasing true airspeed.

The combination of correct statements is:

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

39- During a landing approach, the aircraft is subjected to wind shear with a decreasing headwind. In the absence of a pilot action, the aircraft:

1) Flies above the glide path

2) Flies below the glide path

3) Has an increasing true airspeed

4) Has a decreasing true airspeed

The combination of correct statements is:

A) 2, 4

B) 2, 3

C) 1, 3

D) 1, 4

40- The wind shear is:

A) A vertical wind velocity variation over a short distance.

B) A horizontal wind velocity variation over a short distance.

C) A vertical or horizontal wind velocity and/or wind direction variation over a short distance.

D) A vertical or horizontal wind velocity and/or wind direction variation over a large distance.

41- An aircraft which experiences a headwind of 40 kts while making its way towards the center of a microburst may expect, when crossing the microburst, to face a wind shear of:

A) 60 kts

B) 40 kts

C) 80 kts

D) 20 kts

42- On final approach, you encounter a strong rear wind gust or strong downwash which forces you to go around. You should apply go around thrust and:

1) Maintain the same aircraft configuration (gear and flaps)

2) Reduce the drags (gear and flaps)

3) Gradually increase the attitude up to triggering of stick shaker

4) Avoid excessive attitude change

The combination of correct statements is:

A) 2, 3

B) 1, 4

C) 1, 3

D) 2, 4

43- During a landing approach, the aircraft is subjected to winds shear with an increasing headwind. In the absence of a pilot action, the aircraft:

1) Flies above the glide path.

2) Flies below the glide path.

3) Has an increasing true airspeed.

4) Has a decreasing true airspeed.

The combination of correct statements is:

A) 2, 3

B) 1, 4

C) 1, 3

D) 2, 4

44- When an aircraft flies into a wind shear, where a horizontal tailwind gust is experienced, the aircraft tends:

A) To climb.

B) To descend.

C) Not to change its trajectory.

D) To climb or descend, depending on the gust strength.

45- On the approach you encounter a wind shear a change to a horizontal tailwind will cause:

A) A climb.

B) A descent or climb depending upon the strength and type of the gust.

C) A descent.

D) An increase in TAS.

46- In a mountainous region you encounter wind shear during the approach to landing and see an increase in airspeed. You:

A) Reduce power to stay on the glide path.

B) Reduce power to 1, 2 Vs and make a precision landing.

C) Bring to level flight, allow speed to fall and intercept the glide path from above.

D) Allow speed to increase while staying on the glide path and monitoring speed.

47- In wind shear associated with a microburst; you experience a 40 kts headwind. Coming out of the microburst, you will experience a wind shear of:

A) -20 kts

B) -40 kts

C) -60 kts

D) -80 kts

48- In a microburst combined with a violent storm the winds at:

A) High altitude converges on the center of the phenomenon and the atmospheric pressure increases by a few hPa.
B) Low altitude diverges from the center of the phenomenon and the atmospheric pressure decreases by a few hPa.
C) Low altitude diverges from the center of the phenomenon and the atmospheric pressure increases by a few hPa.
D) Low altitude converges on the center of the phenomenon and the atmospheric pressure decreases by a few hPa.

49- Which one of the following magnitudes will be the first to change its value when penetrating a wind shear?

A) Pitch angle.
B) Vertical speed.
C) Ground speed.
D) Indicated airspeed.

50- On the approach you experience an increasing headwind. What happens to the aircraft?

1) Descends below the glide path.

2) Climbs above the glide path.

3) TAS increases.

4) TAS decreases.

A) 1, 4
B) 1.3
C) 2, 4
D) 2, 3

51- Which wind shear condition results in an increase in airspeed?

A) Increasing tailwind.
B) Decreasing tailwind.
C) Decreasing headwind.
D) None of the above.

52- On passing through a shear line, why does the IAS change?

A) The inertia of the aircraft will initially keep it at its original speed in relation to the ground.
B) A decreased mass of air is entering the Pitot tube.
C) Winds shear alters the air density, which affects the ASI reading.
D) Winds shear changes the static pressure, which makes the ASI miss-read.

53- Under a microburst, what happens?
A) Air is diverging and local pressure increases.
B) Air rotates and local pressure decreases.
C) Air is diverging and local pressure decreases.
D) Air rotates and local pressure increases.

54- On encountering wind shear what do you do?
A) Apply takeoff power and pull to the stick shaker.
B) Apply small increase in power.
C) Apply moderate power and pull to the stick shaker.
D) Pull to the stick shaker.

55- What do you do in a microburst?
1) Apply engine power.
2) Retract speed brakes.
3) Retract flaps and gear.
4) Retract all drag devices.
5) Pitch up to stick shaker.
A) 1, 3, 5
B) 1, 4, 5
C) 1, 2, 5
D) 2, 3, 5

56- In a microburst downdraught in the order of 3000 to 4000 ft/min can produce vector changes in horizontal wind of:
A) 30 to 40 kts.
B) 10 to 20 kts.
C) 60 to 80 kts.
D) 100 to 140 kts.

57- When landing behind a large aircraft the effect of wake turbulence is likely to be worst in conditions of:
A) A strong wind down the runway.
B) A strong crosswind.
C) A light wind up the runway.
D) A light quartering tailwind.

58- An airplane creates a wake turbulence when:
A) Generating lift.
B) Flying at high speed.
C) Using a high engine RPM.
D) Flying with its gear and flaps extended.

59- To avoid wake turbulence, when departing behind a larger aircraft, the pilot should maneuver:
A) Below and downwind from the larger aircraft.
B) Above and downwind from the larger aircraft.
C) Above and upwind from the larger aircraft.
D) Below and upwind from the larger aircraft.

60- The wake turbulence:
A) Starts when pulling out the drag devices and stops when retracting the drag devices.
B) Starts as soon as the aeroplane is running for takeoff and stops as soon as it has come to a stop at landing.
C) Starts when the airplane reaches a height of 300 ft above the ground and stops when it crosses this height before landing.
D) Starts during the rotation and stops as soon as the airplanes wheels touch the ground.

61- The wake turbulence caused by an aircraft is mainly the result of:
1) An aerodynamic effect (wing tip vortices).
2) The engines action (propellers rotation or engine gas exhausts).
3) The importance of the drag devices (size of the landing gear, of the flaps, etc.).
The combination regrouping all the correct statements is:
A) 1, 2, 3
B) 3
C) 2, 3
D) 1

62- When taking off behind a wide-body aircraft, with wind coming from the left side, you adopt a path whenever possible?
A) Distinct from the preceding airplane, by remaining at the right of and under its path.
B) Distinct from the preceding airplane, by remaining at the left of and above its path.
C) Identical to the one of the preceding airplane.
D) Distinct from the preceding airplane, by remaining behind it and under its path.

63- The wake turbulence is the most severe when the aircraft is:
1) Slow
2) Heavy
3) In a clean configuration
4) Flying with a high thrust
The combination of correct statement is:
A) 1, 4
B) 1, 2, 3
C) 1,2,3,4
D) 2, 3, 4

64- The greatest wake turbulence occurs when the generating aircraft is:
A) Small, light, at maximum speed in full flaps configuration.
B) Large, heavy, at maximum speed in full flaps configuration.
C) Small, light, at low speed in clean configuration.
D) Large, heavy, at low speed in clean configuration.

65- In accordance "with ICAO and PANS-OPS procedures, which letter should be entered into a flight plan to denote an aeroplane which has a weight of less than 136000 kg but greater than 7000 kg:
A) H
B) M
C) L
D) S

66- The wake turbulence is greater when the aircraft has a:
A) Low weight and low speed.
B) Low weight and high speed.
C) High weight and low speed.
D) High weight and high speed.

67- When taking off after a wide body aircraft which has just landed, you should takeoff:
A) In front of the point where the aircraft's wheels have touched down.
B) Beyond the point where the aircraft's wheels have touched down.
C) At the point where the aircraft's wheels have touched down and on the wind side of the runway.
D) At the point where the aircraft's wheels have touched the ground and on the under wind side of the runway.

68- Tip vortices which are responsible for wake turbulence appear as soon as the following is established:

A) Drag
B) Lift
C) Spin up
D) Lift destruction

69- Where is the best position following a heavier aeroplane?

A) Above its flight path and downwind.
B) Below its flight path and downwind.
C) Below its flight path and upwind.
D) Upwind and above its flight path.

70- Wake turbulence starts:

A) When selecting the drag devices and stops when retracting the drag devices.
B) When the airplane reaches a height of 300 ft above the ground and stops when it crosses this height before landing.
C) During rotation and stops as soon as the airplanes wheels touch the ground.
D) As soon as the aeroplane is commencing the takeoff run and stops as soon as it has come to a stop after landing.

71- What is the major factor causing wake turbulence?

1) Wing tip vortices.
2) Engines.
3) High lift devices.
4) Size of the landing gear.

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

72- For a given aeroplane, the wake turbulence increases, when the aeroplane has a:

A) Low mass and high airspeed.
B) High mass and high airspeed.
C) Low mass and low airspeed.
D) High mass and low airspeed.

73- What is the weight range for MEDIUM category aircraft?

A) 5700 kg to 100000 kg.
B) 7000 kg to 136000 kg.
C) 5700 kg to 136000 kg.
D) 7001 kg to 135999 kg.

74- When must wake turbulence be considered?

A) High rate of roll maneuvers over the runway.
B) A HEAVY category aircraft landing with full lift enhancing devices employed.
C) A HEAVY aircraft landing in a strong crosswind.
D) A LIGHT aircraft landing in a light crosswind.

75- What is the dispersal time for wake turbulence from a wide-bodied aircraft?

A) 30 seconds.
B) 1 NM.
C) 3 minutes.
D) 10 minutes.

76- The wake turbulence category "HEAVY" applies to aircraft with a max certificated Takeoff Mass in pounds in excess of:

A) 299200 lbs
B) 275000 lbs
C) 136000 lbs
D) 125000 lbs

77- What transponder code should be used to provide recognition of an aircraft which is being subjected to radio failure?

A) Code 7700
B) Code 7600
C) Code 7500
D) Code 2000

78- In case of a hijack, the squawk code to be used is:

A) 2000
B) 7600
C) 7700
D) 7500

79- In addition to informing each State, whose citizens are known to be on board an aircraft, the State of the country in which an aircraft has landed after an act of unlawful interference must immediately notify the:

A) State of the Operator, the JAA and ICAO.
B) State of Registry of the aircraft and the JAA.
C) State of Registry of the aircraft, the State of the Operator and ICAO.
D) State of Registry of the aircraft and the State of the Operator only.

80- According to the EU-OPS, when a commercial transport passenger airplane is equipped with a door in the flight crew compartment area, this door must include:

A) A locking system to prevent any unauthorized access.
B) A device preventing the flight crew from being locked in the cockpit.
C) Distinctive red or yellow colored markings indicating the access area (in case of a blocked door).
D) A sealing system allowing the maintenance for as long as possible of the pressure in the cockpit in case of a depressurization in the compartment area.

81- When you have been unlawfully interfered with, the state in which you land is required to inform:

1) State of the Operator.
2) ICAO.
3) State of registration of aircraft.
4) JAA.

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

82- The flight deck door should be capable of being:

A) Remotely locked from either inside or outside the compartment.
B) Locked from within the compartment.
C) Directly locked from outside the compartment.
D) Remotely locked by cabin crew operation from outside the compartment.

83- A bomb alert is received at cruise altitude, fuel is not a problem that needs to be considered, what do you do?

A) Descend to safety altitude.
B) Go to the maximum altitude not affected by pressure.
C) Go to cabin altitude pressure and remain clean until the final approach.
D) Descend to cabin pressure altitude or safety altitude, whichever is the higher, and go to landing configuration as a safety measure.

84- Selecting an alternate aerodrome the runway of this facility must be sufficiently long to allow a full stop landing from 50 ft above the threshold (jet type aircraft, dry runway) within:

A) 80% of the landing distance available.
B) 70% of the landing distance available.
C) 60% of the landing distance available.
D) 50% of the landing distance available.

85- The standby power supply powering the standby artificial horizon must be operable on board any aircraft of more than 5.700 kg or more than 9 passengers during at least (ICAO Annex 6):

A) 15 minutes
B) 60 minutes
C) 30 minutes
D) 2 hours

86- The recent experience conditions of a captain assigned to a flight on an aircraft by an operator must not be less than:

A) 6 takeoffs and 6 landings as pilot at the flight controls on this type of aircraft during the last 90 days.
B) 3 takeoffs and 3 landings as pilot at the flight controls on this type of aircraft during the last 90 days.
C) 6 takeoffs and 6 landings as pilot at the flight controls on this type of aircraft during the last 6 months.
D) 3 takeoffs and 3 landings as pilot at the flight controls on this type of aircraft during the last 6 months.

87- MDA is:

A) A specified height in a Non-Precision Approach or Circling Approach below which the descent must not be made without the required visual reference.
B) A specified altitude in a Non-Precision Approach or Circling Approach below which the descent must not be made without the required visual reference.
C) Referenced to the Runway Threshold (THR) elevation.
D) Both B and C are correct.

88- Which of the following statements is true?

A) OCH is referenced to aerodrome elevation in precision approach.
B) OCA is referenced to threshold elevation in precision approach.
C) OCH is referenced to threshold elevation.
D) Both OCA and OCH are referenced to aerodrome elevation.

89- If the commander of an aeroplane violates any local rule, regulation or procedure he is to report the matter:

A) To the local Authority without delay.
B) To the Authority of the State of the operator without delay.
C) To the local Authority within ten days.
D) To the Authority of the State of the operator within 14 days.

90- The responsibility to provide flight operations personnel with the relevant parts of the Operations Manual and to ensure the issue of the amendments rests with:

A) Aircraft operator.
B) Aircraft producer.
C) Owner of the aircraft.
D) The national authority.

91- What is the proper phraseology if ATC wants to know if you are RVSM approved?

A) RVSM ok.
B) RVSM approved.
C) Affirmative RVSM.
D) Affirm RVSM.

92- When approaching a cleared Flight level in RVSM airspace, the vertical speed should not exceed:

A) 2000 ft/min
B) 350 ft/min
C) 750 ft/min
D) 1500 ft/min

93- According to the noise abatement takeoff and climb procedure 1(NADP 1), as established in DOC 8168 - OPS Volume 1, part V, aircraft must climb with speed not less than V_2 + 10, until reaching:

A) 2000 ft
B) 500 ft
C) 1500 ft
D) 800 ft

94- Who has the responsibility for establishing operating procedures for noise abatement purposes during instrument flight in compliance with ICAO PANS OPS 8168?

A) The operator.
B) The state of the operator.
C) The state in which the aeroplane is operating.
D) The commander.

95- When setting up a minimum noise climb, the minimum height at which a power reduction shall be allowed is:

A) 600 m (1500 ft)
B) 450 m (1000 ft)
C) 150 m (500 ft)
D) 240 m (800 ft)

96- According to the recommended noise abatement procedures contained in the ICAO, DOC 8168 Volume I part V, data available indicates that the procedure which results in noise relief during the part of the procedure close to the airport:

A) Is procedure 2.
B) Is procedure 1.
C) Is either procedure 1 or 2, because there is not difference in noise distribution.
D) Depends on the wind component.

97- Which one of the following factors should prevent a runway being chosen as the preferential landing runway for noise abatement purposes in visual meteorological condition (VMC)?

A) It has no ILS or visual approach slope guidance.
B) Crosswind component, including gusts, is 10 kts.
C) It has a tailwind component of any value.
D) It has a tailwind component of 3 kts and a crosswind, including gusts, of 12 kts.

98- In accordance with (ICAO) DOC 8168 - OPS, noise preferential routes are established to ensure that departing and arriving aeroplanes avoid overflying noise-sensitive areas in the vicinity of the aerodrome as far as practicable. In establishing noise preferential routes:

A) Turns during takeoff and climb should not be required unless the bank angle for turns is limited to 20° (climbing at V_2 + 10 to 20 kts).
B) Turns during takeoff and climb should not be required unless the aeroplane has reached and can maintain throughout the turn a height of no less than 100 m above terrain and the highest obstacle.
C) No turns should be required coincident with a reduction of power associated with a noise abatement procedure.
D) Turns during takeoff and climb should not be required unless the bank angle for turns is limited to 28° (climbing at V_2 + 10 to 20 kts).

99- According to the recommended noise abatement takeoff and climb procedure 2 (NADP 2) established in ICAO, DOC 8168 Volume I part V, Chapter 3, thrust reduction to climb power has to be done as soon as the aircraft reaches:

A) 2000 ft
B) 3000 ft
C) 800 ft
D) 1500 ft

100- According to ICAO Document 8168 Part V, when using Procedure 2 (NADP 2) for noise abatement, when must you reduce power?

A) Not before 800 ft
B) Not before 1000 ft
C) Not before 2000 ft
D) Not before 3000 ft

101- Noise abatement for landing:

A) Precludes the use of thrust reverse.
B) Should not preclude the use of thrust reverse.
C) Stops use of thrust reverse before the threshold.
D) Allows limited use of thrust reverse.

102- According to ICAO Doc 8168, a noise abatement departure procedure is not to be initiated at less than:

A) 1500 ft above aerodrome elevation.
B) 2000ft above aerodrome elevation.
C) 800 ft above aerodrome elevation.
D) 2000 ft above aerodrome elevation.

103- According to the recommended "noise abatement takeoff and climb procedure" NADP2, established in ICAO Doc 8168, acceleration and flaps/slats retraction is initiated:

A) At 1500 ft.
B) Not below 1000 ft.
C) At 3000 ft.
D) Not below 800 ft.

104- In VMC, a runway should not be chosen as preferential for noise abatement procedures when:

A) It has a tailwind regardless its magnitude.
B) Cross-wind component, including gusts, is 10 kts or less.
C) It has no ILS or visual approach slope guidance.
D) Tailwind component, including gusts, is less than 4 kts.

105- Which statement is correct about noise abatement procedures during landing?

A) There are no noise abatement procedures for landing.
B) These procedures prohibit the use of reverse thrust.
C) These procedures shall not prohibit the use of reverse thrust.
D) These procedures are applied in case of instrument approach only.

106- Which statement is correct concerning noise abatement?

A) There is no prohibition on the use of thrust reverse.
B) Reverse thrust is not permitted at any time.
C) At night, thrust reverse is not permitted.
D) Thrust reverse may be permitted, but only at idle power.

107- Who is responsible for establishing and distributing amendments to noise abatement procedures?

A) The country where the aeroplane is operated.
B) The country where the aeroplane is registered.
C) The country of the operator of the aerodrome.
D) The operator of the aerodrome.

108- For an oxygen diluter demand system, the regulator controls the amount of pure oxygen mixed with air. Following explosive decompression with the regulator set to normal, at what approximate altitude will pure oxygen be supplied?

A) 8000 ft
B) 24000 ft
C) 14000 ft
D) 32000 ft

109- As cabin altitude increases, what happens to the differential pressure?

A) Decreases.
B) Increases.
C) Stays the same.
D) None of the above.

110- When the pressurization system fails, the differential pressure:

A) Rises.
B) Falls.
C) Remains the same.
D) Fluctuates.

111- Following an explosive decompression, the maximum altitude without oxygen at which flying efficiency is not impaired is:

A) 14000 ft
B) 8000 ft
C) 25000 ft
D) 2500 ft

112- Flying at FL390, before what cabin altitude must the oxygen drop out masks be automatically presented?

A) 12000 ft
B) 13000 ft
C) 14000 ft
D) 15000 ft

113- In case of a pressurization malfunction:

1) Noise increases.
2) Change in Cabin Rate of Climb/Descent.
3) Pressure differential decreases.

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

114- Gradual decompression is caused by:

1) Window leak.
2) Door leak.
3) Window blown.
4) Emergency escape hatch open.

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

115- Following a rapid decompression, above what height does a lack of O_2 affect performance:

A) 14000 ft
B) 2500 ft
C) 8000 ft
D) 25000 ft

116- An aeroplane suffers cabin decompression at 24.000 ft, what is the crew's initial reaction:

A) Disconnect autopilot.
B) Put FASTEN SEAT BELTS sign on.
C) Declare MAYDAY.
D) Don O_2 masks.

117- A rapid decompression may be caused by:
1) A leak in a door seal during normal pressurized flight
2) Loss of a cabin compartment window
3) Malfunction of all pressurization systems
4) Loss of a cargo-hold door
The combination regrouping all the correct statements is:
A) 1, 3
B) 1, 2, 3, 4
C) 2, 4
D) 1, 2, 3

118- A warning device alerts the crew in case of an excessive cabin altitude. This warning must be triggered on reaching the following altitude:
A) 10000 ft (approx. 3000 m).
B) 14000 ft (approx. 4200 m).
C) 8000 ft (approx. 2400 m).
D) 12000 ft (approx. 3600 m).

119- A slow decompression may be caused by:
1) A slight air leak from an over-wing exit
2) A malfunction of the pressurization.
3) The loss of a window.
4) The loss of a door.
The combination regrouping all the correct statements is:
A) 1, 2, 3
B) 1, 2
C) 3, 4
D) 1, 2, 3, 4

120- What would be evident during a rapid decompression?
1) Violent rush of gas from lungs.
2) Expansion of body gases.
3) Blast of air to the exterior.
4) Mist in the cabin.

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

121- A braking action of 0, 25 and below reported on a SNOWTAM is:
A) Poor.
B) Unreliable.
C) Medium.
D) Good.

122- The maximum validity of a SNOWTAM is:
A) 24 hours.
B) 12 hours.
C) 6 hours.
D) 3 hours.

123- What is the definition of a wet runway?
A) 25% contamination of the runway with water depth less than 3 mm.
B) More than 25% coverage of water greater than 3 mm deep.
C) Water standing on a runway without grooves or a porous pavement.
D) Water standing on a runway with water depth less than 3 mm appearing non-reflective.

124- When landing in heavy rain:
A) Decrease air speed on landing, area may be more slippery.
B) Increase air speed as rain affects boundary layer.
C) Keep the speed the same until landing.
D) Decrease the landing speed to stick shaker.

125- Viscous hydroplaning is caused by:
A) A smooth and clear runway surface.
B) A smooth and dirty runway surface.
C) Bald tires.
D) A rough runway surface.

126- How is braking efficiency presented?
A) Decimal followed by two significant figures.
B) Sequentially from A to E.
C) Poor, medium, good.
D) As a function of the length of the runway.

127- A runway is considered to be contaminated when its surface is covered more than:
A) 10% with ice.
B) 25% with compacted snow.
C) 20% with melted snow.
D) 15% with melted snow.

128- When there is a risk of hydroplaning, the pilot of air aeroplane:

A) Should make a positive landing, apply maximum reverse thrust and start braking as quickly as possible.
B) Should use maximum reverse thrust, however should start braking below the hydroplaning speed.
C) Should use normal landing, braking and reverse technique.
D) Must wait for landing until the risk for hydroplaning is no longer existing.

129- Landing on a flooded runway in heavy rain:

1) Decrease your approach speed.
2) Make a positive touchdown on the main gear and lower the nose gear as soon as practicable.
3) Increase the approach speed.
4) Make a smooth touchdown.
5) Apply reverse thrust as soon as possible.
6) Brake heavily.

The combination regrouping all the correct statements is:

A) 2, 4, 5, 6
B) 2, 3, 5
C) 2, 5
D) 1, 2, 5

130- What is the most important factor to be taken into account concerning dynamic hydroplaning?

A) Weight of the aeroplane.
B) Liftoff speed.
C) Intensity of the rainfall.
D) Configuration of the aeroplane.

131- A runway is considered to be contaminated when its surface is covered for more than:

A) 15% with ice.
B) 50% with loose snow with a quantity equivalent to more than 2 mm of water.
C) 10% with compacted snow.
D) 25% with loose snow with a quantity equivalent to more than 3 mm of water.

132- When flying above optimum altitude:

A) Range reduces.
B) Mach number stability increases.
C) Flight envelope increases.
D) Range increases.

133- For optimum performance for an aeroplane, a step cruise climb is performed. What is the best level to climb to?

A) Between lock on and optimum levels.
B) Around lock on level.
C) Around optimum level.
D) Below lock on level.

134- RVSM Pre-Flight procedure - the flight crew shall verify the altimeter accuracy by setting the QNH or QFE. The reading should then agree with the altitude of the apron or the zero height indication within:

A) 25 ft
B) 30 ft
C) 75 ft
D) 150 ft

135- Ice accretion depends on many factors including ambient temperature and type of precipitation. Which of the following would give the shortest holdover time?

A) Steady snow.
B) Freezing rain.
C) Rain on a cold soaked wing.
D) Frost.

136- What happens to the EPR if the probe is blocked by ice?

A) Over reads.
B) Under reads.
C) Depends on temperature.
D) Nothing.

137- The holdover time following an anti-icing procedure being carried out will vary considerably depending on the ambient temperature and the weather conditions. For a given ambient temperature, the longest protection will be in weather conditions of:

A) Frost.
B) Freezing fog.
C) Rain on a cold soaked wing.
D) Steady snow.

138- Holdover time can be considerably reduced by:

A) Air temperature being slightly below 0 °C.
B) Airframe temperature being slightly below 0 °C.
C) Strong winds and effect of jet blast from other aeroplanes.
D) Effect of tailwind.

139- What is the worst case for hold over time following de-ice/anti-ice?
A) Freezing rain.
B) Freezing fog.
C) Frost.
D) Snow.

140- When anti-icing has been applied, when must you make sure it is still active?
A) When clear of icing conditions.
B) On rotation.
C) At brake release for takeoff.
D) Until one can use one's own anti-icing equipment.

141- After anti-icing has been completed, a pre-departure inspection reveals presence of frost, ice or snow. The correct action is to:
A) Switch on all the aircraft anti-icing and de-icing systems and leave on until clear of icing conditions when airborne.
B) Complete departure as soon as possible to reduce the possibility of further contamination.
C) Carry out a new de-icing/anti-icing procedure.
D) Complete departure provided that the recommended anti-icing holdover (protection) time for the prevailing conditions and type of fluid used has not been exceeded.

142- In icing conditions, if you have exceeded the holdover time, the correct procedure is to:
A) De-ice again the aircraft, then apply anti-icing fluid.
B) Apply directly anti-icing fluid without conducting previous de-icing procedures.
C) Operate the aircraft de-icing/anti-icing systems.
D) De-ice the aircraft.

143- The anti-icing fluid protecting film can wear off and reduce the holdover time considerably:
A) During strong winds or as a result of other aircraft engines jet blast.
B) When the outside temperature is close to 0°C.
C) When the temperature of the aeroplane skin is close to 0°C.
D) When the aeroplane is parked facing into wind.

144- The application of a Type II anti-icing fluid on an aircraft on the ground will provide a:
A) Limited holdover time.
B) Protection time up to 24 hours.
C) Limited time of protection independent of the outside temperature.
D) Protection against icing for the duration of the flight.

145- After de-icing/anti-icing still in freezing conditions, how should you position the aircraft?
A) In prop and jet wash.
B) In jet wash but not prop wash.
C) In prop wash but not jet wash.
D) In neither.

146- When planning a flight in icing conditions, what are the requirements?
A) Aircraft to be equipped with approved anti-icing equipment.
B) Apply anti-icing fluid.
C) A met officer will decide if the flight can take place.
D) Takeoff anyway and hope for the best.

147- When does the anti-icing holdover time begin on a 2 step procedure?
A) From the start of the anti-icing procedure.
B) From the end of the anti-icing procedure.
C) When all icing deposits have been removed from the airframe.
D) From the start of the de-icing procedure.

148- After the anti-icing time has expired, you should:
A) De-ice then anti-ice.
B) Just de-ice.
C) Do nothing.
D) Just anti-ice.

149- For a de-icing and anti-icing procedure, how are the fluids applied?
A) Both hot.
B) Anti-icing hot, de-icing cold.
C) De-icing hot, anti-icing cold.
D) Both cold.

150- When refueling is been perform while passengers are boarding or disembarking the aircraft, it is necessary that:
A) All the flight crew be on board
B) The aircraft's stairs be completely extended
C) Refueling is prohibited while passengers are boarding and / or disembarking
D) Communications be maintained between ground personnel and qualified personnel onboard

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

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
101	B	114	A	127	B	140	C
102	C	115	C	128	A	141	C
103	D	116	D	129	B	142	A
104	C	117	C	130	B	143	A
105	C	118	A	131	D	144	A
106	A	119	B	132	A	145	D
107	C	120	A	133	C	146	A
108	D	121	A	134	C	147	A
109	A	122	A	135	B	148	A
110	B	123	A	136	A	149	C
111	B	124	B	137	A	150	D
112	D	125	B	138	C		
113	D	126	C	139	A		

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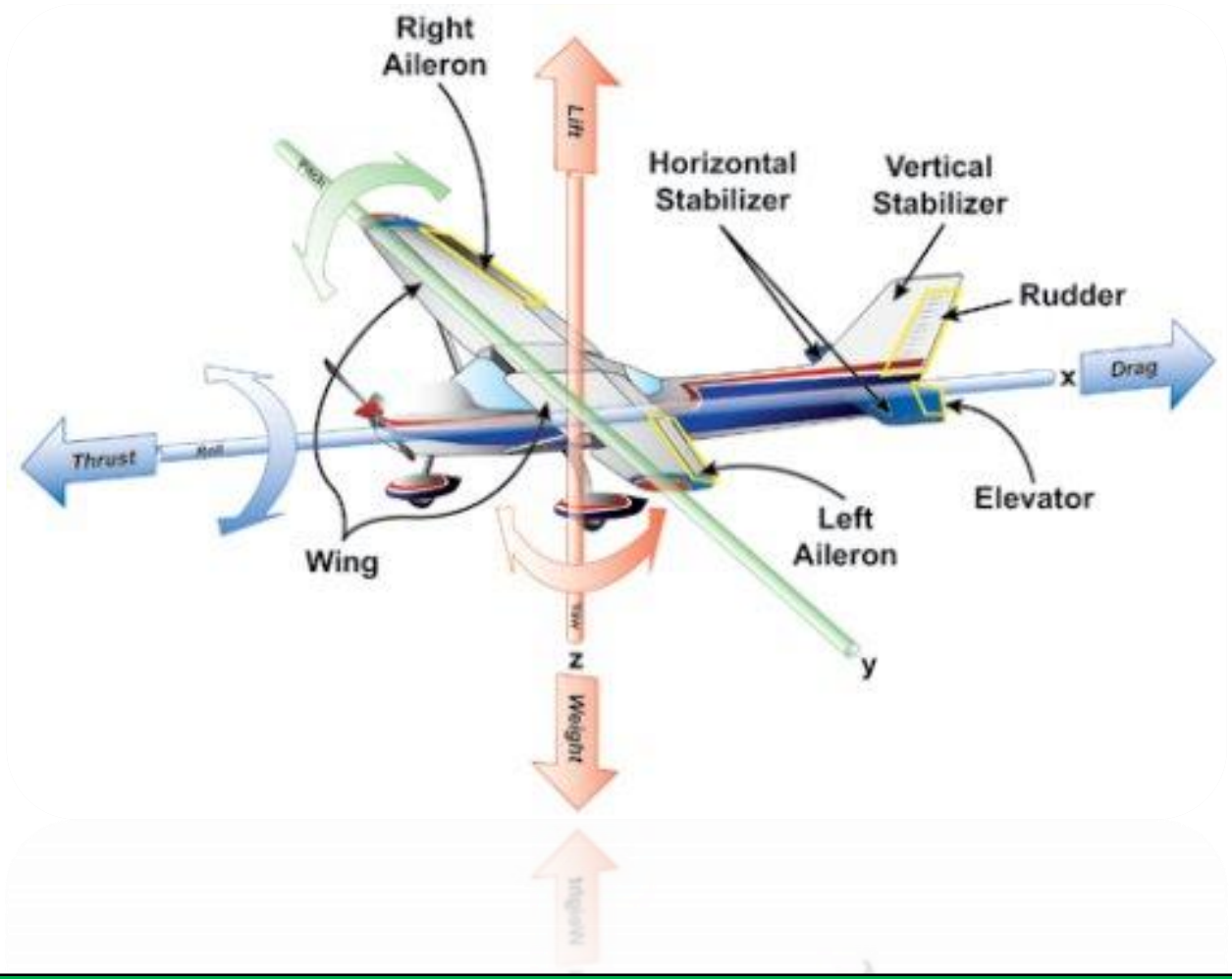
Principles of Flight



1- 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

2- 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

3- 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.

4- 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.

5- 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.

6- 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.

7- 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.

8- 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.

9- 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).

10- 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.

11- 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.

12- 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.

13- 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.

14- 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.

15- 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.

16- 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 angles of attack.

17- 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.

18- 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.

19- 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.

20- 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.

21- 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.

22- 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.

23- 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.

24- The relative thickness of an airfoil is expressed in:

A) Degrees cross section tail angle.
B) % chord.
C) Camber.
D) Meters.

25- 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.

26- 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.

27- 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.

28- 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}.

29- 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.

30- 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.

31- 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.

32- 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.

33- 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.

34- 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.

35- 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.

36- 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.

37- 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.

38- 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.

39- 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

40- 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.

41- 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.

42- 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.

43- 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.

44- 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.

45- 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.

46- For a typical wing the optimum angle of attack is approximately:

A) -3°
B) 0°
C) 4°
D) 8°

47- 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.

48- 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.

49- 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.

50- 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.

51- Maximum gliding distance of an aircraft is obtained when:

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

52- Lift = ½ PV^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.

53- What is the formula for lift?

A) $L = C_L$ ½ PV^2S
B) $L = C_L$ ½ PVS^2
C) $L = C_L$ ½ PVS
D) $L = C_L$ ¼ PV^2S

54- 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°.

55- 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.

56- 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.

57- 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.

58- 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.

59- 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.

60- 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.

61- 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.

62- 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.

63- 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.

64- 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.

65- 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 wing tip, 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.

66- 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.

67- Induced drag of an aircraft would be increased with:
A) Increased speed.
B) Increased weight.
C) Increased aspect ratio.
D) Decreased angle of attack

68- 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.

69- 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.

70- 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.

71- 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.

72- 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.

73- Which of the following wing planforms produces the highest lift coefficient at the wing root?
A) Swept
B) Rectangular
C) Elliptical
D) Tapered

74- 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.

75- 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.

76- 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.

77- How does the total drag vary as speed is increased from stalling speed (V_S to V_{No}) in a straight and level flight at constant weight?
A) Decreasing, then increasing.
B) Decreasing.
C) Increasing.
D) Increasing, then decreasing.

78- 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

79- 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.

80- How does aerodynamic drag vary when airspeed is doubled? By a factor of:
A) 2
B) 1
C) 16
D) 4

81- What does parasite drag vary with?
A) Square of the speed.
B) C_{LMAX}
C) Speed.
D) Weight.

82- 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.

83- 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.

84- 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.

85- 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.

86- 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.

87- 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.

88- 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.

89- 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.

90- 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.

91- 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

92- 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.

93- Parasite drag is linearly proportional to:
A) Speed.
B) Angle of attack.
C) Speed^2.
D) Weight.

94- 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

95- 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

96- 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.

97- 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

98- 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.

99- 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 various points dependent on aircraft weight.

100- 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.

101- Which of the following is the speed in level flight that would activate the stall warning?

A) V_{S1G} + 15 kts
B) $1.2V_{S1G}$
C) $1.05\ V_{S1G}$
D) $1.5\ V_{S1G}$

102- 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 sweepback decreases stall speed.
D) Decreasing sweep angle decreases stall speed.

103- 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.

104- 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.

105- The stalling speed in IAS will change 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.

106- 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.

107- 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.

108- Increase of wing loading will:
A) Decrease the minimum gliding angle.
B) Increase C_{LMAx} .
C) Decrease takeoff speeds.
D) Increase the stall speeds.

109- 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.

110- 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.

111- 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.

112- 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.

113- 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.

114- 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.

115- During a spin to the left, which wing(s) is/are stalled?
A) Neither.
B) Only the left
C) Both.
D) Only the right.

116- 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.

117- 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.

118- Comparing the IAS and TAS stall speed at 5.000 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.

119- 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.

120- 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.

121- 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.

122- 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.

123- 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.

124- 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.

125- 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_{DMAX}) 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.

126- 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.

127- 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.

128- 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.

129- 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.

130- 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.

131- 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.

132- 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.

133- What is the most effective flap system?

A) Single slotted flap.
B) Split flap.
C) Plain flap.
D) Fowler flap.

134- What 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.

135- 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.

136- During the retraction of the flaps a constant angle of attack the aeroplane starts to (all other factors of importance being constant):

A) Bank.
B) Sink suddenly.
C) Climb.
D) Yaw.

137- 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.

138- 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.

139- (Refer to figure C-39) Which type of flap is shown in the picture?

A) Plain flap.
B) Split flap.
C) Single slotted flap.
D) Fowler flap.

140- 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.

141- When deploying the flaps, the effective angle of attack:

A) Decreases.
B) Remains the same.
C) Increases.
D) May increase of decrease depending on the aircraft type.

142- 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.

143- C_{LMAX} may be increased by the used of:
A) Flaps.
B) Slats.
C) Boundary layer control.
D) All answers are correct.

144- 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°.

145- 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.

146- 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.

147- 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.

148- 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.

149- 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.

150- 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.

151- 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.

152- 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.

153- 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.

154- Which of the following increases the stall angle?
A) Slats
B) Flaps
C) Spoilers
D) Ailerons

155- 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.

156- 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} .

157- 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.

158- 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.

159- Trailing edge flaps are used in order to:

A) Decrease stalling speed and reduce max angle of attack thereby achieving a more nose down attitude near and at stalling speed.
B) Increase max lift coefficient by increasing max angle of attack.
C) Increase L/D max.
D) Reducing drag.

160- 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}.

161- 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.

162- 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.

163- 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.

164- 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.

165- 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.

166- 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.

167- 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.

168- Maneuverability is best at:
A) Aft CG position.
B) Forward CG position.
C) High flap settings.
D) Low speed.

169- 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.

170- 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.

171- 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.

172- 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.

173- 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.

174- Moving the CG rearwards will:
A) Have no effect on stability.
B) Increase lateral stability.
C) Increase longitudinal stability.
D) Reduce longitudinal stability.

175- 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.

176- 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.

177- 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.

178- If an aircraft is longitudinally statically unstable, at the same time it will be dynamically:
A) Unstable.
B) Neutral.
C) Stable.
D) Positively stable.

179- 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.

180- 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.

181- Directional static stability is determined by:
A) Aircraft weight.
B) Tail volume.
C) Fin area.
D) Elevator angle for trim.

182- Which of the following gives an unstable contribution in sideslip?
A) Wing sweep.
B) Flap extension.
C) Dihedral.
D) High wing.

183- 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.

184- 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.

185- Directional stability is the stability around the:
A) Longitudinal axis.
B) Lateral axis.
C) Normal axis.
D) Pitch axis.

186- Compared to straight wings, swept back wings have:
A) Less directional stability.
B) Better longitudinal stability.
C) Better directional stability.
D) Less longitudinal stability.

187- 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.

188- 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.

189- 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.

190- Which of the following will reduce lateral stability?
A) Anhedral.
B) Tip tanks.
C) Dihedral.
D) Wing root fairing.

191- 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.

192- 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.

193- 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.

194- 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.

195- 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.

196- 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 ¼ 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.

197- Which type of wing arrangement decreases the static lateral stability of an aeroplane?

A) Increased wing span.
B) Dihedral.
C) High wing.
D) Anhedral.

198- 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.

199- 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.

200- 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.

201- 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}.

202- 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.

203- 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.

204- 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.

205- 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}.

206- 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.

207- 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.

208- 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.

209- 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.

210- 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.

211- Which aeroplane behavior will be corrected by a yaw damper?
A) Spiral dive.
B) Tuck under.
C) Dutch roll.
D) Buffeting.

212- 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.

213- 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.

214- Which moments or motions interact Dutch roll?
A) Rolling and yawing.
B) Pitching and yawing.
C) Pitching and rolling.
D) Pitching and adverse yaw.

215- Which one of the following systems suppresses the tendency to Dutch roll?
A) Rudder limiter.
B) Yaw damper.
C) Roll spoilers.
D) Spoiler mixer.

216- 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.

217- 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 aero plane 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.

218- 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.

219- 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.

220- Dutch roll is a combination of:
A) Pitch and roll.
B) Pitch and yaw.
C) Yaw and roll.
D) None of the above.

221- 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

222- 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.

223- 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.

224- 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.

225- 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.

226- 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.

227- 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.

228- 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

229- 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.

230- 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.

231- 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.

232- 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.

233- 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.

234- 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.

235- 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.

236- 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.

237- When the stick is moved forward, the stabilizer lifts:
A) Decreases.
B) Increases.
C) Remains the same.
D) Initially decreases, then increases.

238- 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.

239- 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.

240- 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.

241- 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.

242- 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.

243- 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.

244- 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.

245- 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.

246- 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.

247- When are outboard ailerons (if present) de-activated?
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.

248- A jet aeroplane equipped with inboard end 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.

249- 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.

250- In what 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.

251- Which component of drag increases most when an aileron is deflected upwards?
A) Induced drag.
B) Interference drag.
C) Wave drag.
D) Form drag.

252- 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.

253- 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.

254- 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.

255- 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.

256- 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.

257- 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.

258- 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.

259- 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.

260- 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.

261- 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.

262- 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.

263- 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.

264- 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.

265- 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.

266- 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.

267- 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.

268- 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.

269- If the elevator trim wheel is move happen to the control range?
A) No effect on range.
B) Increase elevator range.
C) Decrease elevator range.
D) Exceed the stall limits.

270- 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.

271- 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.

272- 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.

273- 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.

274- 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.

275- 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.

276- 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.

277- 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.

278- 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.

279- 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.

280- 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.

281- 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

282- 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.

283- 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.

284- 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.

285- 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 .

286- 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.

287- 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.

288- 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.

289- 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.

290- 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.

291- 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

292- 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°.

293- The bank angle in a rate turn depends on:
A) Wind
B) Weight
C) Load factor
D) TAS

294- 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.

295- 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.

296- The maximum glide range of a wing and:
A) The ratio to 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.

297- 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

298- An aeroplane performs a continuous descent with 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.

299- 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.

300- What factors determine the distance ground 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.

301- in a turn the load factor "n" and the stalling speed V_S will be:

A) "n" greater than 1, Vs higher than in straight and level flight.
B) "n" smaller than 1, Vs 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.

302- 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.

303- 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.

304- To cover the greatest distance when 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.

305- 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 higher turn rate.
B) More right rudder.
C) Less right bank.
D) More left rudder.

306- 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.

307- 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

308- 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.

309- 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.

310- 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.

311- 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.

312- In steady level flight the load actor is:
A) Zero
B) 1.0
C) 1.5
D) 2.0

313- 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.

314- 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.

315- 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.

316- 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.

317- 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.

318- 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.

319- 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.

320- The force which causes an aircraft to turn is given by:
A) The rudder.
B) The ailerons.
C) The wing lift.
D) The weight.

321- 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.

322- 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

323- 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.

324- 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.

325- 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.

326- 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.

327- 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.

328- 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.

329- 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.

330- 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.

331- 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 loss of the vertical component of lift.
C) Due to the loss of the horizontal component of lift.
D) Because the wing tip on the outside of the turn is travelling faster.

332- 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.

333- 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.

334- 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.

335- In a climb the weight component along the flight path is balanced by:

A) Thrust
B) Lift
C) Drag
D) Gravity

336- 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.

337- 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 aero plane's gross weight.
D) Is inversely proportional to the bank angle.

338- 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.

339- Except wind, what other factors affect the glide range?

A) Weight.
B) lift/drag ratio.
C) C_{LMAX}
D) Weight and power required.

340- 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

341- 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

342- 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.

343- In straight and level flight the aircraft's normal axis is approximately:

A) Horizontal
B) Vertical
C) Lateral
D) Longitudinal

344- 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.

345- 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.

346- 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.

347- 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.

348- A yaw damper:
A) Increases rudder effectiveness.
B) Must be disengaged before making a turn.
C) Augments stability.
D) Increases the rate of yaw.

349- A wing which is inclined downwards from root to tip is said to have:
A) Wash out.
B) Taper.
C) Sweep.
D) Anhedral.

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

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

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	A	226	C	251	D	276	D
202	C	227	C	252	B	277	D
203	B	228	A	253	B	278	A
204	A	229	A	254	B	279	D
205	A	230	C	255	B	280	B
206	D	231	D	256	A	281	B
207	A	232	A	257	C	282	B
208	C	233	B	258	C	283	A
209	A	234	A	259	C	284	B
210	B	235	B	260	A	285	A
211	C	236	A	261	D	286	A
212	B	237	B	262	C	287	C
213	B	238	A	263	C	288	B
214	A	239	A	264	B	289	D
215	B	240	D	265	B	290	D
216	A	241	C	266	D	291	A
217	A	242	D	267	B	292	B
218	A	243	C	268	D	293	D
219	D	244	A	269	C	294	B
220	C	245	C	270	A	295	B
221	C	246	A	271	D	296	A
222	A	247	A	272	B	297	C
223	C	248	A	273	D	298	D
224	A	249	B	274	A	299	D
225	C	250	B	275	A	300	A

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
301	A	314	C	327	B	340	D
302	B	315	B	328	D	341	C
303	C	316	D	329	D	342	C
304	D	317	A	330	B	343	B
305	D	318	C	331	B	344	B
306	A	319	A	332	C	345	A
307	A	320	C	333	B	346	B
308	C	321	B	334	C	347	B
309	D	322	A	335	A	348	C
310	D	323	D	336	D	349	D
311	D	324	B	337	A	350	A
312	B	325	D	338	C		
313	A	326	A	339	B		

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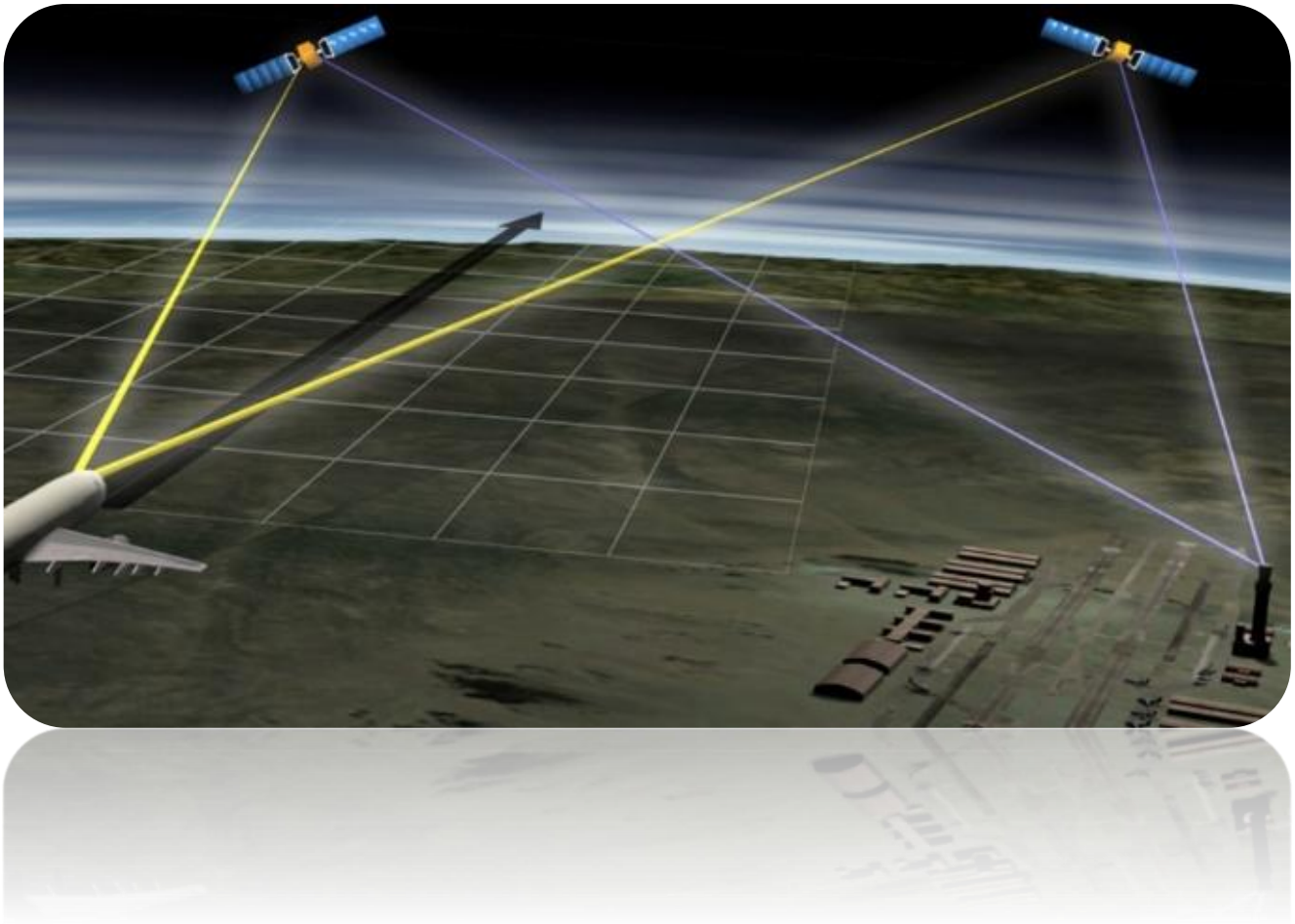
Radio Navigation



1- 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.

2- The frequency band of the VOR is:
A) VHF
B) UHF
C) HF
D) LF and MF

3- 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.

4- 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.

5- 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.

6- 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.

7- 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.

8- 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.

9- 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 an 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

10- 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°

11- 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.

12- 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 stave establishment of phase difference between the reference and the variable signal is not possible.
D) All answers are correct.

13- 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.

14- An aircraft is flying on a heading of 270° (M). The VOR OBS is also set to 270° with the full left deflection and FROM flag displayed. In which sector is the aircraft from the VOR ground station:

A) SE
B) SW
C) NW
D) NE

15- Aircraft is flying on a heading of 270° with 270° set on the OBS and "FROM" indicated. The CDI needle shows 4 dots to the right. Which segment are you in?

A) NE
B) SW
C) SE
D) NW

16- In order to establish what radial you are on you could:

A) Read the OBS when the CDI is centered and the TO/FROM is showing TO.
B) Rotate the OBS until the CDI gets centered and the TO/FROM indicator is showing FROM. Then read the radial on the OBS.
C) Turn the OBS to make the TO/FROM change from TO to FROM. The OBS is now indicating the radial you are on.
D) Turn the aircraft until the CDI is centered. The aircraft magnetic heading is now the reciprocal of the radial you are on.

17- 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.

18- 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.

19- 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.

20- 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.

21- What information does military TACAN provide for civil aviation users?

A) Magnetic bearing.
B) DME.
C) Nothing.
D) DME and magnetic bearing.

22- What use if any dose TACAN provide to civilian users?

A) Bearing information only.
B) Bearing and range information.
C) Range information only.
D) It is of no use to civilian pilots.

23- 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.

24- A VOT is:

A) A VOR test.
B) A terminal VOR.
C) A trial VOR.
D) A tracking VOR.

25- 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°.

26- An aircraft is required to approach a VOR via the 104° radial. 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.

27- 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°

28- 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°

29- An aircraft is on a VOR radial of 290°, heading 260° (M), and with the OBS set to 320°. What is the intercept heading? (Intercept angle=45°)

A) 245°
B) 335°
C) 275°
D) 005°

30- An aircraft is on a VOR radial of 360°, heading 360° (M), and with the OBS set to 020°. What is the intercept heading? (Intercept angle=45°)

A) 065°
B) 335°
C) 045°
D) 315°

31- 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°

32- An aircraft is on a VOR radial of 005°, heading 175° (M), and with the OBS set to 160°. What is the intercept heading? (Intercept angle=45°)

A) 295°
B) 215°
C) 240°
D) 205°

33- 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°

34- 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°

35- 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°

36- 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°

37- Which of the following is a valid frequency (MHz) for a VOR :

A) 107.75
B) 109.90
C) 118.35
D) 112.20

38- What is the approved frequency band assigned to VOR?

A) 108 – 117.975 MHz which is LF.
B) 108 – 117.975 MHz which is MF.
C) 108 – 117.975 MHz which is HF.
D) 108 -117.975 MHz which is VHF.

39- The frequency range of VOR receiver is:

A) 108 – 117.95 MHz
B) 108 – 135.95 MHz
C) 118 – 135.95 MHz
D) 108 – 117.95 KHz

40- An aircraft is tracking inbound to a VOR beacon on the 105° radial. 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

41- 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°

42- 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.

43- 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°

44- 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°

45- 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) 277° radial.
B) 089° radial.
C) 097° radial.
D) 269° radial.

46- An aircraft is required to approach a VOR station via the 244° radial. In order to obtain correct sense indications, the deviation indicator should be set to:

A) 064° with the FROM flag showing.
B) 064° with the TO flag showing.
C) 244° with the FROM flag showing.
D) 244° with the TO flag showing.

47- The OBS is set on 048°, TO appears in the window. The needle is close to full right deflection. The VOR radial is approximately:

A) 218°
B) 058°
C) 038°
D) 238°

48- 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)

49- 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

50- 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

51- 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

52- 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.

53- An aircraft is attempting to VOR on the 064˚ radial, the CDI shows 4 dots fly right with a 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.

54- (refer to figure C-40) 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 below shows the aircraft when it is obtaining a relative bearing of 100° from the NDB?

A) a
B) b
C) c
D) d

55- 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˚

56- 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.

57- (Refer to figure C-41) 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.

58- (Refer to Figure C-42) An aircraft is tracking away from VOR "A" on the 310° radial with 8° right drift; NDB "X" is north of "A". Which diagram below illustrates the RMI when the aircraft is on its present track with a QDR from "X" of 270°?

A) a
B) b
C) c
D) d

59- 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.

60- 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.

61- What would be the identification when a VORTAC is undergoing routine maintenance and is considered unreliable?

A) A test signal, TESTING, is sent every 30 seconds.
B) Identifier is preceded by M and an intermitted OFF V-O-R following the range's name. During periods flag would appear.
C) The identifier would be removed.
D) None

62- When checking the course sensitivity of a VOR receiver, how many degrees should be OBS be rotated to move the CDI from the center to the last dot on either side?

A) 5 to 10
B) 10 to 12
C) 18 to 20
D) 0 to 10

63- How should the pilot make a VOR receiver check when the aircraft is located on the designated checkpoint on the airport surface?

A) Set the OBS on 180° plus or minus 4°; the CDI should center with a FROM indication.
B) Set the OBS on the designated radial. The CDI must center within plus or minus 4° of that radial with a FROM indication.
C) With the aircraft headed directly toward the VOR and the OBS set to 0°, the CDI should center with a TO indication.
D) Set the OBS on the designated radial. The CDI must center within plus or minus 4° of that radial with a TO indication.

64- An aircraft 60 miles from a VOR station has a CDI indication of one-fifth deflection, this represents a course centerline deviation of approximately.

A) 6 miles.
B) 2 miles.
C) 1 mile.
D) 12 miles.

65- When the CDI needle is centered during an airborne VOR check, the OBS and the TO/FROM indicator should read:

A) Within 2°of the selected radial.
B) Within 4°of the selected radial.
C) Within 6°of the selected radial.
D) 0° TO, only if you are due south of the VOR.

66- 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.

67- During a VOT check of the VOR equipment, the course deviation indicator centers on 356° with the TO/FROM reading FROM. This VOR equipment may:

A) Be used if 4° is entered on a correction card and subtracted from all VOR courses.
B) Be used during flight, since the error is within limits.
C) Not be used during VFR flights, since the TO/FROM should read TO.
D) Both A & B

68- 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 deg.
B) Plus 6 or minus 4 deg.
C) Plus or minus 4 deg.
D) Zero

69- (Refer to Figure C-43-1) The VOR receiver has the indications shown, What is the aircraft‘s position relative to the station?

A) North.
B) East.
C) South.
D) West.

70- (Refer to Figure C-43-3) The VOR receiver has the indications shown. What is the aircraft‘s position relative to the station?

A) East.
B) Southeast.
C) West.
D) Northwest.

71- (Refer to Figure C-43-8) The VOR receiver has the indication shown. What radial is the aircraft crossing?

A) 030°
B) 210°
C) 300°
D) 120°

72- 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.

73- The heading of the airplane has a direct relationship to the radial selected on the VOR Indicator.

A) True
B) False

74- 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.

75- 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.

76- 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.

77- 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.

78- 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

79- DME and VOR are “frequency paired” because:

A) The same receiver can be used for both aids.
B) The VOR transmitter is easily converted to the required DME frequency.
C) Cockpit workload is reduced.
D) Both ground transmitter aerials can be placed on the same site if required.

80- In which situation speed indications on an airborne Distance Measuring Equipment (DME) most closely represent the ground speed of an aircraft flying at FL400?

A) When passing abeam the station and within 5 NM of it.
B) When tracking directly towards the station at a range of 100 NM or more.
C) When overhead the station, with no change of heading at transit.
D) When tracking directly away from the station at a range of 10 NM.

81- Which of the following system provides distance information?

A) DME
B) VOR
C) ADF
D) VDF

82- 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.

83- 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.

84- Which one is the most correct statement regarding the range of the DME system?

A) Operates on the principle of phase comparison.
B) Operates on VHF.
C) Range within "line of sight", and maximum approx. 200 NM.
D) Has unlimited range due to ground wave propagation.

85- Which of the following would give the best indication of speed?

A) A VOR on the flight plan route.
B) A VOR off the flight plan route.
C) A DME on the flight plan route.
D) A DME off the flight plan route.

86- 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.

87- 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.

88- A typical DME frequency is:
A) 1000 MHz
B) 1300 MHz
C) 1000 KHz
D) 113.55 MHz

89- Regarding the DME system, which one of the following statements is true?
A) DME operates in the VHF frequency band.
B) The DME measures the phase difference between the reference and variable phase signals to calculate the distance.
C) The transponder reply carrier frequency differs by 63 MHz from that of the interrogation signal.
D) When passing overhead the DME station, the DME will indicate zero.

90- Consider the following statements about distance when using DME, which one is correct?
A) The difference between the two is automatically compensated for in all DME equipment.
B) The difference between the two distances will be negligible for en-route navigation when the indicated distance in NM is more than the height of the aircraft above the DME site, stated in thousands of feet.
C) The horizontal distance is always slightly longer than the slant distance.
D) The operator in the aircraft should always make a mental increase to the indicated range, in order to compensate for the difference between horizontal and slant distance.

91- In which of the following frequency bands does DME operate?
A) UHF
B) SHF
C) VHF
D) EHF

92- The most accurate measurement of speed by DME for an aircraft at 30,000 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.

93- 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.

94- 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.

95- 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.

96- 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.

97- Groundspeed measurement using DME equipment is most accurate when flying:
A) From the station at long range.
B) Directly over the station.
C) Towards the station at short range.
D) Past the station at short range.

98- 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

99- 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.

100- 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

101- The frequency band chosen for NDB is:

A) Upper MF and lower LF
B) VLF
C) Upper LF and lower MF
D) LF

102- NDBs transmit mainly in the:

A) VHF band.
B) UHF band.
C) HF band.
D) MF band.

103- 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.

104- 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.

105- 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.

106- 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.

107- 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.

108- The 95% accuracy for ADF bearings of an NDB by day is:
A) ± 2°
B) ±5°
C) ± 10°
D) ± 3°

109- 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.

110- 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.

111- 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.

112- 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.

113- Do all ADF systems have a sense aerial?
A) Always.
B) Only when a rotating loop system is being used.
C) Never.
D) Only when a fixed loop system is being used.

114- 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°

115- 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.

116- 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.

117- 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°.

118- Given:

Actual QDM: 330°

Actual HDG: 060°

Required QDM: 350°

What should be the first turn to intercept the required QDM?

A) 360°

B) 015°

C) 300°

D) 350°

119- 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°.

120- 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°

121- 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°

122- 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°

123- 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.

124- What gives the greatest error in ADF?
A) Coastal effect.
B) Night effect.
C) Static interference from thunderstorms.
D) Quadrant error.

125- 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.

126- NDBs operate in the:
A) VLF and LF bands.
B) LF and MF bands.
C) VLF, LF and MF bands.
D) VLF and MF bands.

127- 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.

128- 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.

129- 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.

130- 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°.

131- 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

132- 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°

133- 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°

134- 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.

135- (Refer to Figure C-44) 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°

136- (Refer to Figure C-44) 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°

137- (Refer to Figure C-45) 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) 260°
C) 270°
D) 305°

138- (Refer to Figure C-45) 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°

139- (Refer to Figure C-46) Which ADF indication represents the aircraft tracking TO the station with a right crosswind?

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

140- (Refer to Figure C-46-1) Determine the magnetic bearing TO the station:

A) 030°
B) 150°
C) 210°
D) 330°

141- (Refer to Figure C-46-2) What is the magnetic bearing TO the station:

A) 010°
B) 135°
C) 190°
D) 315°

142- (Refer to Figure C-46-2) Determine the approximate heading to intercept the 180° bearing TO the station:

A) 040°
B) 160°
C) 180°
D) 220°

143- (Refer to Figure C-46-3) What is the magnetic bearing from the station?

A) 090°
B) 115°
C) 270°
D) 295°

144- (Refer to Figure C-46-1) What outbound bearing is the aircraft crossing?

A) 030°
B) 150°
C) 210°
D) 330°

145- (Refer to Figure C-47-1) The relative bearing TO the station is:
A) 045°
B) 180°
C) 135°
D) 315°

146- (Refer to Figure C-47-2) The relative bearing TO the station is:
A) 090°
B) 180°
C) 270°
D) 360°

147- (Refer to Figure C-47-4) On a magnetic heading of 320°, the magnetic bearing TO the station is:
A) 005°
B) 045°
C) 185°
D) 225°

148- (Refer to Figure C-47-6) If the magnetic bearing TO the station is 240°, the magnetic heading is:
A) 015°
B) 045°
C) 195°
D) 225°

149- (Refer to Figure C-47-8) If the magnetic bearing TO the station is 135°, the magnetic heading is:
A) 135°
B) 270°
C) 315°
D) 360°

150- 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.

151- The ADF receiver will give an "OFF" indication if the station signal is unreliable.
A) True
B) False

152- ADF quadrantal Error is caused by:

A) Static build up on the airframe and St. Elmo's Fire.
B) The aircraft's major electrical axis, the fuselage, reflecting and re-radiating the incoming NDB transmissions.
C) Station interference and/or night effect.
D) NDB signals speeding up and bending as they cross from a land to water propagation path.

153- In order to Tune, Identify and Monitor NON A1A NDB emissions the BFO should be used as follows:

	Tune	Identify	Monitor
A)	On	On	Off
B)	On	On	On
C)	On	Off	Off
D)	Off	Off	Off

154- (Refer to Figure C-48) An aircraft is tracking away from an NDB on a track of 023°(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

155- 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.

156- (Refer to Figure C-49) An aircraft has an RMI with two needles. Assume that:
i) The aircraft is outbound from NDB Y on a track of 126°(M) drift is 14° left.
ii) A position report is required when crossing a QDR of 022° from NDB Z.
Which of the diagrams below represents the RMI at the time of crossing the reporting point?

A) a
B) b
C) c
D) d

157- An aircraft on a heading of 235°(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.

158- The heading read on a standard RMI is:

A) The magnetic track.
B) The relative heading.
C) The magnetic heading.
D) The true heading.

159- 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.

160- 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.

161- 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.

162- 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°

163- 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.

164- 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°.

165- (Refer to Figure C-50) Which RMI illustration indicates the aircraft to be flying outbound on the magnetic bearing of 235° FROM the station? (wind 050° 20 knots.)

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

166- (Refer to Figure C-50) Which RMI illustration indicates the aircraft is southwest of the station and proceeding TO the station?

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

167- (Refer to figure C-50) What is the magnetic bearing TO the station as indicated by illustration "4"?

A) 285°
B) 055°
C) 105°
D) 235°

168- (Refer to figure C-50) Which RMI illustration indicates the aircraft is located on the 055° radials of the station and heading away from the station?

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

169- The radio magnetic indicator or RMI is usually composed of a single-bar needle, double-bar needle ….

A) And a fixed compass card.
B) And a slaved compass card.
C) Ambiguity indicator, and a fixed compass card.
D) A TO-FORM indicator, and a slaved compass card.

170- The RMI is oriented toward:

A) True north.
B) Magnetic north.
C) Grid north.
D) The nose of the aircraft.

171- On an HSI (horizontal situation indicator) used in combination with a VOR receiver:

A) A pictorial presentation of aircraft deviation relative to VOR radials is provided.
B) The lubber line will indicate the reciprocal value of the received radial.
C) The lubber line will indicate the selected radial.
D) There will be no Omni Bearing Selector knob, as this function is automatic on this type of indicator.

172- 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.

173- An aircraft is on the 220° radial from a VOR station. Course 090° is selected on the HSI. If the magnetic heading is 360°, the deviation bar relative to the aeroplane model, will be:

A) Behind.
B) In front.
C) Right.
D) Left.

174- 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.

175- 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.

176- 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°

177- (Refer to figure C-51) What is the lateral displacement of the aircraft in nautical miles from the radial selected on the No. 1 NAV?
A) 2.5 NM
B) 5.0 NM
C) 7.5 NM
D) 10.0 NM

178- (Refer to figure C-51) On which radial is the aircraft as indicated by the NO. 1 NAV?
A) Radial 075°
B) Radial 165°
C) Radial 345°
D) Radial 355°

179- (Refer to figure C-51) Which OBS selection on the NO.1 NAV would center the CDI and change the ambiguity indication to a TO?
A) 175°
B) 165°
C) 345°
D) 355°

180- (Refer to figure C-51) What is the lateral displacement in degrees from the desired radial on the No.2 NAV?
A) 1°
B) 2°
C) 4°
D) 8°

181- (Refer to figure C-51) Which OBS selection on the Answer NO. 2 NAV would center the CDI?
A) 174°
B) 170°
C) 166°
D) 335°

182- (Refer to figure C-51) Which OBS selection on the NO.2 NAV would center the CDI and change the ambiguity indication to a TO?
A) 166°
B) 174°
C) 346°
D) 354°

183- (Refer to figure C-52) To which aircraft position does HSI presentation "A" correspond?
A) 1
B) 8
C) 4
D) 11

184- (Refer to figure C-52) To which aircraft position does HSI presentation "B" correspond?
A) 4
B) 9
C) 13
D) 19

185- (Refer to figure C-52) To which aircraft position does HSI presentation "C" correspond?
A) 2
B) 6
C) 7
D) 12

186- (Refer to figure C-52) To which aircraft position does HSI presentation "D" correspond?
A) 4
B) 10
C) 15
D) 17

187- (Refer to figure C-52) To which aircraft position does HSI presentation "E" correspond?
A) 5
B) 6
C) 15
D) 19

188- (Refer to figure C-52) To which aircraft position does HSI presentation "F" correspond?

A) 6
B) 10
C) 14
D) 16

189- How many satellites make up the Global Positioning System (GPS)?

A) 20
B) 22
C) 25
D) 24

190- 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.

191- 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.

192- 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

193- 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

194- 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.

195- One disadvantage of the GPS is that it is adversely affected by electrical disturbances such as thunderstorms and precipitation static.

A) True.
B) False.

196- The sky waves formed by the low frequency LORAN transmitters are not considered as reliable for navigation as the ground waves.

A) True.
B) False.

197- A LORAN chain is composed of stations designated as:

A) AM and FM.
B) High and low.
C) Main and auxiliaries.
D) Master and Secondary's.

198- The principle of operation of Loran C is:

A) Timing the interval between transmitted and received pulses.
B) Differential range by frequency comparison.
C) Differential range by pulse transmissions.
D) Differential range by phase comparison.

199- The frequency range of LORAN C is:

A) 90-110 MHz, LF
B) 90-110 kHz, MF
C) 90-110 MHz, VHF
D) 90-110 kHz, LF

200- The coverage of LORAN C is:

A) Specified areas only
B) Northern hemisphere only
C) Oceanic areas
D) Northern hemisphere oceanic areas

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

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

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System

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- Magnetos are:

A) Fitted within the distributor, and fire in the same sequence as the spark-plugs.

B) Generators, driven by the cam-shaft, used to supply electrical equipment

C) Used to generate low voltage sparks for the spark-plugs.

D) Self-contained, engine driven, electrical generators which produce high voltage sparks.

4- Which of the following is an appropriate action to take if you have a carburetor fire on startup?

A) Deselect carburetor heat.

B) Select mixture control to Idle Cut off (ICO).

C) Turn the starter switch to "Off".

D) All answers are correct.

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- The power output of an internal combustion engine can be increased by:

A) Increasing the size of the fuel tank.

B) Decreasing the area of the cylinder.

C) Decreasing the length of the stroke.

D) Increasing the engine RPM.

7- Immediately after starting an aircraft engine, you must check the starter warning light. If it is still illuminated, you should:

A) Shut down the engine, count to 30, and then attempt a re-start.
B) Monitor it for 30 seconds. If it remains illuminated shut down the engine.
C) Do nothing. The starter warning light should stay on while the engine is running.
D) Shut down the engine immediately.

8- The significance of using the chemically correct mixture of air and fuel is that:

A) It is 15:1 by volume.
B) It is the one usually used.
C) It allows complete combustion to occur.
D) It gives the best results.

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- During one complete Otto Cycle, the piston:

A) Rotates around the gudgeon pin twice.
B) Moves towards the cylinder head twice.
C) Receives two power strokes.
D) Moves towards the cylinder head four times.

11- While taxying in an aircraft fitted with a fixed pitch propeller, you suspect that you have carburetor icing. The correct action to take would be to:

A) Select carburetor heat to fully hot. Then, before take-off, select carburetor heat cold, making sure that the engine develops the correct minimum take-off RPM.
B) Select carburetor heat to fully hot and leave this setting selected until you have taken off and are climbing away.
C) Select carburetor heat to fully hot then select cold as the RPM drops.
D) Avoid the use of carburetor heat on the ground, and rely on the heat of the engine within the cowlings to melt the ice.

12- Detonation could result from using:

A) Too high RPM.

B) Too low a manifold pressure.

C) A higher grade fuel than recommended.

D) Too weak a mixture.

13- Pre-ignition in a four stroke piston engine is:

A) The fuel / air mixture burning earlier than it should.

B) Caused by a rich mixture in a hot engine.

C) The explosive combustion of the fuel-air mixture.

D) Characterized by the ringing nature of the explosion it causes.

14- If the engine gets too hot, the mixture may ignite before the spark plug fires.

A) This is called detonation.

B) This is called pre-ignition.

C) The mixture should be weakened to assist in cooling the engine.

D) The throttle should be opened to assist in cooling the engine.

15- To assist in reducing the temperature of the engine:

A) The air/fuel mixture can be weakened.

B) The airspeed can be reduced.

C) The cowl flaps can be closed.

D) The air/fuel mixture can be richened.

16- (Refer to figure C-53) The component parts of the wing shown in the diagram are ”A / B / C“:

A) Front Spar / Formers / Rear Spar

B) Primary Spar / Formers / Stringer

C) Front Spar / Secondary Spar / Former

D) Stringers / Secondary Spar / Former

17- Engine compression ratio is the ratio of the:

A) Total volume to the clearance volume.

B) Clearance volume to the swept volume.

C) Swept volume to the total volume.

D) Swept volume to the clearance volume.

18- 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.

19- In the event of an alternator or generator failure during flight the:

A) Electrical loads should be reduced to a minimum and a landing made as soon as safely practicable.
B) Flight may be continued normally because the battery supplies all electrical loads.
C) Alternator master switch should be turned off and flight continued normally without electrical power.
D) All answers are correct.

20- Within one "Otto" cycle, the valves of a four stroke piston engine will each open:

A) Twice.
B) Once.
C) During the power stroke.
D) During the induction stroke.

21- The normal method for shutting down an aircraft engine is:

A) Closing the throttle and moving the mixture to ICO.
B) Switching the starter switch to off.
C) Moving the mixture to Idle Cut-Off (ICO).
D) Closing the throttle.

22- Carbon monoxide gas, which is highly toxic, may enter the aeroplane cabin in flight because of an exhaust system defect. Carbon Monoxide:

A) Has a very distinctive taste.
B) May be identified by its strong smell.
C) May be identified by its grey color.
D) Is odorless and colorless.

23- 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.

24- During flight if altitude _____ and density_____ the mixture should be ___

A) Increases / Decreases / Lean
B) Increases / Decreases / Rich
C) Decreases / Increases / Lean
D) Decreases / Decreases / Rich

25- The power output of a four-stroke piston engine at sea level:

A) Is constant as RPM increases.
B) Is proportional to the volume of mixture induced into the cylinder.
C) Increases as RPM increases.
D) Increases initially, then remains constant as RPM increases.

26- 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.

27- 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.

28- The exhaust gas temperature gauge:

A) Requires power from the DC bus-bar.
B) Is an engine instrument designed to protect the engine from excessive heat.
C) Does the same job as the cylinder head temperature gauge.
D) Can indicate whether the air-fuel mixture being drawn into the combustion chamber is too lean or too rich.

29- The correct working cycle of a four stroke engine is:

A) Induction, compression, power, exhaust.
B) Exhaust power induction, compression.
C) Induction, power, compression, exhaust.
D) Exhaust, induction, power, compression.

30- It is important to ensure the priming pump is locked after use because:

A) It may cause fuel to be sucked from the fuel strainer into the inlet manifold, causing an extremely rich mixture.

B) It may cause a fuel leak, resulting in an increased fire risk.

C) It may cause fuel to be sucked from the fuel tank into the carburetor, causing an extremely rich mixture.

D) If it vibrates closed, it will cause the engine to stop.

31- The temperature of the gases within the cylinder of a four stroke engine during the power stroke will:

A) Remain constant.

B) Decrease.

C) Follow Charles's Law.

D) Increase.

32- Baffles:

A) Are directional air guides which direct the airflow fully around the cylinder.

B) Are placed within the lubrication system to slow down the passage of oil into the engine.

C) Reduce the flow of air around the engine.

D) Must be close fitting to reduce the flow of air around the engine.

33- Pre-ignition:

A) Occurs after ignition.

B) Is also known as pinking.

C) Is usually caused by a hot spot in the combustion chamber.

D) Happens after the spark occurs at the plug.

34- The compression ratio of a piston engine is the ratio of the:

A) Swept volume to clearance volume.

B) Total cylinder volume to the volume when the piston is at bottom dead center (BDC).

C) Total cylinder volume to swept volume.

D) Cylinder volume when the piston is at BDC to the cylinder volume when the piston is at TDC.

35- Detonation is:

A) Unstable combustion.

B) An explosion that occurs before the normal ignition point.

C) Usually associated with a rich mixture and high cylinder head temperature.

D) Usually associated with a weak mixture and a low cylinder head temperature.

36- The cylinder head temperature gauge:

A) Obtains its information from a probe which is installed about four inches from the cylinder head on the exhaust system.

B) Is primarily a fuel management instrument.

C) Requires alternating current to power the instrument needle.

D) Obtains its temperature information from the hottest engine cylinder, by means of a probe consisting of two dissimilar metals joined together.

37- The principal reason why light training aircraft have fixed undercarriages is that:

A) The reduced performance caused by the additional drag of a fixed undercarriage is offset by its simplicity, low cost and easy maintenance.

B) Training aircraft need to maneuver on the ground.

C) Training aircraft need to ensure that kinetic energy on landing is absorbed.

D) Training aircraft need to be supported at a convenient height

38- 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.

39- 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.

40- 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.

41- On a fixed pitch propeller aircraft whose engine is fitted with a carburetor, the indication of induction system icing are:

A) A rise in engine oil temperature and a fall in oil pressure.

B) A sudden drop in RPM and engine temperature.

C) A rise in manifold pressure and a reduction in air-speed, in level flight.

D) A gradual drop in RPM and possible rough running and vibration.

42- 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.

43- How soon after starting a cold aircraft engine in the summer should the oil pressure gauge give an indication?

A) By the time pre-flight checks are complete, otherwise shut down the engine.

B) Immediately, otherwise shut down the engine.

C) Within 30 seconds, otherwise shut down the engine.

D) As long as the oil levels were at an adequate level before start-up, and RPM is within limits, it is probable that the oil pressure gauge is faulty and should be reported after the flight.

44- The piston rod in a reciprocating engine forms a link between

A) The cylinder piston and the crankshaft.

B) The cylinder piston and the camshaft.

C) The valve rod and the rocker arm.

D) The rocker arm and the valve body.

45- The purpose of fins around the cylinder of a reciprocating air-cooled aircraft engine is a:

A) Lower engine aerodynamic drag.

B) Cylinder augmentation.

C) Better cylinder cooling.

D) Lower engine mass.

46- The power of an aviation engine without a supercharger decreases with altitude because of:

A) Lower air density it receives too rich fuel/air mixture.

B) Lower outside temperatures it does not operate at optimum temperature.

C) Higher air density it receives too poor fuel/air mixture.

D) Lower air density and therefore insufficient cylinder loading.

47- A reciprocating aviation engine develops the highest power:

A) In level flight at low altitude.

B) At high altitudes.

C) During takeoff with full RPM.

D) During takeoff.

48- Oil in a reciprocating engine serves:

A) For lubricating and cooling of the engine.

B) To increase mixture combustion temperature in the cylinders.

C) As additive for proper fuel/air which burns in the cylinders.

D) For quiet engine operating only.

49- What would be the most likely cause of fluctuating oil pressure in an aircraft engine?

A) Loose prop seal.

B) Worn or loose bearing.

C) Low oil level.

D) Faulty oil pressure indicator.

50- When the engine is stopped, the main source of electrical power is the:

A) Magneto.

B) Battery.

C) Generator or alternator.

D) Circuit breaker.

51- To which source of electrical power is the starter of an aircraft engine connected to?

A) Directly to the battery.

B) To the external source of electrical power only.

C) To the alternator or generator.

D) Depends on the type of aircraft.

52- The battery master switch should be turned to OFF after the engine is stopped to avoid the battery discharging through the:

A) Alternator or generator.

B) Magnetos.

C) Ignition switch.

D) Electrical services connected to it.

53- On a reciprocating engine, what is the purpose of monitoring exhaust temperature gauge (EGT)?

A) Engine temperature to prevent detonation.

B) Carburetor icing.

C) Oil temperature.

D) Oil consumption.

54- 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.

55- 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.

56- 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.

57- 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.

58- 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

59- 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.

60- 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.

61- 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.

62- The empennage consists of the:

A) Horizontal stabilizer only.

B) Horizontal and vertical stabilizer.

C) Vertical stabilizer only.

D) Tailplane only.

63- 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.

64- 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.

65- 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.

66- Wings without exterior support are called:

A) Mono-lever.
B) Monocoque.
C) Cantilever.
D) Sweepback.

67- 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.

68- 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.

69- (Refer to figure C-54) If piston A has an area of 2 cm^2 and piston B has an area of 10 cm^2, when piston B moves down by 5 cm, how far will piston A have moved?

A) 25 cm
B) 10 cm
C) 5 cm
D) 0.5 cm

70- 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.

71- (Refer to figure C-55) In the hydraulic press schematically shown, what balancing force would be acting on the right hand side?

A) 20 N

B) 1 N

C) 4 N

D) 100 N

72- (Refer to figure C-56) In the diagram (not to scale), the balancing force required on the right hand side is:

A) 1 N

B) 1000 N

C) 20 N

D) 100 N

73- 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.

74- 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.

75- 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

76- 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.

77- 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.

78- 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.

79- 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.

80- 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.

81- In a modern transport aircraft what type of hydraulic fluid is typically used?

A) Synthetic.

B) Mineral.

C) Mineral/alcohol.

D) Vegetable.

82- 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.

83- 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.

84- 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

85- 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.

86- What color is the hydraulic liquid in a modern jet-powered aircraft?

A) Purple

B) Red

C) Yellow

D) Pink

87- 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.

88- 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.

89- 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.

90- 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.

91- 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.

92- 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.

93- 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.

94- 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.

95- 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.

96- 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 max 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.

97- 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.

98- 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.

99- 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.

100- 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.

101- 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.

102- The damping element in a landing gear shock absorber used on large aircraft is:

A) Oil

B) Nitrogen

C) Oxygen

D) Springs

103- 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.

104- The systems used for emergency extension of landing systems may comprise of:

1) Compressed CO_2

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

105- 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.

106- 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.

107- 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.

108- 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

109- 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.

110- 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.

111- 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.

112- The range of control surface movements is limited by:

A) Leaving control cables a little stack.

B) Tensioning control cables correctly.

C) Defined limits is the Operations Manual.

D) Providing control stops.

113- 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.

114- 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.

115- 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.

116- 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.

117- With which system is differential control associated?

A) Trim system.

B) Aileron system.

C) Rudder system.

D) Elevator system.

118- 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.

119- 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.

120- 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.

121- 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.

122- 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.

123- 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

124- 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.

125- 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

126- 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.

127- 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.

128- 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.

129- 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.

130- 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.

131- 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).

132- The ice protection for propellers of modern turboprop aeroplanes works:

A) With anti-icing fluid.

B) Pneumatically.

C) With hot air.

D) Electrically.

133- 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.

134- 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

135- 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.

136- 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.

137- 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.

138- 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.

139- 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.

140- 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.

141- 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.

142- Fuel is pressurized to:

A) Prevent cavitation.

B) Prevent vapor lock.

C) Keep constant fuel flow in negative G.

D) Prevent fuel icing.

143- 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.

144- 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.

145- 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.

146- 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.

147- 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.

148- 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.

149- 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.

150- 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.

151- 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.

152- The fuel tanks in small aircraft are mainly located:

A) In the wings.

B) In the tail section of the aircraft.

C) In the fuselage.

D) Close to the engine.

153- Fuel tank booster pumps are typically:

A) Centrifugal, low pressure.

B) Centrifugal, high pressure.

C) Gear type, low pressure.

D) Gear type, high pressure.

154- 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.

155- The pressurization of tanks is maintained by the fuel:

A) Vent system.

B) Tank drains.

C) Top off unit.

D) Dump system.

156- 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.

157- The high pressure fuel pumps are driven by:

A) Hydraulic pressure.

B) Air pressure.

C) The engine.

D) The electrical system.

158- 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.

159- 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.

160- 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.

161- 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.

162- 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.

163- 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.

164- Which fuel tanks are heated?

A) Wing tanks.

B) Fuselage tanks.

C) All tanks.

D) None.

165- 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.

166- On what principle does a fuel flow meter work?

A) Volume and viscosity.

B) Quantity of movement.

C) Capacitive dielectric.

D) Pressure and temperature.

167- 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.

168- The most widely used electrical frequency in aircraft is:

A) 115 Hz

B) 200 Hz

C) 50 Hz

D) 400 Hz

169- 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.

170- 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.

171- 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.

172- 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.

173- 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.

174- 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.

175- 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.

176- 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

177- Ohm's law states:

A) I=R ÷ V

B) R = I ÷ V

C) I=V ÷ R

D) I =V ×R

178- Electrical potential is measured in:

A) Watts

B) Amperes

C) Ohms

D) Volts

179- 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.

180- The most common overload protection device used in aircraft is:

A) Circuit breakers.

B) Fuses.

C) Blow torches.

D) Relays.

181- 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

182- 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.

183- Batteries are rated in:

A) Amperes / volts.

B) Amperes x hours.

C) Watts.

D) Ohms.

184- 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.

185- 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

186- 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.

187- 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.

188- The electrolyte in a Nickel-Cadmium battery is:

A) Hydrogen peroxide.

B) Nickel dioxide.

C) Potassium hydroxide.

D) Potassium chloride.

189- 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.

190- 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.

191- 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 are volume and weight inefficient.

D) The lead-acid battery is too heavy.

192- The capacity of a typical lead-acid battery for use in small general aviation aircraft is:

A) 24 V

B) 12-18 Ah

C) 4-8 Ah

D) 12 Volts

193- 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.

194- 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.

195- 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.

196- 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.

197- The moving part in an AC generator is usually referred to as the:

A) Stator.

B) Rotor.

C) Oscillator.

D) Slip ring.

198- 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.

199- 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.

200- 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.

201- 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.

202- 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.

203- 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.

204- 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.

205- 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.

206- Generator paralleling through bus bars 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.

207- In a four-stroke piston engine, the only "DRIVING" stroke is:

A) Compression

B) Induction

C) Power

D) Exhaust

208- The correct formula to calculate the multi-cylinder engine displacement (engine capacity) is:

A) Cylinder length x cylinder diameter

B) Piston area x piston stroke x number of cylinders

C) Piston area x piston stroke

D) Cylinder volume x number of cylinders

209- In a piston engine the manifold pressure:

A) Is affected only by altitude.

B) Increases as the throttle is opened.

C) Decreases as the throttle is opened.

D) Is unaffected by throttle position.

210- IHP BHP and FHP are all terms related as follows:

A) IHP is the power measured at the prop shaft, BHP is the power produced in the cylinders and FHP is the power available in the fuel due to the calorific value.

B) IHP is the power produced in the cylinders, BHP is the power produced at the crankshaft and FHP is the difference between IHP and BHP.

C) IHP + BHP + FHP = mechanical efficiency

D) IHP -BHP = thermal efficiency.

211- The conditions which can cause knocking are:

A) Low manifold pressure and high fuel flow.

B) High manifold pressure and high revolutions per minute.

C) Low manifold pressure and high revolutions per minute.

D) High manifold pressure and low revolutions per minute.

212- With a piston engine, when detonation is recognized, you:

A) Increase manifold pressure and enrich the mixture.

B) Reduce manifold pressure and lean the mixture.

C) Reduce manifold pressure and enrich the mixture.

D) Increase manifold pressure and lean the mixture.

213- The first indication of carburetor icing during cruise, in aeroplanes equipped with constant speed propellers, would most likely be a:

A) Rough running engine followed by an increase in manifold pressure.

B) Decrease in manifold pressure.

C) Decrease in RPM.

D) Rough running engine followed by loss in RPM.

214- The main reason for opening the cowl flaps is to control the:

A) Cabin temperature.

B) EGT (exhaust gas temperature).

C) Oil temperature.

D) CHT (cylinder head temperature).

215- During ground operation of an engine, the cowl flaps should be in what position?

A) Closed to avoid excessive drag on takeoff.

B) Open to provide liquid coolant flow from the radiator through the engine.

C) Closed.

D) Open.

216- The ignition occurs in each cylinder of a four-stroke engine (TDC = Top Dead Centre):

A) After TDC at each second crankshaft revolution.

B) Before TDC at each crankshaft revolution.

C) After TDC at each crankshaft revolution.

D) Before TDC at each second crankshaft revolution.

217- In a 4-stroke engine, when does ignition occur in each cylinder?

A) After TDC for starting and then before TDC every 2nd rotation of the crankshaft.

B) Before TDC for starting and then after TDC every 2nd rotation of the crankshaft.

C) After TDC for starting and then before TDC every rotation of the crankshaft.

D) Before TDC for starting and then after TDC every rotation of the crankshaft.

218- From the cruise, with all the parameters correctly set, if the altitude is reduced, to maintain the same mixture the fuel flow should:

A) Decrease.

B) Increase.

C) Remain the same.

D) Increase or decrease, depending on the engine type.

219- What will happen to the geometrical pitch angle of a "constant speed propeller" if the manifold pressure is increased?

A) It will increase and after a short time it will be the same again.

B) It will increase.

C) It will decrease so that the engine can increase.

D) It will remain the same.

220- 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.

221- 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.

222- When in flight, a piston 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.

223- 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.

224- 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.

225- 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.

226- 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.

227- 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.

228- 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.

229- 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.

230- Constant-speed propellers provide a better performance than fixed-pitch propellers because they:

A) Have a same 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.

231- With a fixed pitch propeller increasing speed will …….. propeller alpha and increasing power and therefore propeller RPM will …….. propeller alpha.

A) Decrease; decrease

B) Increase; decrease

C) Decrease; increase

D) Increase; increase

232- 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.

233- 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.

234- 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.

235- 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.

236- 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.

237- 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.

238- 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.

239- 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.

240- The forces acting on a propeller are:

A) Thrust only.

B) Thrust and drag only.

C) Torque only.

D) Thrust and torque.

241- 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.

242- A single engine 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.

243- 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.

244- The first action in event of propeller runaway (over speed condition), should be to:

A) Feather the propeller.

B) Reduce the RPM lever setting.

C) Push the RPM lever fully forward.

D) Close the throttle.

245- A typical fixed pitch propeller (e.g. C-172) is designed to achieve its optimum angle of attack at:

A) Low forward speeds, such as during takeoff.

B) Cruise speed.

C) Rest to case engine starting.

D) Maximum speed for high performance.

246- A variable pitch propeller during takeoff will move 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.

247- A propeller is turning to the right, seen from behind. The asymmetric thrust effect in the climb will:

A) Roll the aeroplane to the right.

B) Roll the aeroplane to the left.

C) Yaw the aeroplane to the right.

D) Yaw the aeroplane to the left.

248- A propeller is turning to the right, seen from behind. The asymmetric thrust effect is mainly induced by:

A) Large angles of yaw.

B) High speed.

C) High angles of attack.

D) Large angles of climb.

249- A propeller turns to the right, torque effect in the takeoff will:

A) Pitch the aeroplane nose up.

B) Pitch the aeroplane nose down.

C) Roll the aeroplane to the right.

D) Roll the aeroplane to the left.

250- Which of the following would change the magnitude of the gyroscopic precession effect of the propeller?

A) Propeller blade angle.

B) Rate of roll.

C) Propeller RPM.

D) TAS.

251- A propeller rotating anti-clockwise when viewed from the front, during the takeoff ground roll will:

A) Produce an increased load on the left wheel due to torque reaction.

B) Produce an increased load on the right wheel due to gyroscopic effect.

C) Produce an increased load on the right wheel due to torque reaction.

D) Produce an increased load on the left wheel due to gyroscopic effect.

252- Gyroscopic precession of the propeller is induced by:

A) Pitching and rolling.

B) Pitching and yawing.

C) Increasing RPM and yawing.

D) Increasing RPM and rolling.

253- For an aircraft with a right hand propeller, the slipstream rotation will cause:

A) Yaw to the left.

B) Yaw to the right.

C) Roll to the left.

D) Roll to the right.

254- To counteract the effect of slipstream on a single engine aircraft:

A) The horizontal stabilizer should be reduced in size.

B) The fin should be placed as far as possible from the propeller.

C) Higher setting should be used.

D) Frise ailerons should be used.

255- For a tail wheel aircraft with a right handed propeller, at the start of the takeoff run, asymmetric blade effect causes:

A) Yaw to right.

B) No effect.

C) Nose down pitch (tail up).

D) Yaw to left.

256- In twin engine aeroplanes with propellers turning clockwise as seen from behind:

A) The left engine produces a higher yaw moment if the right engine fails than vice versa.

B) The left engine is the critical engine.

C) The minimum control speed is determined by the failure of the right engine.

D) The right engine is the critical engine.

257- In which of the following lists of flight conditions will torque effect be greatest in a single-engine aeroplane?

A) Low airspeed / high power / high angle of attack.

B) High airspeed / high power/ high angle of attack.

C) Low airspeed / low power / low angle of attack.

D) High airspeed / low power / low angle of attack.

258- Which of the following would alter the gyroscopic effect of a propeller?

A) Roll and pitch.

B) Pitch and roll.

C) Increase RPM.

D) Decrease blade angle.

259- With a counter clockwise rotating propeller in a climb as seen from behind, the asymmetric thrust effect will cause:

A) Roll to the left.

B) Yaw to the left.

C) Roll to the right.

D) Yaw to the right.

260- A propeller rotating clockwise as seen from the rear tends to rotate the aircraft to the:

A) Right around the vertical axis, and to the right around the longitudinal axis.

B) Right around the vertical axis, and to the left around the longitudinal axis.

C) Left around the vertical axis, and to the right around the longitudinal axis.

D) Left around the vertical axis, and to the left around the longitudinal axis.

261- Single engine aeroplane with clockwise rotating propeller, a left yaw is generated due to:

A) The torque effect.

B) The slipstream, striking the fin on the left side.

C) Higher lift on the right wing.

D) Higher helix angle.

262- 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.

263- When increasing true airspeed with a constant engine RPM, the angle of attack of a fixed pitch propeller:

A) Stays constant.

B) Increases.

C) Reduces.

D) Stays constant because it only varies with engine RPM.

264- For takeoff, the correct combination of propeller pitch (i) and propeller lever position (ii) at brake release is:

A) (i) Low; (ii) forward

B) (i) High; (ii) forward

C) (i) Low; (ii) aft

D) (i) High; (ii) aft

265- The "constant speed propeller" has:

A) Its best efficiency during climb.

B) Only above and below the design point a better efficiency than the fixed propeller with the same design speed.

C) In general a worse efficiency than the fixed propeller.

D) Only at the design speed a better efficiency than the fixed propeller.

266- A propeller blade is twisted in order to:

A) Reduce the blade tangential velocity from root to tip.

B) Avoid the appearance of sonic phenomena.

C) Maintain a constant angle of attack along the blade.

D) Allow an increased mechanical load.

267- The mechanism to change the propeller blade angle of a small piston 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.

268- What happens to the angle of attack of a fixed pitch propeller as the aircraft accelerates down the runway?

A) Increases.

B) Decreases.

C) Remains the same.

D) Blade angle changes to compensate for forward speed.

269- 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.

270- 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.

271- 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.

272- Which of the following is identified as the cambered of 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.

273- What is the correct definition of super charging?

A) Raising temperature of charge entering cylinder.

B) Providing richer mixture at high altitude.

C) Improving scavenging and hence power output.

D) Increasing the weight of the air/fuel mixture charge beyond that possible by normal aspiration.

274- The primary purpose of a supercharger is to:

A) Increase quantity of fuel at metering jet.

B) Maintain power at altitude.

C) Provide leaner mixtures at altitudes below 5000 ft.

D) Provide a richer mixture at high altitudes.

275- One of the advantages of a turbocharger is:

A) To make the power available less affected by altitude.

B) An increased propulsive efficiency.

C) That there is no torsion at the crankshaft.

D) That there is no danger of detonation.

276- During climb with constant throttle and RPM lever setting (mixture being constant) the (normal aspirated engine):

A) RPM decreases.

B) Manifold Air Pressure (MAP) decreases.

C) RPM increases.

D) Manifold Air Pressure (MAP) increases.

277- A turbo-charger impeller is driven by:

A) A connection through a gearbox connected to the crankshaft.

B) Diversion of exhaust gases by the waste gate using energy that would otherwise have been wasted.

C) Excess torque from the reduction gearbox.

D) A ram air turbine.

278- One of the advantages of a turbocharger over a super charger is that:

A) There is no danger of knocking.

B) It has a better propulsive efficiency.

C) There is no torsion at the crankshaft.

D) It uses the exhaust gas energy which normally is lost.

279- What would happen if the waste gate of a turbocharged engine seized in the descent?

A) Compressor will over speed.

B) Turbine blades will fail.

C) MAP may exceed its maximum permitted value in the induction manifold.

D) RPM may exceed its maximum permitted value.

280- The kind of compressor normally used as a supercharger

A) A hybrid compressor.

B) An axial compressor.

C) A radial compressor.

D) A piston compressor.

281- A turbocharger consists of a:

A) Turbine driving a compressor via a reduction gear.

B) Compressor and turbine on individual shafts.

C) Compressor driving a turbine via a reduction gear.

D) Compressor and turbine mounted on a common shaft.

282- The air in a piston engine supercharger enters the centrifugal compressor at:

A) The periphery and leaves via the eye of the impeller of attack.

B) The diffuser and is fed to the impeller at the optimum angle.

C) The eye of the impeller and leaves it almost at a tangent to the periphery.

D) A tangent to the rotor and leaves via the stator.

283- The speed of a turbocharger is controlled by:

A) Engine RPM.

B) Propeller pitch and altitude.

C) Altitude only.

D) Waste gate position.

284- If a manifold pressure gauge consistently indicates atmospheric pressure, the cause is probably:

A) Ice in the induction system.

B) Too high a float level.

C) A leak in the gauge pressure-line.

D) The waste gate stuck in the closed position.

285- If the turbocharger waste gate is completely closed:

A) None of the exhaust gases are directed through the turbine.

B) The manifold pressure will be lower than normal.

C) The turbo/supercharger is in the OFF position.

D) All the exhaust gases are directed through the turbine.

286- During climbing flight using a turbocharged airplane, the manifold pressure will remain approximately constant until:

A) An outside temperature of -18 °C is reached.

B) The waste gate is fully open and the turbine is operating at minimum speed.

C) The engine's critical altitude is reached.

D) An atmospheric pressure of 14.9 is reached.

287- Which part of the gas turbine engine limits the temperature?

A) Combustion chamber.

B) Turbine.

C) Compressor.

D) Exhaust.

288- 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

289- 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.

290- 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.

291- 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.

292- A gas turbine engine operates in accordance with the:

A) Modified Brayton cycle.

B) Modified Otto cycle.

C) Brayton cycle.

D) Otto cycle.

293- 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.

294- 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

295- 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.

296- 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.

297- 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.

298- 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.

299- A gas turbine blade is usually of the:

A) Pelton wheel type.

B) Impulse type.

C) Reaction type.

D) Impulse/reaction type.

300- 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.

301- 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.

302- 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.

303- 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.

304- 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.

305- 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.

306- 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.

307- 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.

308- 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.

309- 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.

310- 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.

311- 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.

312- 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.

313- 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.

314- 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.

315- The output of a turboprop engine is usually indicated by:

A) Engine RPM as a percentage.

B) Propeller RPM.

C) SHP.

D) Torque.

316- 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.

317- 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.

318- 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

319- 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.

320- 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.

321- 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.

322- 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.

323- 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.

324- The type of smoke detection system fitted to aircraft is:

A) Optical and ionization

B) Chemical

C) Electrical

D) Magnetic

325- Regarding detection systems, ion detectors are used to detect:

A) Smoke.

B) Over-temperature.

C) Fire.

D) Over-temperature and fire.

326- 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.

327- The most common extinguishing agent used in gas turbine engine fire protection system is:

A) Water

B) Freon

C) CO_2

D) Powder

328- 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.

329- 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.

330- 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.

331- An automatic toilet fire extinguisher is activated by:

A) Odour detection.

B) CO_2.

C) Heat detection.

D) Smoke detection.

332- 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.

333- 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.

334- 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.

335- 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.

336- 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.

337- 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.

338- 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.

339- 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.

340- In case of smoke in the cockpit, the crew oxygen regulator must be set to:

A) On demand

B) Normal

C) Emergency

D) 100%

341- 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

342- 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.

343- The purpose of the first aid oxygen is to:

A) Provide some passengers with additional respirator assistance after an emergency descent following a de pressurization.

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.

344- 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.

345- Passenger oxygen chemical generators will supply oxygen for a minimum of:

A) 2 hours

B) 15 minutes

C) 110 minutes

D) 30 minutes

346- 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.

347- 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

348- 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.

349- 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.

350- 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.

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

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

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
201	D	226	A	251	A	276	B
202	A	227	C	252	B	277	B
203	C	228	B	253	A	278	D
204	C	229	A	254	B	279	C
205	C	230	B	255	D	280	C
206	B	231	C	256	B	281	D
207	C	232	C	257	A	282	A
208	B	233	C	258	C	283	D
209	B	234	A	259	D	284	C
210	B	235	D	260	D	285	D
211	D	236	D	261	B	286	C
212	C	237	C	262	A	287	B
213	B	238	A	263	C	288	A
214	D	239	B	264	A	289	B
215	D	240	D	265	B	290	D
216	D	241	A	266	C	291	C
217	A	242	C	267	C	292	C
218	B	243	C	268	B	293	D
219	B	244	D	269	B	294	C
220	A	245	B	270	B	295	C
221	C	246	B	271	C	296	B
222	D	247	D	272	A	297	A
223	D	248	C	273	D	298	B
224	D	249	D	274	B	299	D
225	A	250	C	275	A	300	A

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
301	C	314	C	327	B	340	D
302	B	315	D	328	D	341	B
303	D	316	B	329	D	342	B
304	D	317	D	330	C	343	A
305	A	318	A	331	C	344	A
306	D	319	C	332	C	345	B
307	B	320	D	333	D	346	B
308	B	321	D	334	B	347	C
309	D	322	C	335	A	348	C
310	D	323	A	336	B	349	A
311	B	324	A	337	C	350	B
312	D	325	A	338	A		
313	D	326	B	339	A		

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FIGUERS

Figure C-01

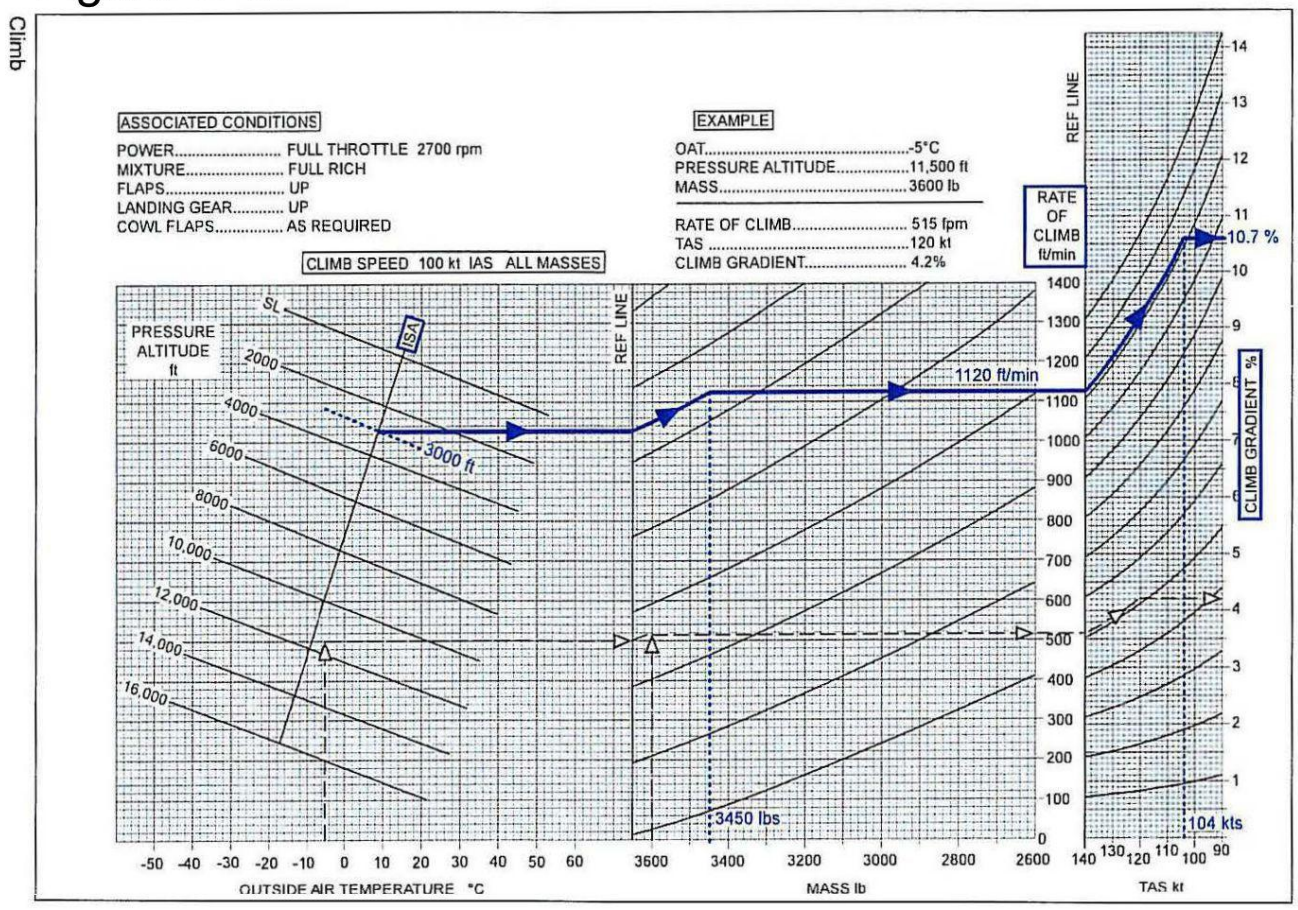


Figure C-02

Landing

ASSOCIATED CONDITIONS

POWER	TO MAINTAIN 900 fpm ON FINAL APPROACH
FLAPS	DOWN (AMBER)
LANDING GEAR	DOWN
RUNWAY	PAVED, LEVEL DRY SURFACE
APPROACH SPEED	IAS AS TABULATED
BRAKING	MAXIMUM

MASS lb	SPEED AT 50 ft kt
3650	79
3400	80
3200	81
3000	81
2800	78

EXAMPLE

OAT	25°C
PRESSURE ALTITUDE	3965 ft
LANDING MASS	3479 lb
HEAD WIND COMPONENT	10 kt
GROUND ROLL	960 ft
TOTAL DISTANCE OVER 50ft OBSTACLE	1470 ft
APPROACH SPEED	80 kt

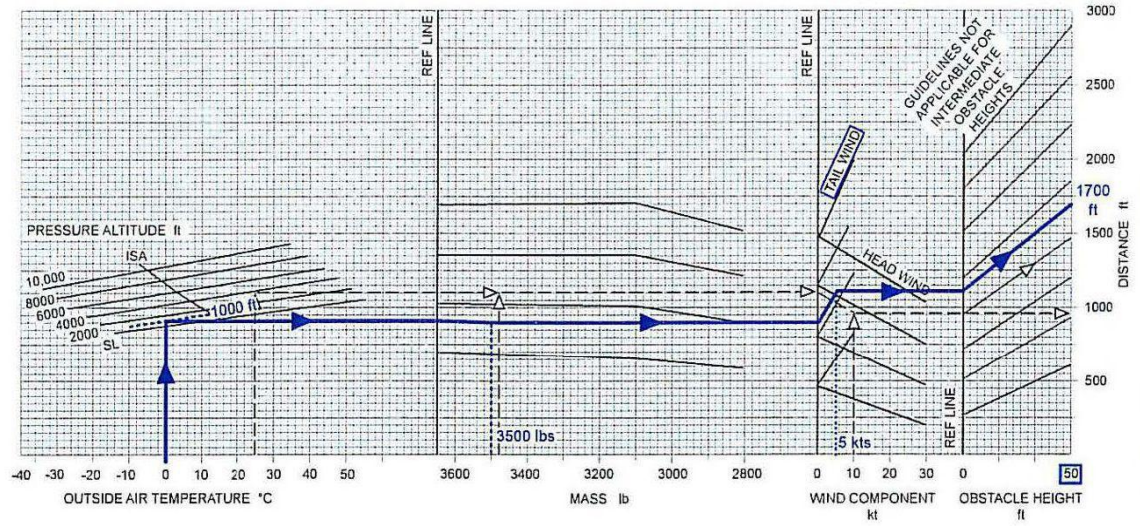


Figure C-03

Landing

ASSOCIATED CONDITIONS

POWER	TO MAINTAIN 900 fpm ON FINAL APPROACH
FLAPS	DOWN (AMBER)
LANDING GEAR	DOWN
RUNWAY	PAVED, LEVEL DRY SURFACE
APPROACH SPEED	IAS AS TABULATED
BRAKING	MAXIMUM

MASS lb	SPEED AT 50 ft kt
3650	79
3400	80
3200	81
3000	81
2800	78

EXAMPLE

OAT	25°C
PRESSURE ALTITUDE	3965 ft
LANDING MASS	3479 lb
HEAD WIND COMPONENT	10 kt
GROUND ROLL	960 ft
TOTAL DISTANCE OVER 50ft OBSTACLE	1470 ft
APPROACH SPEED	80 kt

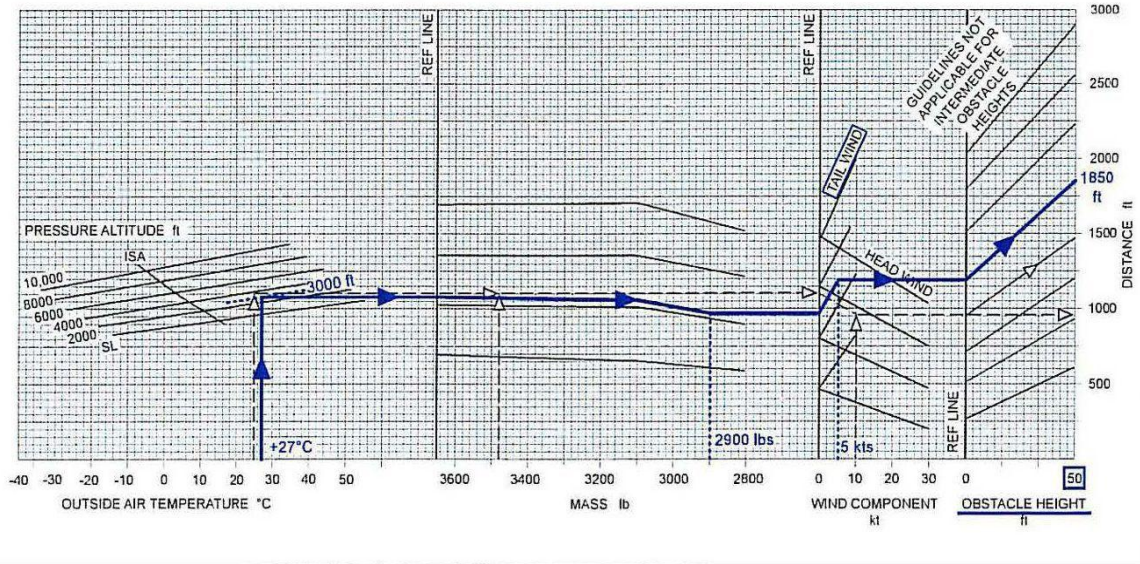


Figure C-04

Landing

ASSOCIATED CONDITIONS

POWER	TO MAINTAIN 900 fpm ON FINAL APPROACH
FLAPS	DOWN (AMBER)
LANDING GEAR	DOWN
RUNWAY	PAVED, LEVEL DRY SURFACE
APPROACH SPEED	IAS AS TABULATED
BRAKING	MAXIMUM

MASS lb	SPEED AT 50 ft kt
3650	79
3400	80
3200	81
3000	81
2800	78

EXAMPLE

OAT	25°C
PRESSURE ALTITUDE	3965 ft
LANDING MASS	3479 lb
HEAD WIND COMPONENT	10 kt
GROUND ROLL	960 ft
TOTAL DISTANCE OVER 50ft OBSTACLE	1470 ft
APPROACH SPEED	80 kt

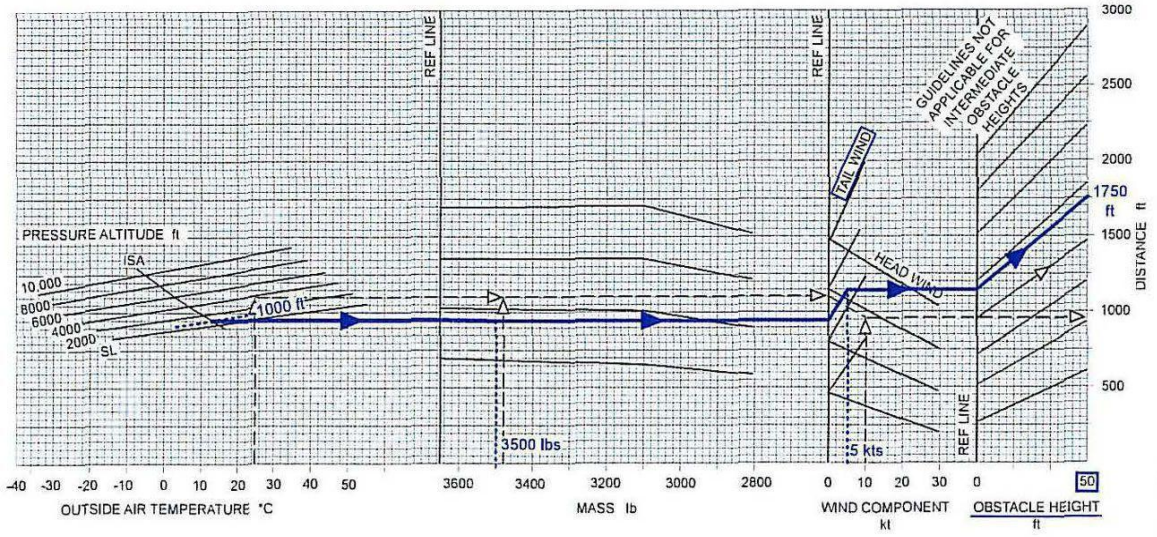


Figure C-05

Landing

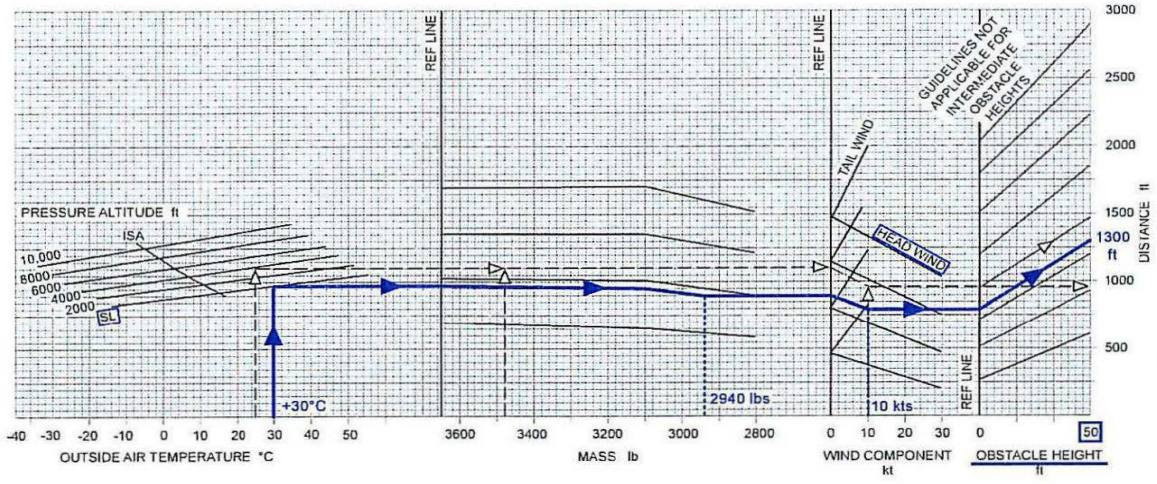
ASSOCIATED CONDITIONS

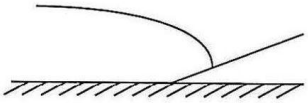
POWER	TO MAINTAIN 900 fpm ON FINAL APPROACH
FLAPS	DOWN (AMBER)
LANDING GEAR	DOWN
RUNWAY	PAVED, LEVEL DRY SURFACE
APPROACH SPEED	IAS AS TABULATED
BRAKING	MAXIMUM

MASS lb	SPEED AT 50 ft kt
3650	79
3400	80
3200	81
3000	81
2800	78

EXAMPLE

OAT	25°C
PRESSURE ALTITUDE	3965 ft
LANDING MASS	3479 lb
HEAD WIND COMPONENT	10 kt
GROUND ROLL	960 ft
TOTAL DISTANCE OVER 50ft OBSTACLE	1470 ft
APPROACH SPEED	80 kt





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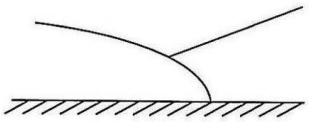
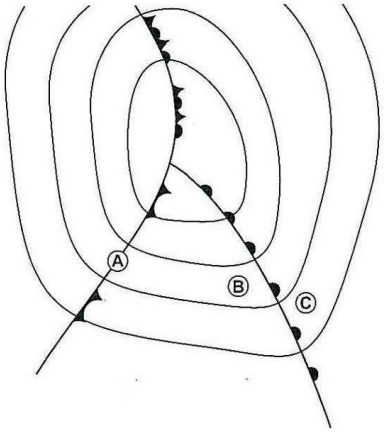


Figure C-07



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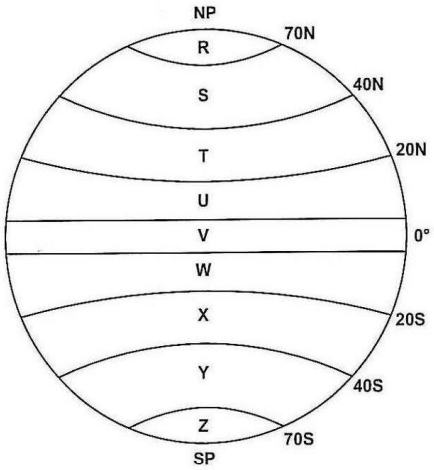
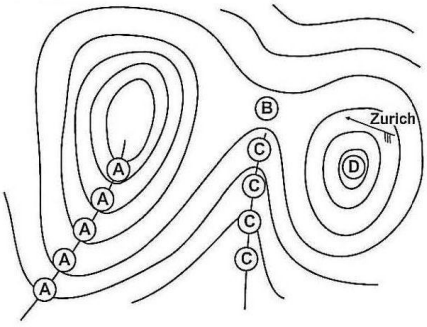


Figure C-09



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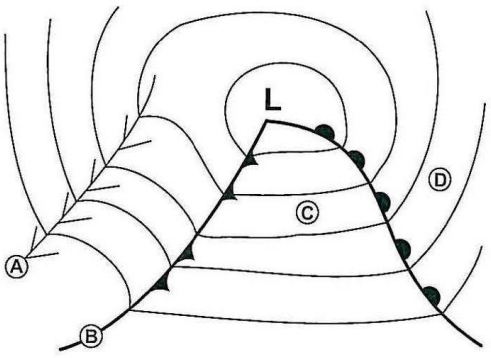
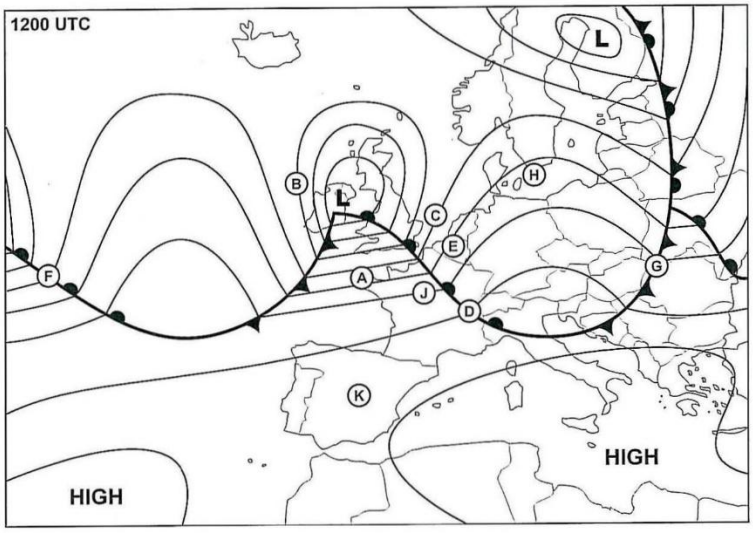


Figure C-11

Figure C-12



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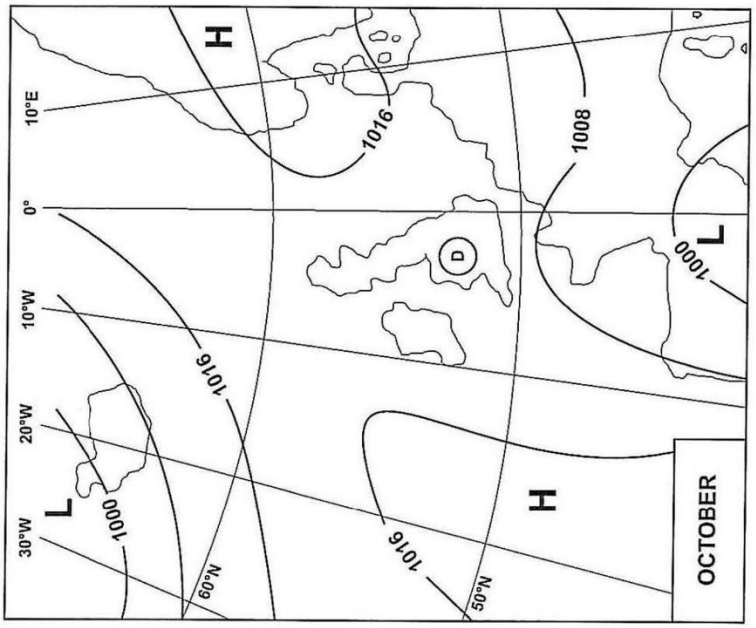
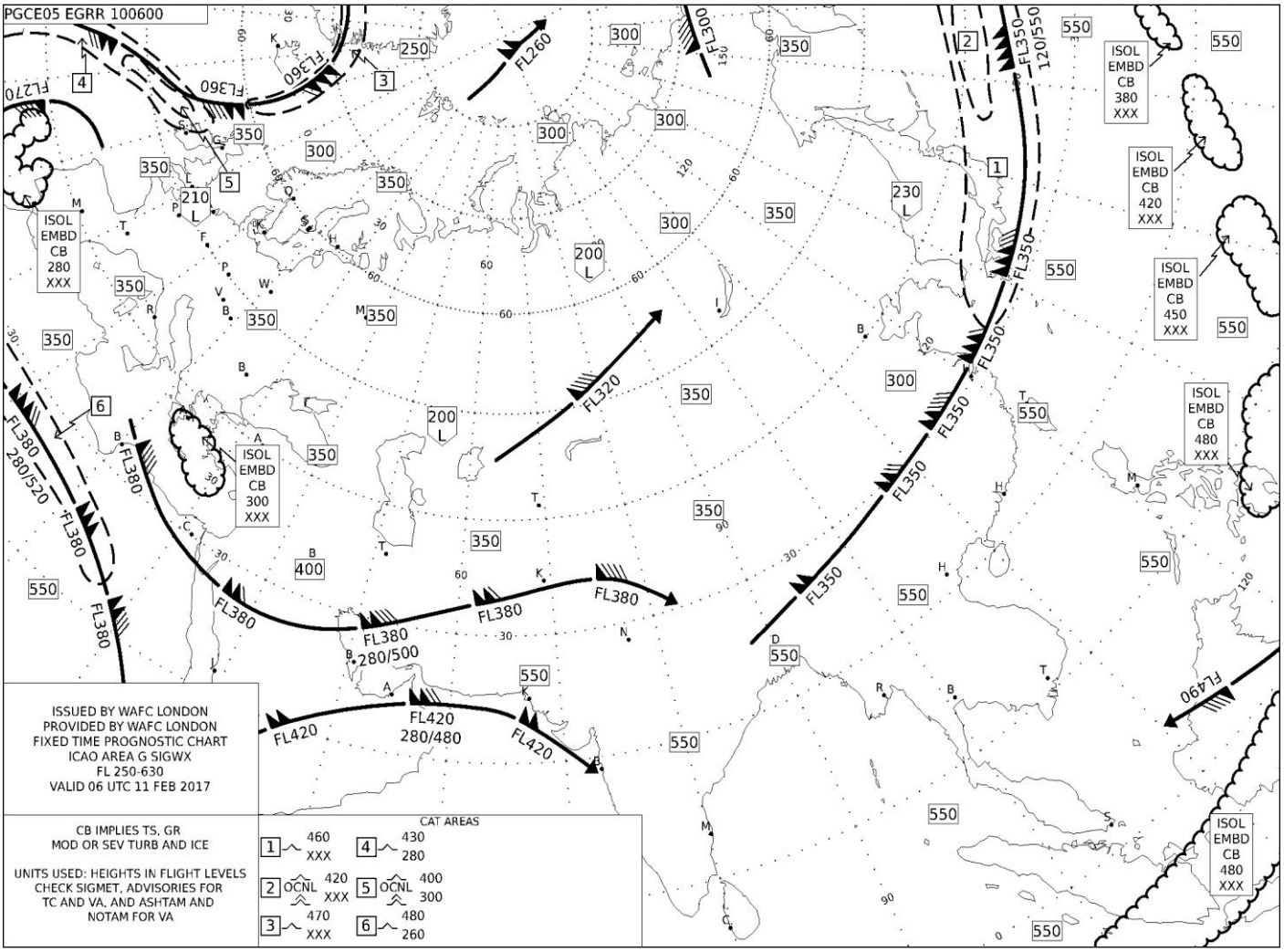


Figure C-14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ISSUED BY WAFC LONDON
PROVIDED BY WAFC LONDON
FIXED TIME PROGNOSTIC CHART
ICAO AREA G SIGWX
FL 250-630
VALID 06 UTC 11 FEB 2017
CB IMPLIES TS, GR
MOD OR SEV TURB AND ICE
UNITS USED: HEIGHTS IN FLIGHT LEVELS
CHECK SIGMET, ADVISORIES FOR
TC AND VA, AND ASHTAM AND
NOTAM FOR VA
CAT AREAS
1 460 XXX
2 OCNL 420 XXX
3 470 XXX
4 430 280
5 OCNL 400 300
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ISOL EMBD CB 280 XXX
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FL260
FL300
FL320
FL350
FL350 120/550
FL360
FL380
FL380 280/520
FL380 280/500
FL420
FL420 280/480
FL490

I.R. of IRAN Met. Org.(IRIMO) TEHRAN FORECASTING CENTER GFS's GPVs	FLT340 Wind(KT)& Temperature(degC)	DT: 00UTC Sat 11 feb 2017 PROG CHART: 250 UGR&VGR&TMPprs +24 VT: 00UTC Sun 12 feb 2017

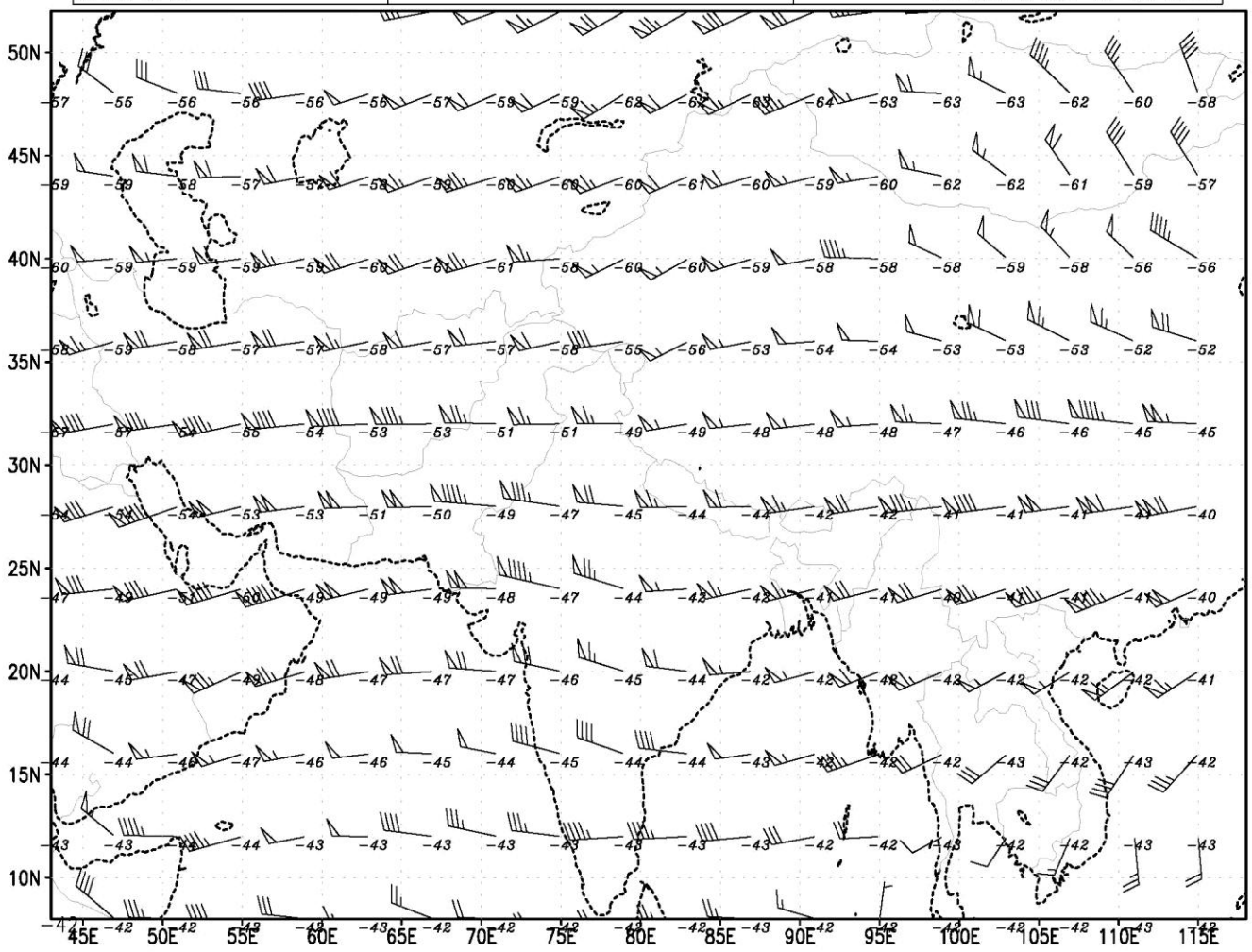

Figure C-15

Figure C-16

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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
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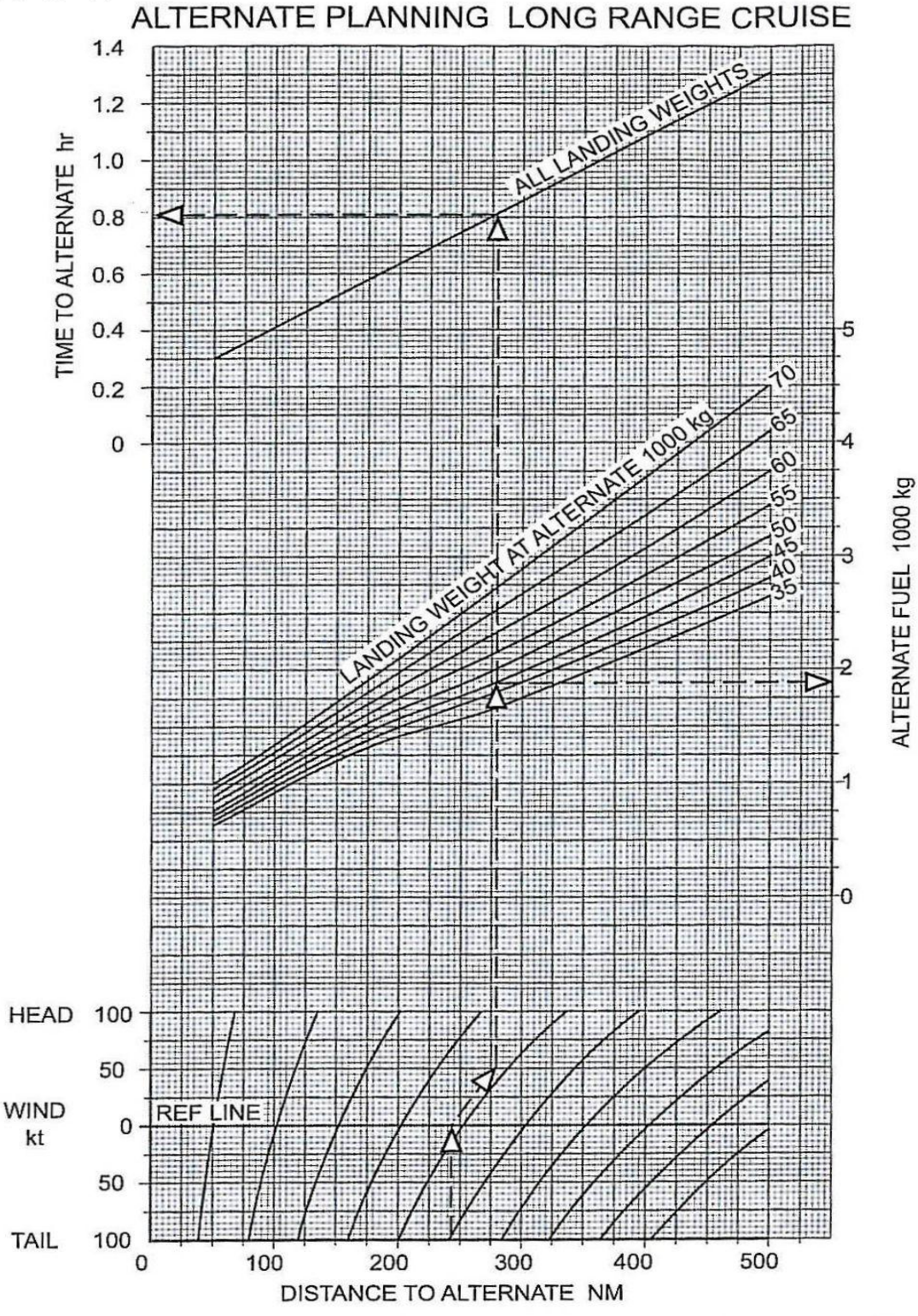
Figure C-17



Simplified Flight Planning – Alternate Distances to 500 NM

Figure C-18

INTEGRATED CRUISE											
MAX. CRUISE THRUST LIMITS NORMAL AIR CONDITIONING ANTI-ICING OFF				ISA CG = 37,0 %		DISTANCE (NM) TIME (MIN)		M.80 OPT FL			
WEIGHT (1000 KG)	0	.2	.4	.6	.8	1.0	1.2	1.4	1.6	1.8	TAS (KTS)
174	5088 665	5107 668	5126 670	5144 673	5163 675	5182 678	5200 680	5219 682	5238 685	5256 687	459
176	5275 690	5293 692	5312 695	5330 697	5349 699	5367 702	5385 704	5404 707	5422 709	5441 711	459
178	5459 714	5477 716	5496 719	5514 721	5532 723	5551 726	5569 728	5587 731	5605 733	5623 735	459
180	5642 738	5660 740	5678 742	5696 745	5714 747	5732 750	5750 752	5768 754	5786 757	5804 759	459
182	5822 761	5840 764	5858 766	5875 768	5893 771	5911 773	5929 775	5947 778	5964 780	5982 782	459
184	6000 785	6018 787	6035 789	6053 791	6071 794	6088 796	6105 798	6119 800	6133 802	6151 804	459
186	6168 807	6186 809	6203 811	6220 813	6238 816	6255 818	6273 820	6290 822	6307 825	6325 827	459
188	6342 829	6359 832	6377 834	6394 836	6411 838	6429 841	6446 843	6463 845	6480 847	6497 850	459
190	6515 852	6532 854	6549 856	6566 859	6583 861	6600 863	6617 865	6635 868	6652 870	6669 872	459
192	6686 874	6703 876	6720 879	6737 881	6754 883	6771 885	6788 888	6805 890	6821 892	6838 894	459
194	6855 896	6872 899	6889 901	6906 903	6923 905	6940 907	6956 910	6973 912	6990 914	7007 916	459
196	7023 918	7040 921	7057 923	7073 925	7090 927	7107 929	7123 931	7140 934	7157 936	7173 938	459
198	7190 940	7206 942	7223 944	7239 947	7256 949	7272 951	7289 953	7305 955	7322 957	7338 960	459
200	7354 962	7371 964	7387 966	7403 968	7420 970	7436 972	7452 974	7468 977	7485 979	7501 981	459
202	7517 983	7533 985	7549 987	7566 989	7582 991	7598 993	7614 996	7630 998	7646 1000	7662 1002	459
204	7678 1004	7694 1006	7708 1008	7720 1010	7735 1011	7751 1013	7766 1016	7782 1018	7798 1020	7814 1022	459
206	7830 1024	7846 1026	7861 1028	7877 1030	7893 1032	7909 1034	7925 1036	7940 1038	7956 1040	7972 1042	461
208	7988 1044	8003 1046	8019 1048	8035 1050	8050 1052	8066 1054	8081 1057	8097 1059	8113 1061	8128 1063	461
210	8144 1065	8159 1067	8175 1069	8191 1071	8206 1073	8222 1075	8237 1077	8253 1079	8268 1081	8284 1083	461
212	8299 1085	8315 1087	8330 1089	8345 1091	8361 1093	8376 1095	8392 1097	8407 1099	8422 1101	8438 1103	461
214	8453 1105	8468 1107	8484 1109	8499 1111	8514 1113	8529 1115	8545 1117	8560 1119	8575 1121	8590 1123	461
216	8606 1125	8621 1127	8636 1129	8651 1131	8666 1133	8681 1135	8696 1137	8712 1138	8727 1140	8742 1142	461
218	8757 1144	8772 1146	8787 1148	8802 1150	8817 1152	8832 1154	8847 1156	8862 1158	8877 1160	8892 1162	461
PACK FLOW LO ΔFUEL = -0,4 %			PACK FLOW HI OR/ AND CARGO COOL ON ΔFUEL = +1 %			ENGINE ANTI ICE ON ΔFUEL = +1,5 %		TOTAL ANTI ICE ON ΔFUEL = +7 %			

Figure C-19

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

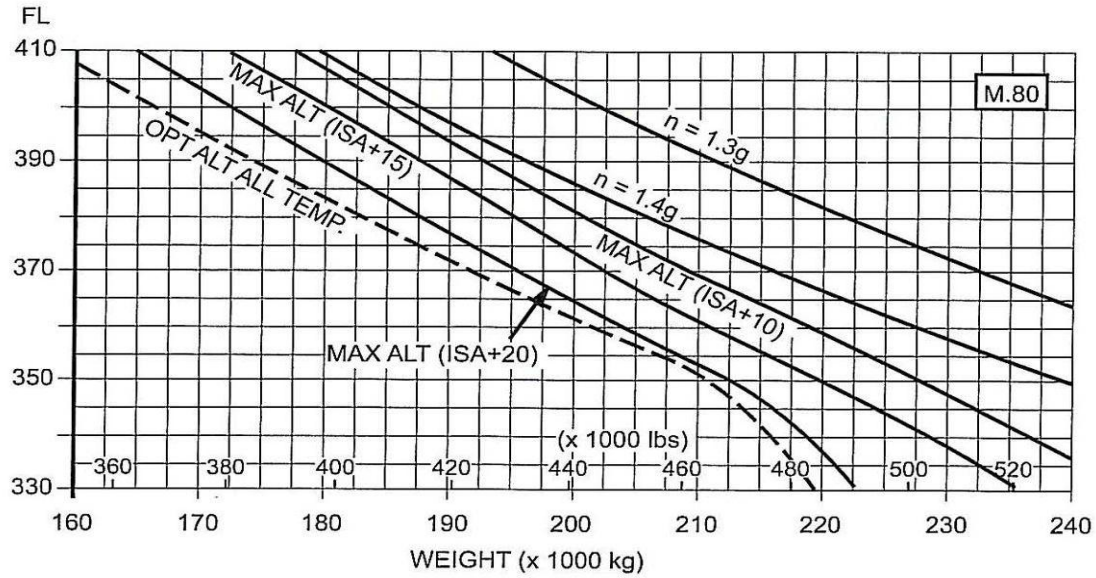
B) DECREASE FUEL REQUIRED BY 0.6 PERCENT PER 10 DEGREES C BELOW ISA

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 C-20


FL
410
390
370
350
330
M.80
MAX ALT (ISA+15)
OPT ALT ALL TEMP.
n = 1.3g
n = 1.4g
MAX ALT (ISA+10)
MAX ALT (ISA+20)
(x 1000 lbs)
360
380
400
420
440
460
480
500
520
160
170
180
190
200
210
220
230
240
WEIGHT (x 1000 kg)

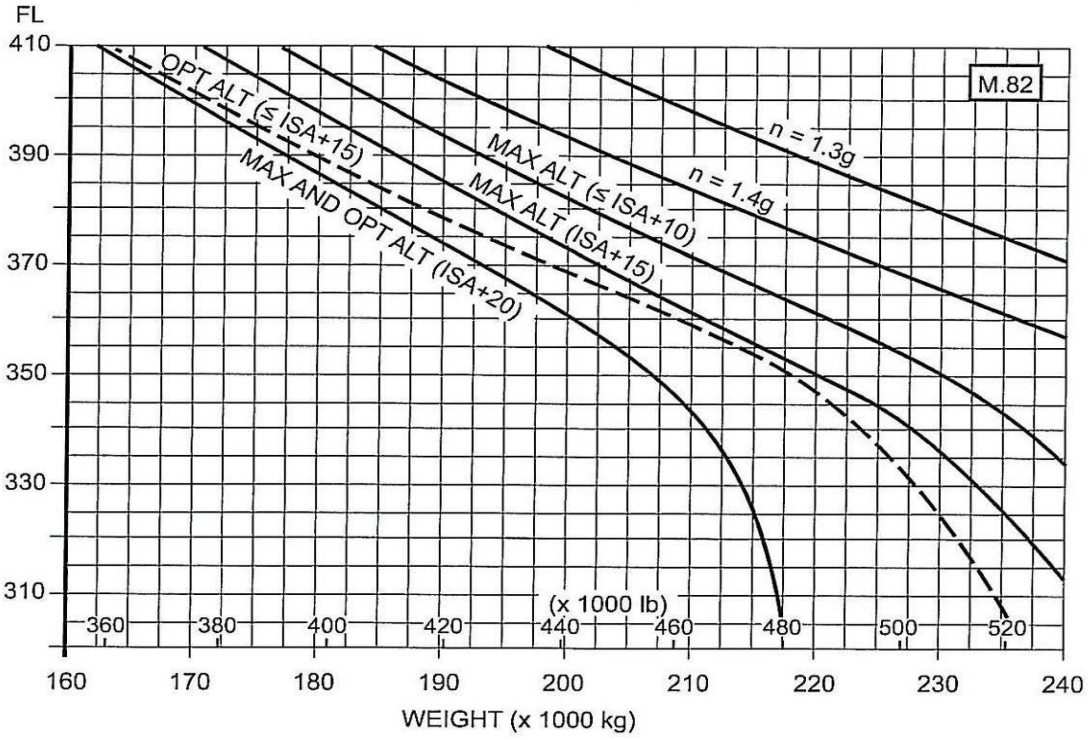
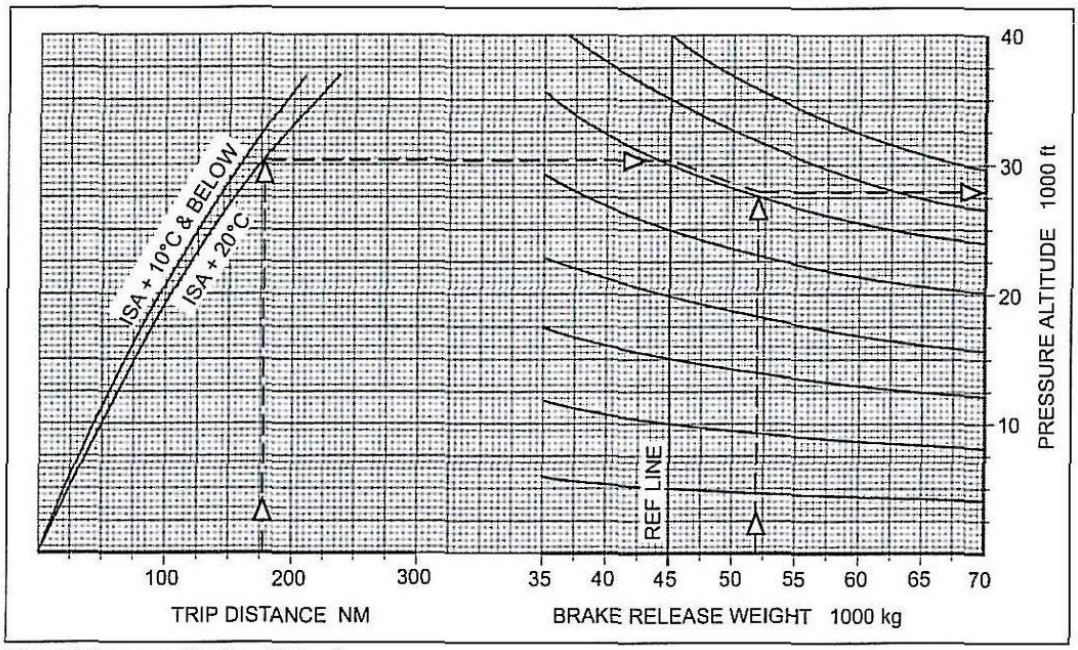

FL
410
390
370
350
330
310
M.82
OPT ALT (≤ ISA+15)
MAX AND OPT ALT (ISA+20)
MAX ALT (≤ ISA+10)
MAX ALT (ISA+15)
n = 1.3g
n = 1.4g
(x 1000 lb)
360
380
400
420
440
460
480
500
520
160
170
180
190
200
210
220
230
240
WEIGHT (x 1000 kg)

Figure C-21



Short Distance Cruise Altitude

Figure C-22

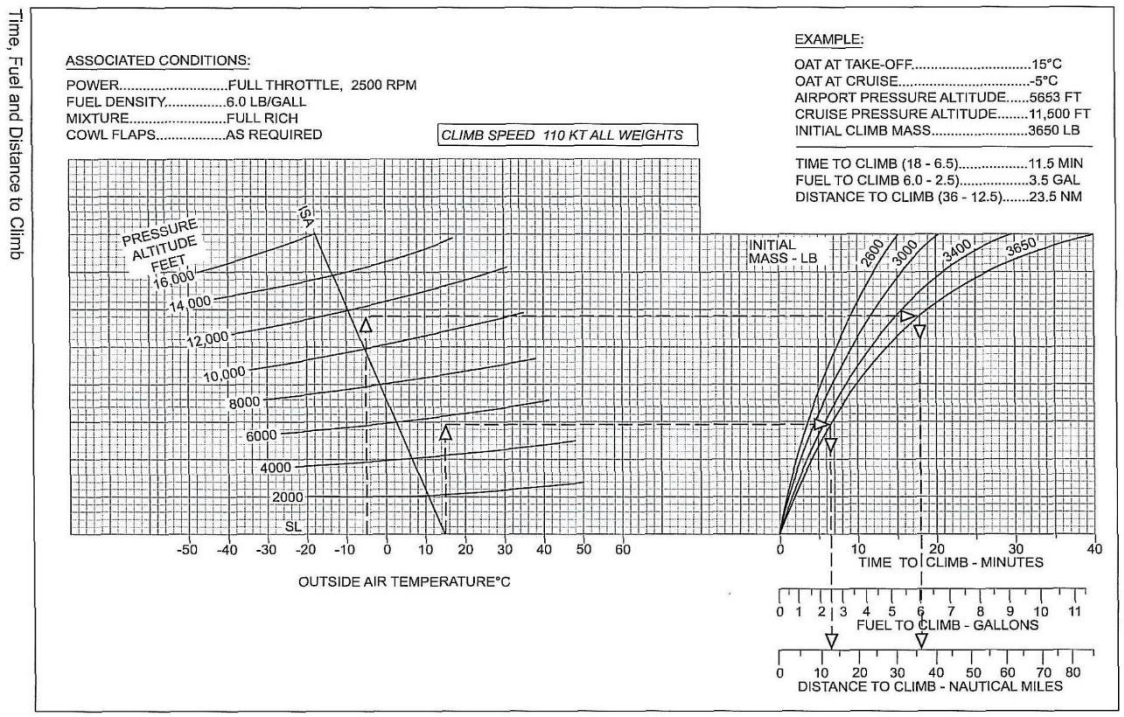


Figure C-23

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

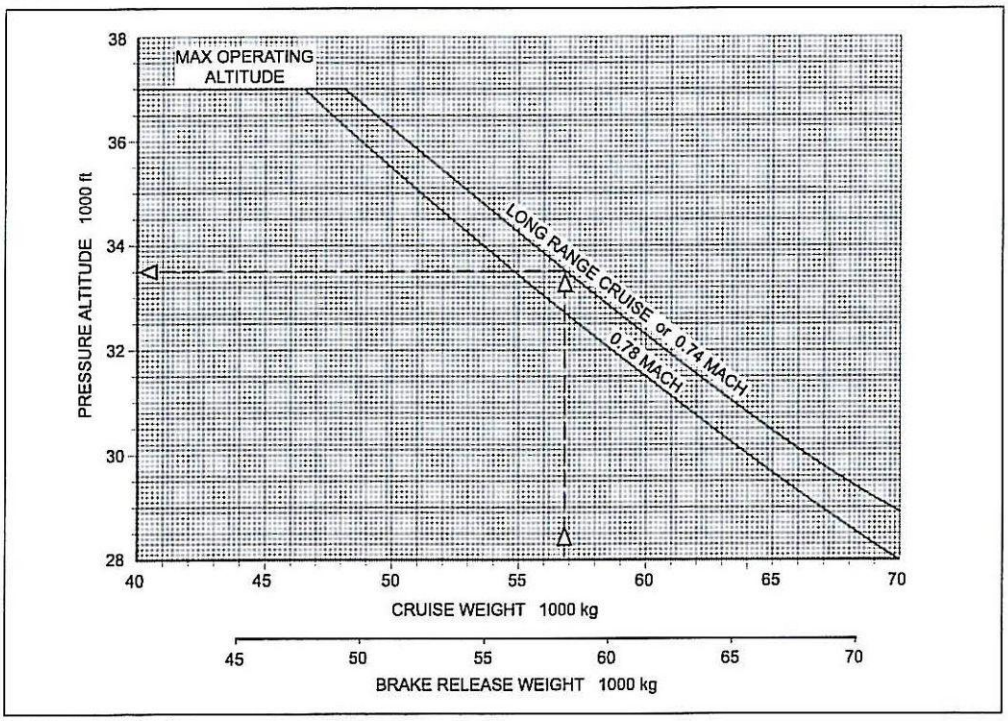
B) DECREASE FUEL REQUIRED BY 0.6 PERCENT PER 10 DEGREES C BELOW ISA

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 C-24

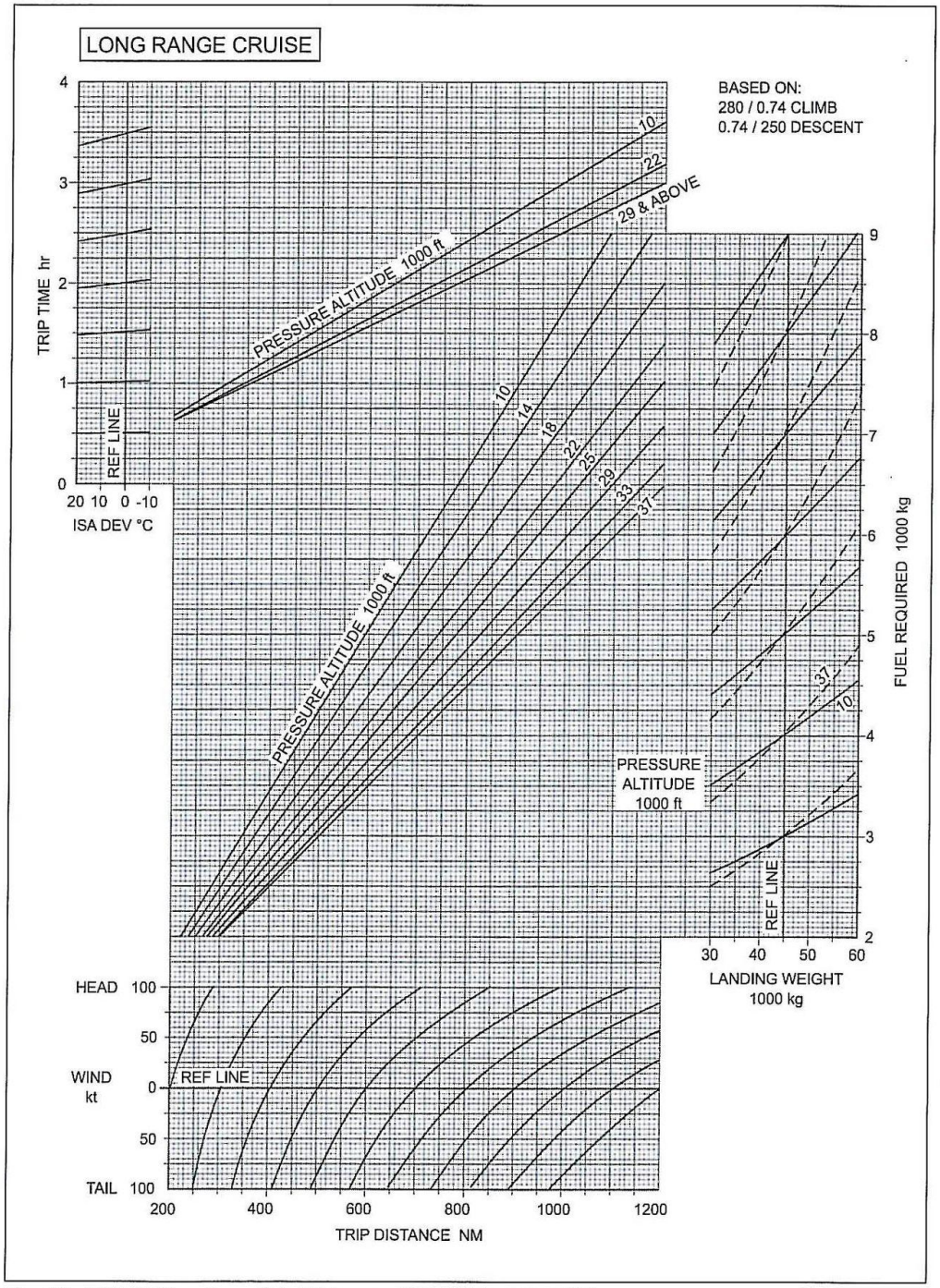


Optimum Altitude

Off-Optimum Condition	Fuel Mileage Penalty %	
	LRC or Mach 0.74	Mach 0.78
2,000 ft above	-1	-1
Optimum	0	0
2,000 ft below	-1	-2
4,000 ft below	-4	-4
8,000 ft below	-10	-11
12,000 ft below	-15	-20

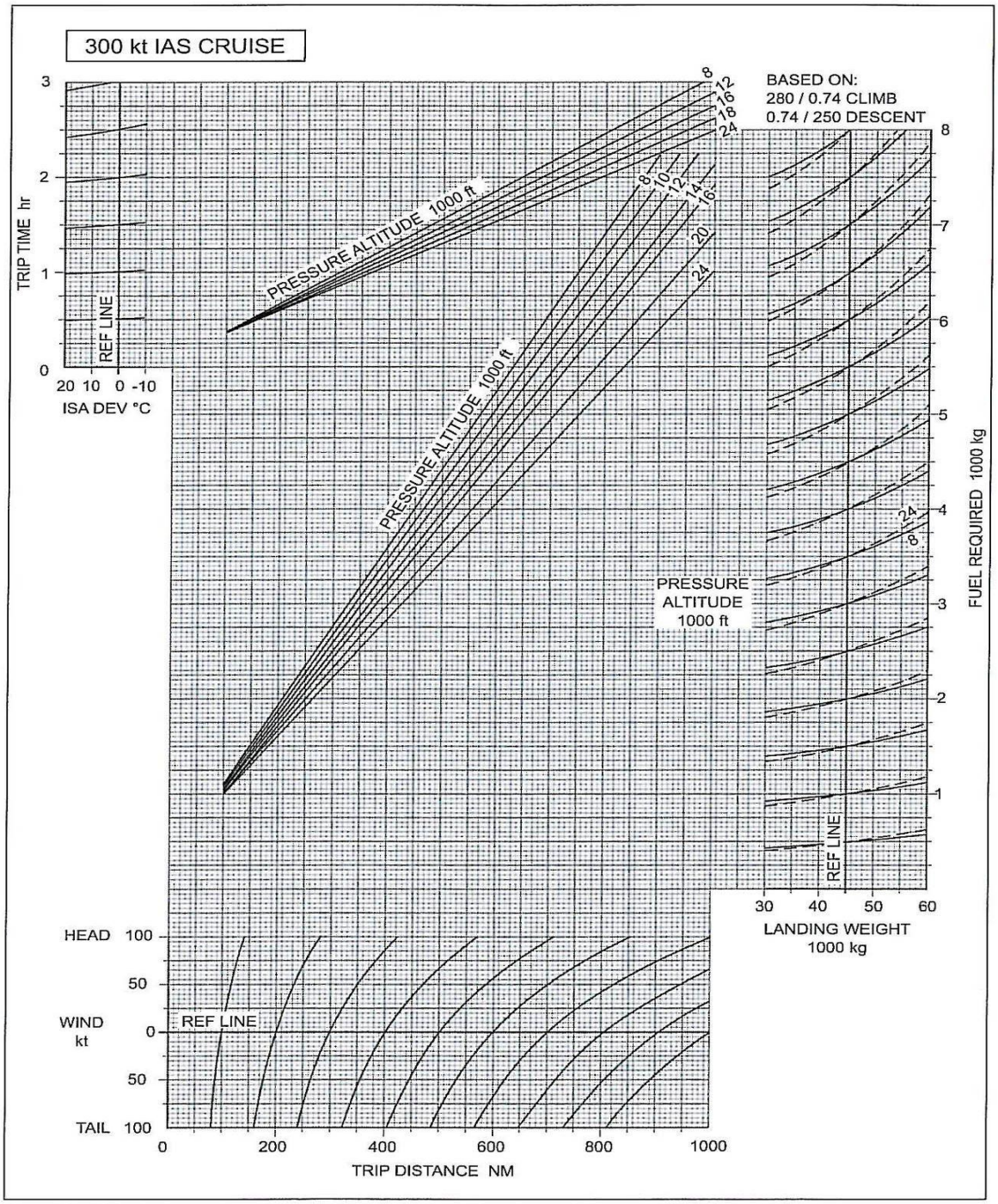
Off-Optimum Fuel Penalty

Figure C-25



Simplified Flight Planning – Trip Distances 200 NM to 1,200 NM

Figure C-26



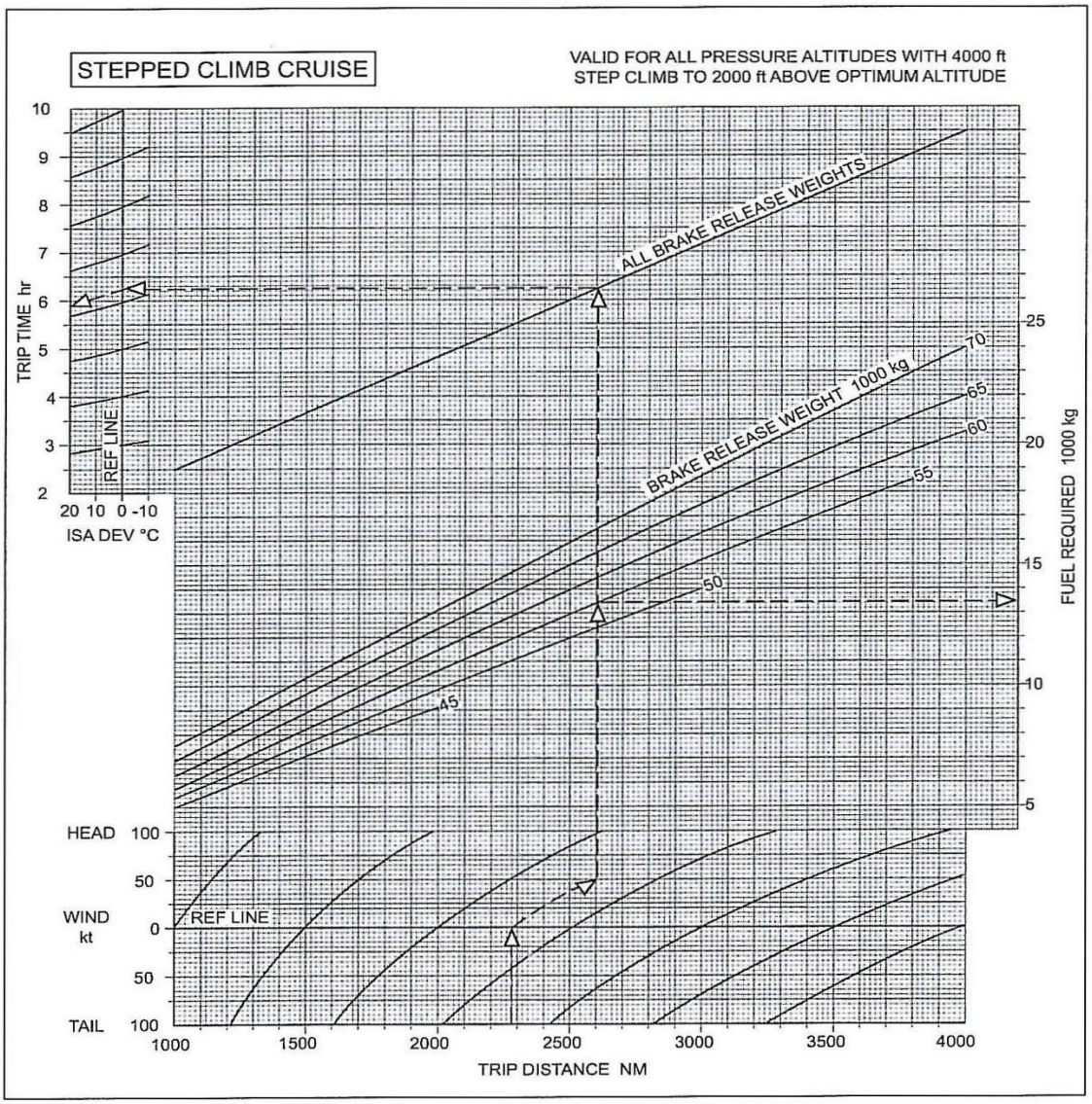
Simplified Flight Planning – Trip Distances 0 NM to 1,000 NM

Figure C-27

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 C-28

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 C-29

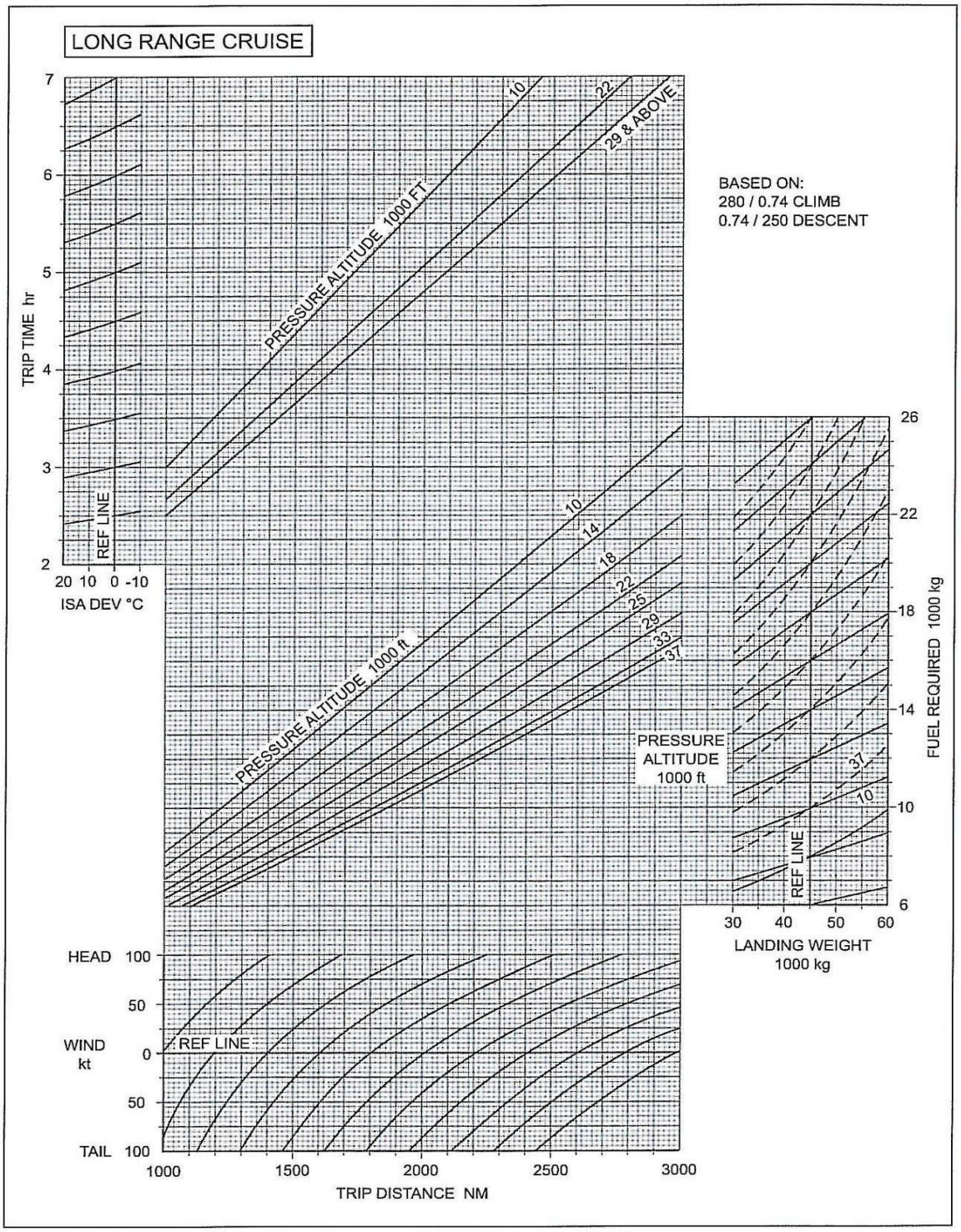
ISA +6°C TO +15°C

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	9/900	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	5/600	5/550	5/550	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 C-30



Simplified Flight Planning – Trip Distances 1,000 NM to 3,000 NM

Figure C-31

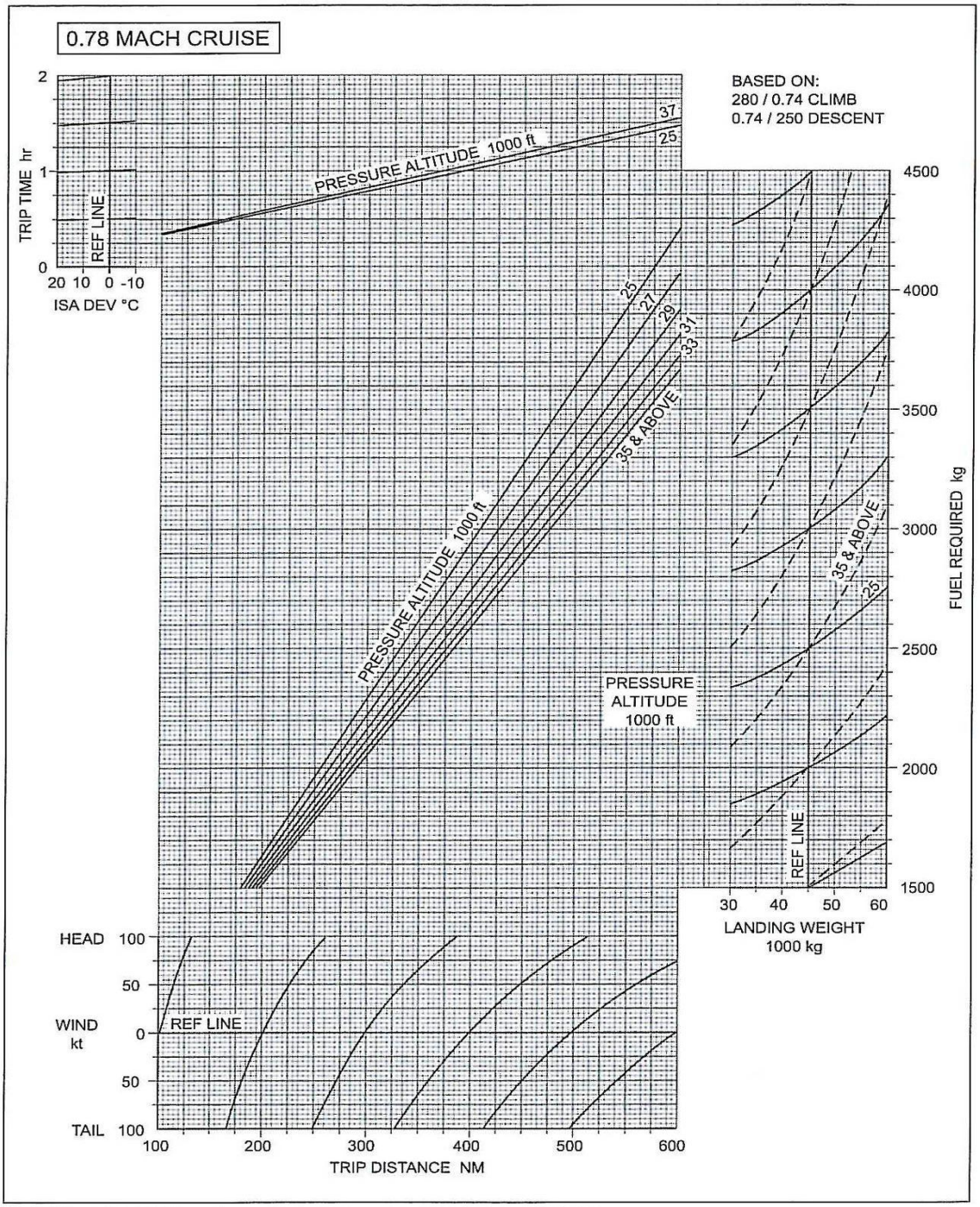
ISA -6°C TO -15°C

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	89/1364	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	55/1350	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	10/950	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	7/750	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	7/750	6/700	6/700	6/650	6/650	5/600	5/550	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	6/650	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	6/650	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	6/650	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	5/550	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	9/294	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 C-32



Simplified Flight Planning – Trip Distances 100 NM to 600 NM

Figure C-33

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	9/850	8/750	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	7/750	7/700	6/700	6/650	5/550	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	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	-150	-200	-300	-350	-400

En-route Climb 280/.74

Figure C-34

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

a) 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.

b) Extract the holding fuel flow in kg per hour.

c) 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.

d) 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 C-35

All Engines Maximum Cruise Thrust Limits A/C Auto

PRESSURE ALTITUDE 28,000 ft LONG RANGE CRUISE

GROSS		0	100	200	300	400	500	600	700	800	900
WT. kg	TAS	CRUISE DISTANCE NAUTICAL AIR MILES									
35000	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 C-36

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 C-37

ICAO AERONAUTICAL CHART SYMBOL
AIR TRAFFIC SERVICES

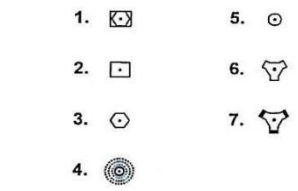
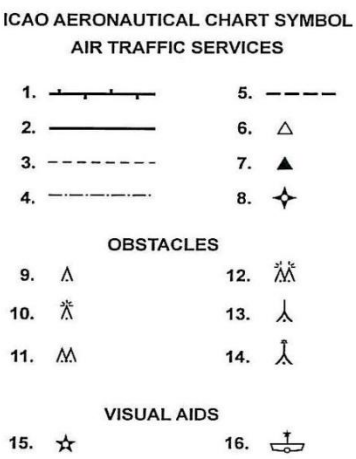
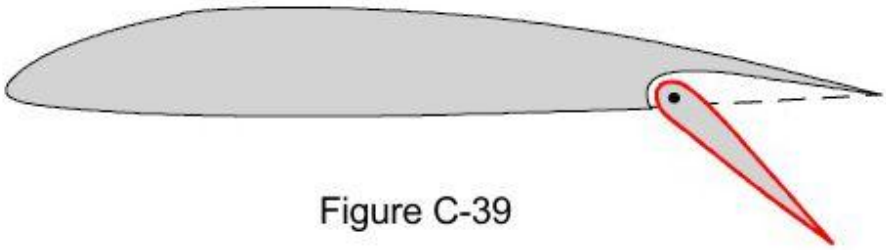


Figure C-38

ICAO AERONAUTICAL CHART SYMBOL
AIR TRAFFIC SERVICES





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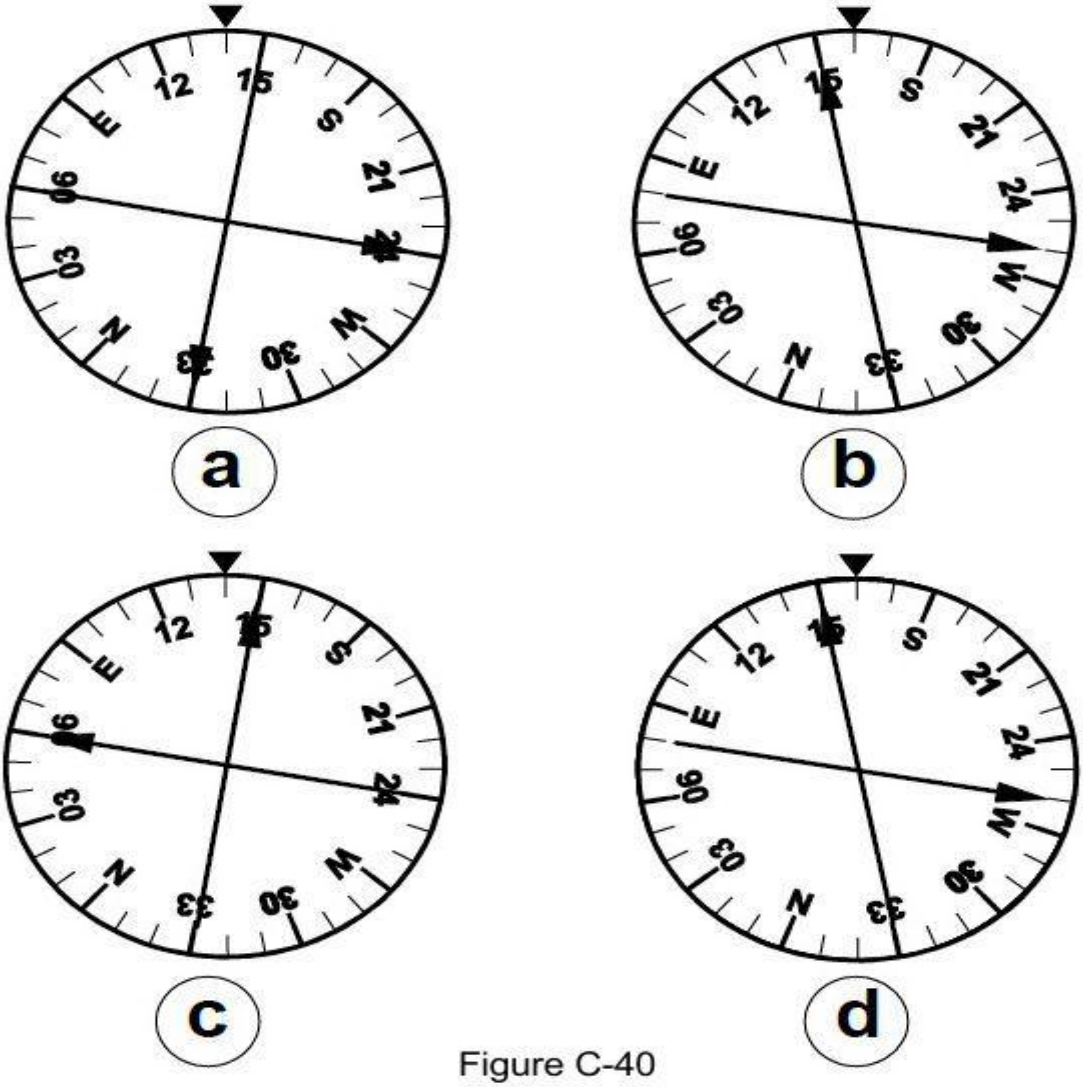

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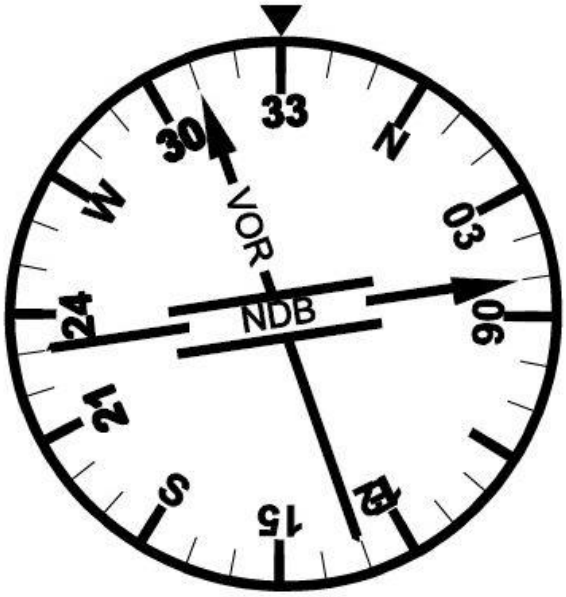


Figure C-41

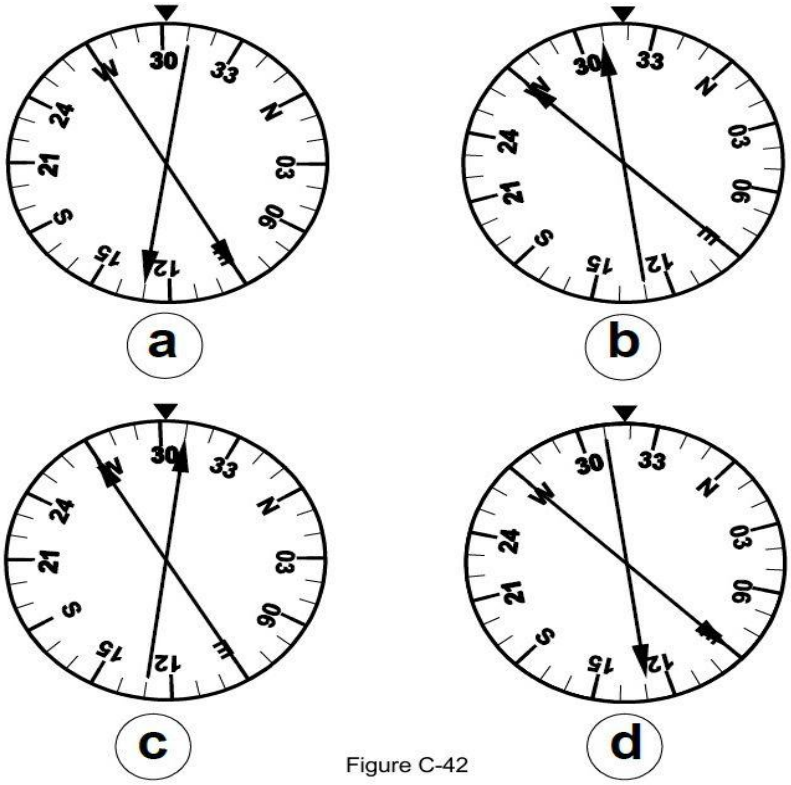


Figure C-42

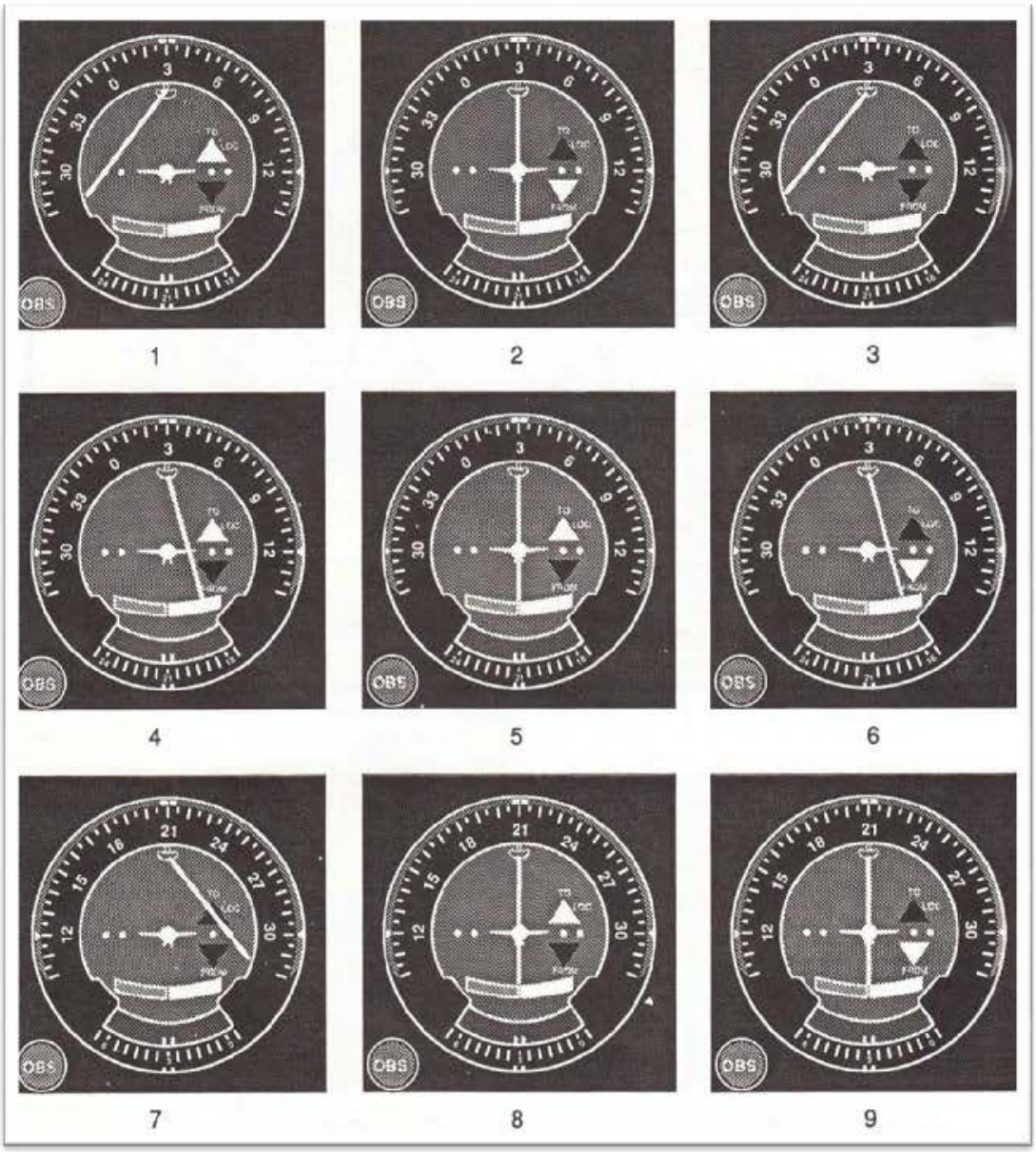
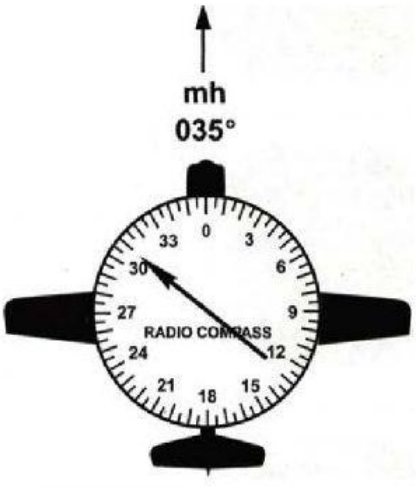


Figure C-43



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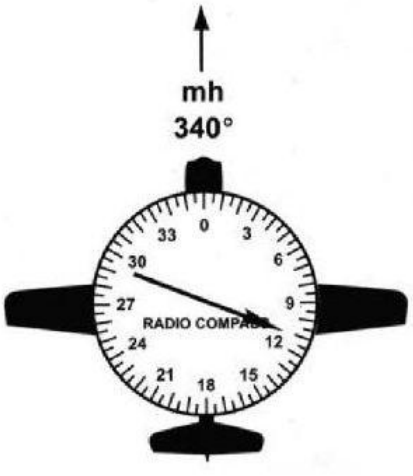


Figure C-45

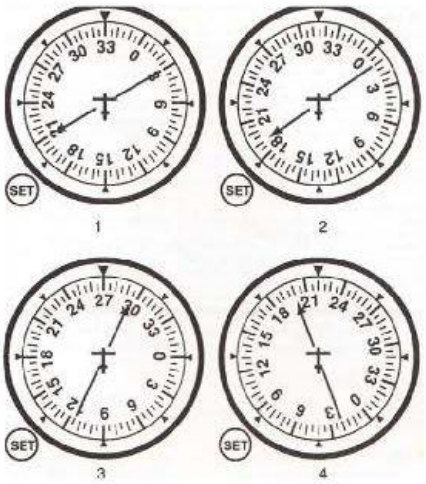


Figure C-46

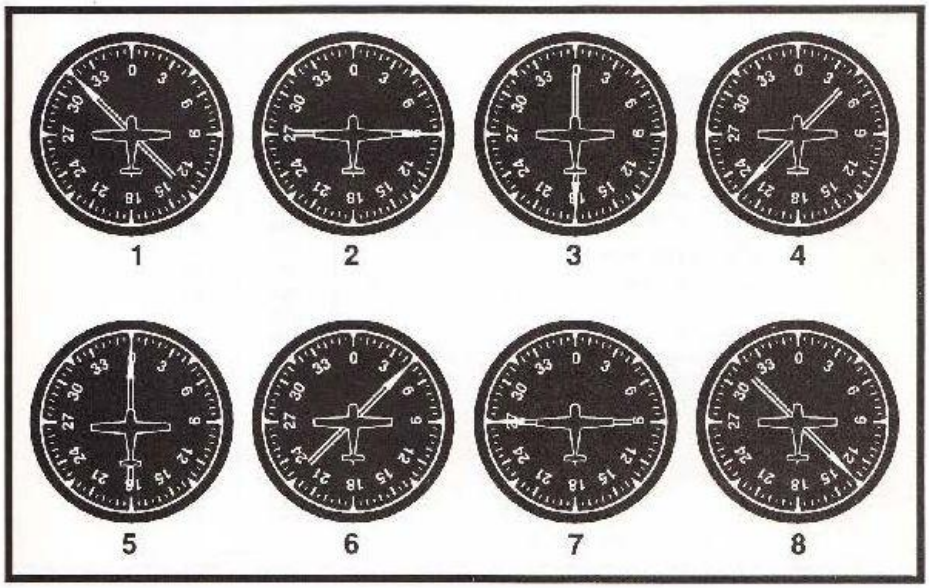
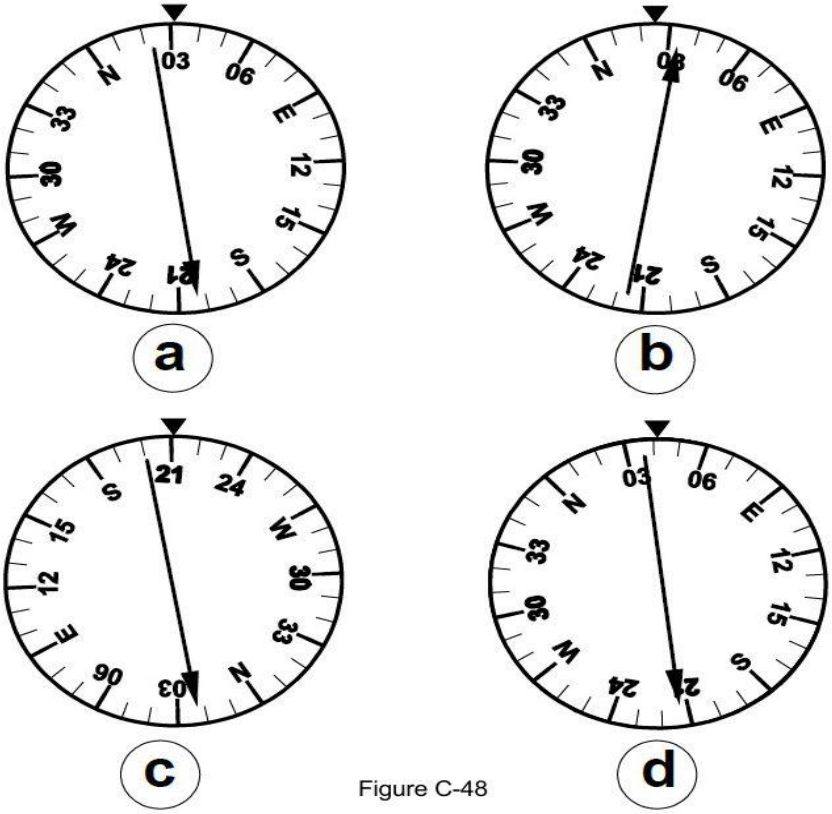


Figure C-47



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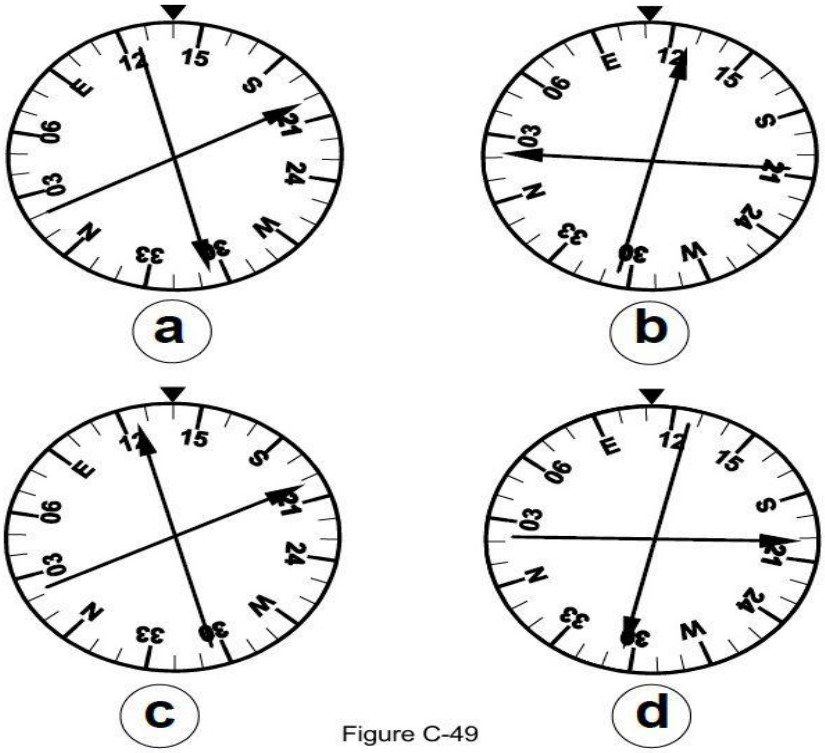
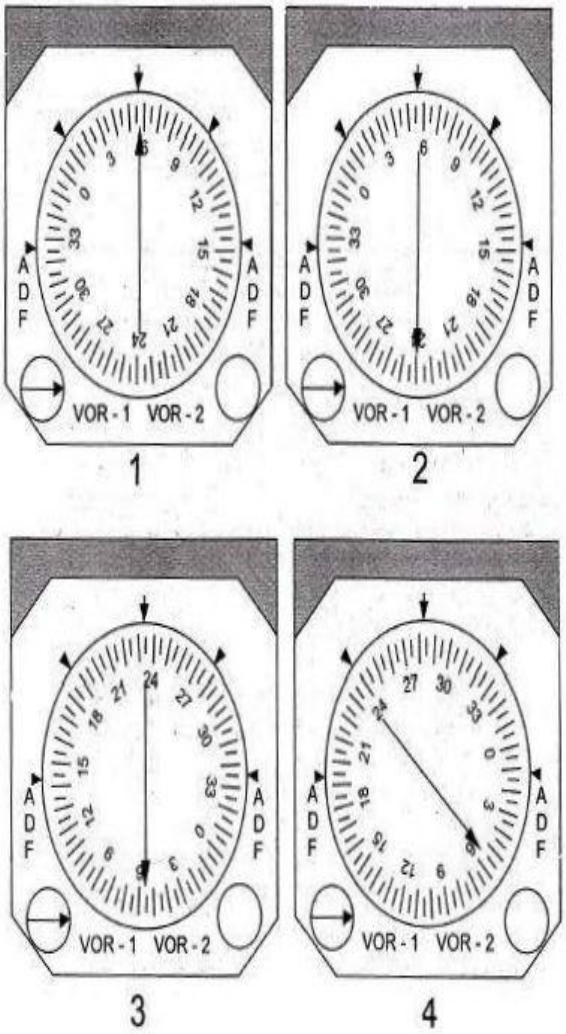


Figure C-49



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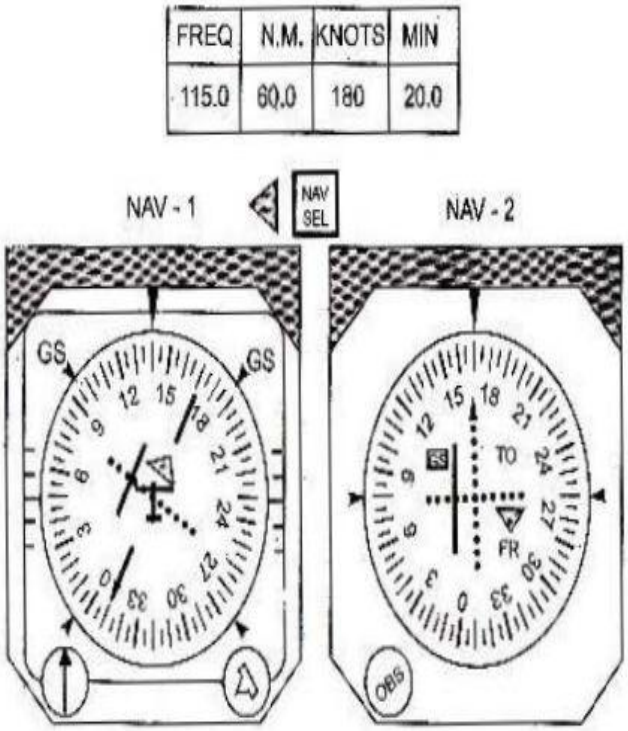

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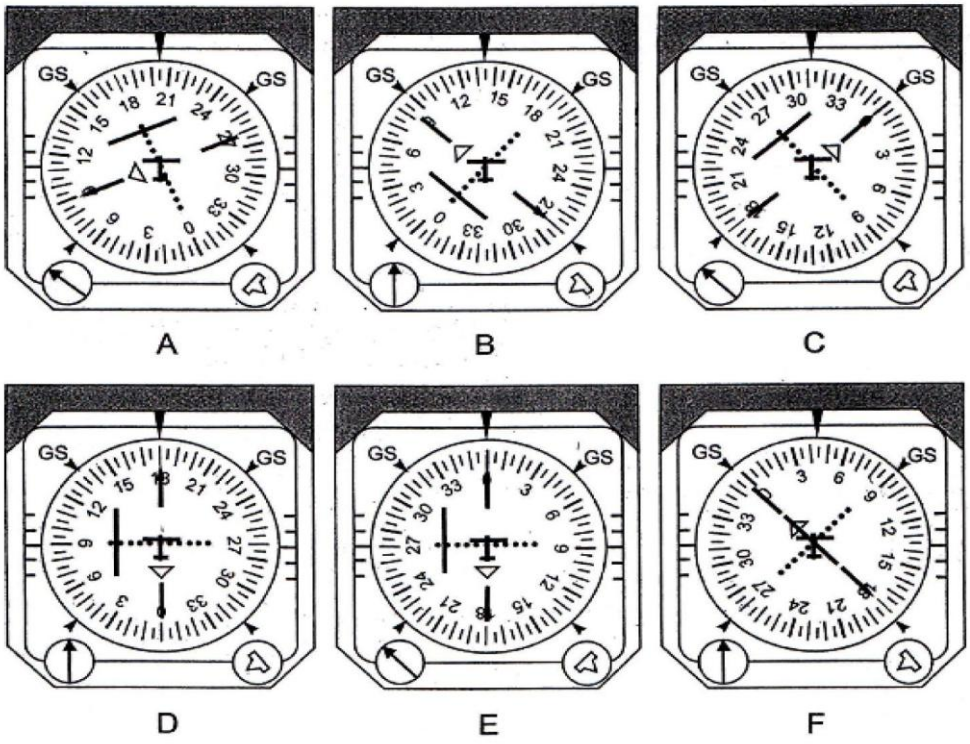
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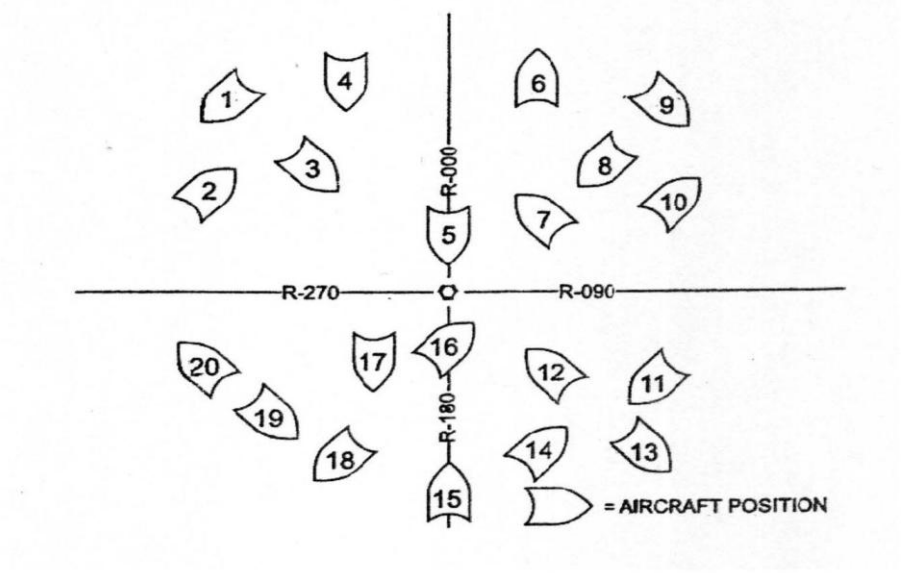
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= AIRCRAFT POSITION

Figure C-52

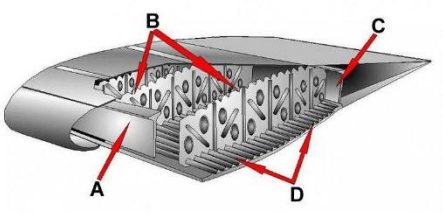
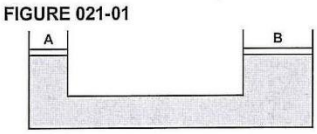


Figure C-53



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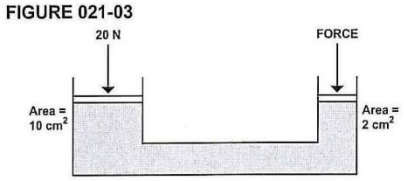

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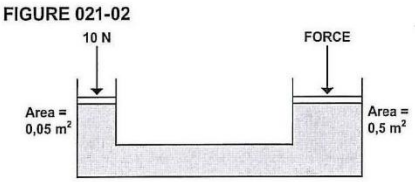


Figure C-56

Figure C-57

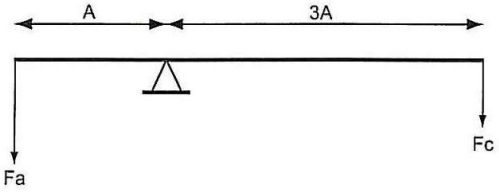


Figure C-58

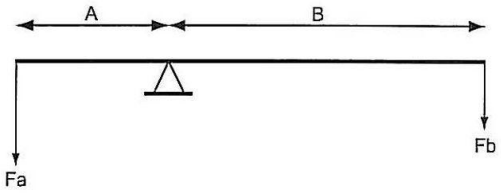


Figure C-59

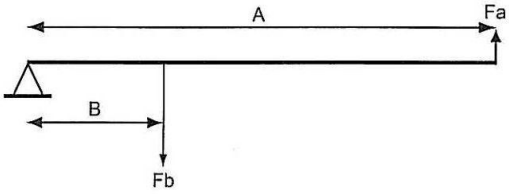
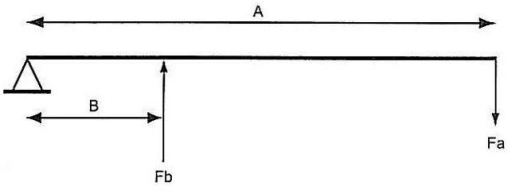


Figure C-60



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