062 – RADIO NAVIGATION

062-01 RADIO AIDS

062-01-01 Ground Direction Finder D/F (including classification of bearings)

11122. What airborne equipment, if any, is required to be fitted in order that a VDF let-down may be flown?

A – none
B – VOR
C – VHF radio
D – VOR/DME

Ref: all

Ans: C

11133. The maximum theoretical range at which an aircraft at FL80 can obtain bearings from a ground VDF facility sited 325 FT above MSL is:

A – 107 NM
B – 158 NM
C – 134 NM
D – 114 NM

Ref: all

Ans: C

11148. Which of the following is an advantage of Ground/DF (VDF) let-down?

A – It is pilot interpreted and does not require the assistance of ATC
B – It only requires a VHF radio to be fitted to the aircraft
C – It does not require any special equipment to be fitted to the aircraft
D – It does not require any special equipment, apart from a VHF radio, to be installed in the aircraft or on the ground

Ref: all

Ans: B

11181. What is the maximum range at which a VDF station at 325 ft can provide a service to an aircraft at FL080?

A – 134 nm
B – 107 nm
C – 91 nm
D – 114 nm

Ref: all

Ans: A

11214. When conducting a QGH approach responsibility for interpreting the procedure rests with ___ and on a VDF approach responsibility rests with ___

A – the controller; the controller
B – the pilot; the pilot
C – the pilot; the controller
D – the controller; the pilot

Ref: all

Ans: D

11220. What is the appropriate maximum theoretical range at which an aircraft at FL130 could receive information from a VDF facility which is sited 1024 FT above MSL?

A – 180 NM
B – 220 NM
C – 120 NM
D – 150 NM

Ref: all

Ans: A

11248. In radio terms, frequency means:

A – the speed of radio waves in metres per second
B – the length of a complete waveform in metres
C – the number of complete waveforms passing a spot in one second
D – the number of waveforms in one hour

Ref: all

Ans: C

11250. If, when you are requesting a QDM from an airfield, you are offered a QGH, is means:

A – the bearing will only be accurate when the aircraft is flying above the QGH level
B – the VDF service will be handled by a different VDF unit, operating on the same frequency
C – the VDF unit is prepared to give you assistance during an approach to the airfield, based on VDF bearings
D – the service will be limited to bearings, no positions will be given by the DF station

Ref: all

Ans: C

11267. Which of the following is an advantage of VDF?

A – No equipment required in the aircraft
B – No special equipment required in the aircraft or on the ground
C – Only a VHF radio is needed in the aircraft
D – It is pilot interpreted, so ATC is not required

Ref: all

Ans: C

11280. With reference to a VDF bearing, the true bearing of the aircraft from the ground station is a:

A – QTE
B – QUJ
C – QDR
D – QDM

Ref: all

Ans: A

15501. What is the minimum level that an aircraft, at a range of 113 NM, must fly in order to contact the tower on R/T for a VDF bearing from an airport sited 169 FT above MSL.

A – FL 50
B – FL 80
C –FL 100
D – FL 60

Ref: all

Ans: D

15522. In which one of the following circumstances is ground direction finding (VDF) likely to be used to fix an aircraft's position?

A – When contacting ATC to join controlled airspace from the open FIR
B – When declaring an emergency on any frequency
C – When using the emergency VHF frequency 121.5 MHz
D – On first contact with ATC on crossing an international FIR boundary

Ref: all

Ans: C

16214. An aircraft travelling at 330 metres a second transmits a signal at 10 GHz to a stationary receiver. If the aircraft is flying directly towards the receiver and they are approximately at the same height the received frequency will be:

A – 11 MHz
B – 10,000011 GHz
C – 9,999989 GHz
D – 11 GHz

Ref: all

Ans: B

16232. Ground DME responders respond at a frequency:

A – the same as the interrogation signal
B – 63 MHz grader than interrogation frequency
C – 63 MHz lower than interrogation frequency
D – 63 MHz different from interrogation frequency, either above or below

Ref: all

Ans: B

16236. The phase difference between the reference and variable signals on QDM 050° (VAR 10°W) for a conventional vor is:

A – 050°
B – 040°
C – 230°
D – 220°

Ref: all

Ans: C

16256. A VDF bearing can be obtained:

A – only on a frequency of 121.5 MHz
B – on the Approach frequency
C – on the frequency notified for VDF services
D – on the frequency agreed between the pilot and ATC but chosen from one of the available ATC frequencies

Ref: all

Ans: C

16257. Which of the following does NOT affect the accuracy of VDF bearings:

A – sky waves
B – duct propagation
C – ground reflections
D – synchronous transmissions

Ref: all

Ans: A

16258. The range at which you can obtain a VDF bearing can be influenced by:

A – time of day
B – type of surface
C – height of aircraft
D – intensity of ionisation

Ref: all

Ans: C

16261. Which of the following statements is correct in respect of a RF signal:

A – the plane of polarisation is dictated by the oscillator unit in the transmitter
B – the electrical component of the signal is parallel to the aerial
C – the magnetic component of the signal is parallel to the aerial
D – both the electrical and magnetic components are parallel to the aerial

Ref: all

Ans: B

16264. A half wave dipole aerial suitable for transmitting an RF signal at 18 MHz should have an effective length of:

A – 16,67 metres
B – 166,67 metres
C – 83,33 metres
D – 8,33 metres

Ref: all

Ans: D

16265. Which of the following statements is true?

A – A broad bandwidth gives a narrow beam width
B – A narrow bandwidth improves beam width
C – A transmission's bandwidth is affected by the design of the aerial
D – Bandwidth must be reduced in order to reduce noise

Ref: all

Ans: D

16266. Diffraction of a RF signal is a displacement of its propagation path due to:

A – reflection from the surface
B – passing over or through mediums of different conductivity
C – passing over obstacles with dimensions close to the wavelength
D – passing through ionised regions of the upper atmosphere

Ref: all

Ans: C

16267. At a height of 5.000 feet you might expect to receive a VHF signal, from a transmitter at sea level, at a range of:

A – 88,4 nm
B – 88,4 nm
C – 70,7 nm
D – 200 km

Ref: all

Ans: A

16268. You are at an altitude of 9,000 feet. At a range of 200 nm from a VHF communications transmitter, and you are receiving a good signal.

A – You should expect this since the transmitter is at a height of 2.000 feet
B – You should have been receiving the signal from a range of 240 nm
C – You are probably receiving a sky wave signal
D – You are probably receiving a duct propagation signal

Ref: all

Ans: D

16269. To establish and maintain effective HF communications the frequency used at a given range:

A – should remain constant
B – should be increased at night
C – should be decreased at night
D – should only be varied by season, decreased in summer and increased in winter

Ref: all

Ans: C

16270. (Refer to figure 062-06).

In the following diagram, the phase difference between the two signals is:

A – 90°
B – 180°
C – 270°
D – 360°

Ref: all

Ans: B

16388. What is QTE?

A – Magnetic track from the station
B – Magnetic track to the station
C – True track from station
D – True track to the station

Ref: all

Ans: C

16389. Ground direction finding at aerodromes utilises when frequencies?

A – VHF at civil aerodromes and VHF at military aerodromes
B – UHF at civil aerodromes and UHF at military aerodromes
C – VHF at civil aerodromes and UHF at military aerodromes
D – UHF at civil aerodromes and VHF at military aerodromes

Ref: all

Ans: C

16778. The emission characteristics A3E describe:

A – ILS
B – VHF communications
C – HF communications
D – VOR

Ref: all

Ans: B

21524. According to ICAO Annex 10, in which frequency band(s) does a locator normally transmit?

A – HF/VHF
B – MF/HF
C – HF
D – LF/MF

Ref: all

Ans: D

21588. What is the “Q” code for a magnetic bearing from a VDF station?

A – “Request QNH”
B – “Request QDR”
C – “Request QTE”
D – “Request QDM”

Ref: all

Ans: B

21595. Which of the following affects VDF range?

A – Coastal refraction
B – The height of the transmitter and of the receiver
C – Sky wave propagation
D – Strength of the pilot’s voice when transmitting

Ref: all

Ans: B

21623. Which Q code would give a magnetic bearing from a VDF station:

A – QDM
B – QDR
C – QUJ
D – QTE

Ref: all

Ans: B

21624. Which Q code would give a magnetic heading to steer (nil wind) to a VDF station:

A – QDM
B – QDR
C – QUJ
D – QTE

Ref: all

Ans: A

21625. Which Q code would give a true track from a VDF station:

A – QDM
B – QDR
C – QUJ
D – QTE

Ref: all

Ans: D

21637. When would VDF be used for a position fix:

A – When an aircraft declares an emergency on any frequency
B – When first talking to a FIR on crossing an international boundary
C – When joining controlled airspace from uncontrolled airspace
D – When declaring an emergency on 121.5 MHz

Ref: all

Ans: D

21639. The gain of an aerial is a measure of its ability to:

A – Focus power
B – Transmit intelligence
C – Overcome transmitter line resistance
D – Compensate for attenuation

Ref: all

Ans: D

21640. A frequency of 2400 KHz is equivalent to a wavelength of:

A – 125 metres
B – 105 metres
C – 0.80 cms
D – 8 metres

Ref: all

Ans: A

21644. Refraction of an electro-magnetic radiation is:

A – The bending of its propagation path as it passes through or over areas of different electrical conductivity
B – The loss of power as it passes through or over areas of different electrical conductivity
C – Is bending resultant from reflection from objects
D – Is loss of power through reflection from objects

Ref: all

Ans: A

21649. The VDF Homer service provides:

A – Accurate bearings on demand
B – A QGH procedure to transiting aeroplanes
C – Bearings which will normally be within ±5^{o} accuracy to a range of 200NM
D – Bearings which may be affected by synchronous transmissions

Ref: all

Ans: C

21650. An aircraft wishing to use the VDF service must:

A – Be equipped with a VOR indicator unit
B – Transmit a signal for a long enough period for the bearing to be established
C – Ask the controller to transmit for a long enough period to establish the bearing
D – Be within 10NM of the VDF aerial

Ref: all

Ans: B

21651. An aeroplane requesting a VDF bearing should:

A – Avoid banking during transmission
B – Not pass overhead VDF aerial
C – Ensure that ratio silence is maintained
D – Transmit on 121.5 MHz

Ref: all

Ans: A

21652. The VDF class B bearing is accurate to within:

A – ±1°
B – ±2°
C – ±3°
D – ±5°

Ref: all

Ans: D

21768. A class C magnetic bearing is received from a station. This is:

A – A QUJ accurate to ±5°
B – A QDM accurate to ±10°
C – A QTE accurate to ±5°
D – A QDR accurate to ±10°

Ref: all

Ans: D

22862. Decimetric waves correspond to the frequency range:

A – 3000 to 30000 MHz
B – 3000 to 30000 KHz
C – 300 to 3000 MHz
D – 300 to 3000 KHz

Ref: all

Ans: C

21803. VOR operates in the (i), transmitting a bearing signal by means of a (ii) and uses (iii) to determine the radial:

A – (i) VHF
(ii) Stationary limacon
(iii) Phase comparison
B – (i) UHF
(ii) Stationary limacon
(iii) Phase comparison
C - (i) VHF
(ii) Rotating limacon
(iii) Phase comparison
D - (i) UHF
(ii) Rotating limacon
(iii) Envelope matching
Ref: all
Ans: C

22327. What equipment does an aircraft need when carrying out a VDF letdown:

A – VHF radio
B – VOR
C – VOR/DME
D – None

Ref: all

Ans: A

22360. An aircraft receives a Class A true bearing from a VDF station. This is:

A – A QUJ accurate to ±2°
B – A QTE accurate to ±2°
C - A QUJ accurate to ±5°
D – A QTE accurate to ±5°

Ref: all

Ans: B

22376. What is the wavelength corresponding to a frequency of 375 KHz:

A – 8 m
B – 80 m
C – 800 m
D – 8000 m

Ref: all

Ans: C

22803. What is the lowest frequency where freedom from static interference can be guaranteed?

A – 3 MHz
B – 30 MHz
C – 300 MHz
D – 3 GHz

Ref: all

Ans: B

22804. When a pilot is conducting a VDF/QGH procedure, he will require:

A – an operator on the ground only for the VDF procedure
B – an operator on the ground only for the QGH procedure
C – an operator on the ground for both the VDF and QGH procedures
D – no operator on the ground for either VDF or QGH procedures

Ref: all

Ans: C

22874. If a ground D/F controller passes a bearing thus: "your true bearing is 256o, class alpha". This means:

A – QTE accurate to ±5°
B – QUJ accurate to ±3°
C – QDR accurate to ±2°
D – QTE accurate to ±2°

Ref: all

Ans: D

24942. The VHF frequency band has a wavelength limit of:

A – 100 m to 10 m
B – 1 m to 100 cms
C – 10 m to 1 m
D – 100 cms to 10 cms

Ref: all

Ans: C

24956. The wavelength of a radio signal is 200 metres. What is the frequency?

A – 1.5 KHz
B – 1.5 GHz
C – 1.5 MHz
D – 15 MHz

Ref: all

Ans: C

24957. The approximate ground waves of LF and MF are (by day) ___ and ___ respectively, with ___ suffering more from atmospheric attenuation.

A – 1500nm; 1000nm; MF
B – 1000nm; 500nm; LF
C – 1000nm; 300nm; MF
D – 500nm; 100nm; LF

Ref: all

Ans: C

24971. With reference to ground DF, the controller can refuse to give bearings if:

A – the requesting aircraft is not from a consenting country
B – conditions are poor and bearings do not fall within the station's classified limits
C – the pilot does not use the prescribed terminology
D – none of the above

Ref: all

Ans: B

24973. As the frequency of a transmitter is increased, the range of the ground wave will:

A – Increase
B – Decrease
C – Decrease only at night
D – Increase only over the sea

Ref: all

Ans: B

24975. A Class B VDF bearing has accuracy limits of plus or minus:

A – 2 degrees
B – 7 degrees
C – 3 degrees
D – 5 degrees

Ref: all

Ans: D

24991. Which of the following statements regarding VHF direction finding (VDF) is most accurate?

A – it is simple and only requires a VHF radio on the ground
B – it is simple and requires a VHF radio and DF equipment in the aircraft
C – it is simple requiring only VHF radios on the ground and in the aircraft
D – it uses line of sign propagation

Ref: all

Ans: D

24992. Given that the compass heading is 270°, the deviation is 2°W, the variation is 30°E and the relative bearing of a beacon is 316°, determine the QDR:

A – 044
B – 048
C – 074
D – 224

Ref: all

Ans: A

062-01-02 ADF (incl. NDB's and Use of RMI)

2802. 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

Ref: all

Ans: B

11107. An NDB transmits a signal pattern in the horizontal plane which is:

A – a beam rotating at 20 Hz
B – bi-local circular
C – a cardioid balanced at 30 Hz
D – omnidirectional

Ref: all

Ans: D

11117. 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

Ref: all

Ans: C

11119. With a transmission from an NDB aerial, the ___ component travels in the ___ plane and the signal is ___ polarised.

A – magnetic; horizontal; vertically
B – electrical; horizontal; vertically
C – electrical; vertical; horizontally
D – magnetic; vertical; horizontally

Ref: all

Ans: A

11121. Factors liable to affect most NDB/ADF system performance and reliability include:

A – height error – station interference – mountain effect
B – static interference – station interference – latitude error
C – static interference – night effect – absence of failure warning system
D – coastal refraction – lane slip – mountain effect

Ref: all

Ans: C

11130. 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

Ref: all

Ans: D

11131. When considering the propagation of ADV transmissions night effect is most pronounced:

A – at dusk and dawn
B – during the long winter nights
C – at or near the coast
D – when flying at low altitude

Ref: all

Ans: A

11132. In order to obtain an ADF bearing the:

A – signal must be received by both the sense and loop aerials
B – sense aerial must be tuned separately
C – mode selector should be switched to LOOP
D – BFO switch must be selected to ON

Ref: all

Ans: A

11150. An NDB signal crossing from land to sea will ___ speed and bend ___ the normal.

A – decrease, towards
B – increase, towards
C – decrease, away from
D – increase, away from

Ref: all

Ans: D

11160. When ADF equipment which incorporates a sense aerial and a loop aerial is tuned to a NDB and the loop aerial is rotated so that a sharp null is found the aerial is:

A – either at right angles or in line with the incoming signals
B – in line with the incoming signals
C – at right angles to the incoming signals
D – aligned with the aircraft nose

Ref: all

Ans: B

11162. 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

Ref: all

Ans: B

11165. Quadrantal errors associated with aircraft Automatic Direction Finding (ADF) equipment are caused by:

A – misalignment of the loop aerial
B – signal bending caused by electrical interference from aircraft wing
C – signal bending by the aircraft metallic surfaces
D – sky wave/ground wave contamination

Ref: all

Ans: C

11173. Which one of the following disturbances is most likely to cause the greatest inaccuracy in ADF bearings?

A – Coastal effect
B – Local thunderstorm activity
C – Quadrantal error
D – Precipitation interference

Ref: all

Ans: B

11175. 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

Ref: all

Ans: B

11179. A radio beacon has an operational range of 10 NM. By what factor should the transmitter power be increased in order to achieve an operational range of 20 NM?

A – Eight
B – Six
C – Four
D – Two

Ref: all

Ans: C

11188. The accuracy of ADF within the DOC by day is:

A - +/-1 deg
B - +/-2 deg
C - +/-5 deg
D - +/-10 deg

Ref: all

Ans: C

11192. What is the wavelength of an NDB transmitting on 375 kHZ?

A – 8 m
B – 8000 m
C – 800 m
D – 80 m

Ref: all

Ans: C

11194. Which of the following factors could cause an error of an ADV bearing of an NDB?

A – Scalloping
B – Atmospheric scatter
C – Phase interference
D – Night effect

Ref: all

Ans: D

11197. The D layer of the ionosphere affects the accuracy of NDB bearings:

A – by day and night
B – by day only
C – by night only
D – never

Ref: all

Ans: D

11200. Night Effect which causes loss of signal and fading, resulting in bearing errors from NDB transmissions, is due to:

A – sky wave distortion of the null position and is maximum at dawn and dusk
B – interference from other transmissions and is maximum at dusk when east of the NDB
C – static activity increasing at night particularly in the lower frequency band
D – the effect of the Aurora Borealis

Ref: all

Ans: A

11226. An RMI indicates aircraft heading. 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

Ref: all

Ans: D

11227. The signal to noise ratio for an NDB is ___ allowing a maximum error of ___ on 95% of occasions during ___

A – 3/1, ±5 degrees, daylight hours only
B – 3/1, ±5 degrees, 24 hours
C – 5/1, ±3 degrees, 24 hours
D – 5/1, ±3 degrees, daylight hours only

Ref: all

Ans: A

11230. An aircraft heading 315ºM shows an NDB bearing 180º on the RMI. Any quadrantal error affecting the accuracy of this bearing is likely to be:

A – zero, as quadrantal errors are not found on the RMI
B – at a maximum
C – at a minimum
D – zero, as quadrantal errors affect only the VOR

Ref: all

Ans: B

11233. When is coastal error at its worst for an aircraft at low level?

A - Beacon inland at an acute angle to the coast
B – Beacon inland at 90º
C – Beacon close to the coast at an acute angle to the coast
D – Beacon close to the coast at 90º to the coast

Ref: all

Ans: A

11260. An aircraft over the sea is receiving a signal from an NDB 50nm from the coast and another from an NDB 20nm from the coast. Which of the following statements is most correct?

A – The bearing information from relative bearings of 90° and 270° would be most correct
B – The bearing information from relative bearings of 360° and 180° would be most correct
C – The bearing information from the beacon 20nm inland would be most correct
D – The bearing information from the beacon 50nm inland would be most correct

Ref: all

Ans: C

11269. The purpose of the BFO switch on the ADF receiver is to:

A – make the signal audible
B – cut out the static noise
C – improve the strength of the received signal
D – attenuate the received signal

Ref: all

Ans: A

11271. Given:
Compass heading 270°
Deviation 2°W
Variation 30°E
Relative bearing 316°
What is the QDR?

A – 224°
B – 226°
C – 046°
D – 044°

Ref: all

Ans: D

11276. Which of the following is likely to have the greatest effect on ADF accuracy?

A – Interference from other NDBs, particularly during the day
B – Frequency drift at the ground station
C – Interference from other NDBs, particularly at night
D – Mutual interference between aircraft aerials

Ref: all

Ans: C

15498. There are two NDBs, one 20 NM inland, and the other 50 NM inland from the coast. Assuming that the error caused by coastal refraction is the same for both propagations, the extend of the error is a position line plotted by an aircraft that is over water will be:

A – the same from both beacons when the aircraft is on a relative bearing of 180^{o} and 360^{o}
B – greater from the beacon that is 20 NM inland
C – the same from both beacons when the aircraft is on a relative bearing of 090^{o} and 270^{o}
D – greater from the beacon that is 50 NM inland

Ref: all

Ans: D

16246. A long range NDB is likely to transmit on ___ and be classified as ___ Select the answer to complete this statement

A – 200 Khz; A2A
B – 800 Khz; A2A
C – 200 Khz; A1A
D – 800 Khz; A1A

Ref: all

Ans: C

16247. The nominal maximum range of an NDB with a transmitter power is 200 watts is:

A – 50 to 60 nm
B – 100 to 120 nm
C – 150 to 170 nm
D – 200 to 200 nm

Ref: all

Ans: A

16249. An ADF uses a sense aerial to:

A – determine the null position
B – resolve ambiguous bearings
C – transmit the beacon ident
D – detect the receiver test signal

Ref: all

Ans: B

16250. A relative bearing indicator shows 030°. The heading of the aeroplane is 090° M. The intercept angle for a course to the NDB of 180° M is:

A – 120°
B – 030°
C – 150°
D – 060°

Ref: all

Ans: D

16251. An RMI shows the bearing of an 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 aeroplanes heading should be altered to:

A – 010°
B – 330°
C – 300°
D – 040°

Ref: all

Ans: A

16252. An aeroplanes RMI shows an NDB bearing 070°, w/v calm. The aeroplane is to join a right hand holding pattern at the NDB, the inbound leg of which is 330°. The aeroplane should:

A – fly to the NDB and join the pattern
B – fly to the NDB then fly outbound on 150° for 1 minute
C – fly to the NDB then fly a teardrop with an outbound heading of 120° for 1 minute and a rate one turn to join in bound
D – fly to the NDB then fly choose either (B) or (C) above as preferred

Ref: all

Ans: A

16253. An aeroplane is flying parallel to a coast. Which of the following NDBs will give the greatest costal refraction LOP error?

A – NDB sited on the coast-RBI 330°
B – NDB sited 30 nm inland-RBI 330°
C – NDB sited on the coast-RBI 300°
D – NDB sited 30 nm inland-RBI 300°

Ref: all

Ans: B

16254. The BFO:

A – creates the audio ident for an NDB
B – is used to make the ident from an A2A NDB audible
C – is used to make the ident from an A1A NDB audible
D – is used to determine the signal strength of an NDB

Ref: all

Ans: C

16255. 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

Ref: all

Ans: B

16387. What is the role of a ground direction finder?

A – To aid pilot navigation
B – To halt ground movements
C – To map airfields
D – To assist planners in the construction of airfield approaches

Ref: all

Ans: A

16390. What is the approved frequency band assigned to aeronautical NDBs?

A – 190-1750 Hz
B – 190-1750 KHz
C – 190-1750 MHz
D – 190-1750 GHz

Ref: all

Ans: B

16391. With regard to the following types of NDB which statements is correct?

A – Locators have 200 W power, 50 nm range and are NON A2A
B – Locators have 15 W power, 10-25 nm range and are NON A2A
C – Locators have 5000 W power, 50 nm range and are NON A2A
D – Locators have 5000 W power, 50 nm range and are NON A1A

Ref: all

Ans: B

16769. An NDB aerial is (i) so as to ensure the range is (ii) by minimising (iii) due to (iv):

A – (i) horizontal; (ii) maximum; (iii) diffraction; (iv) the ground wave
B – (i) vertical; (ii) maximum; (iii) attenuation; (iv) energy losses to the surface
C – (i) horizontal; (ii) maximum; (iii) refraction; (iv) the D layer
D – (i) vertical; (ii) maximum; (iii) attenuation; (iv) atmospheric refraction

Ref: all

Ans: B

16773. If an NDB with a transmitter power of 25 KW which has a range of 50 nm is adjusted to give a power output of 100 KW the new range of the NDB will be approximately:

A – 100 nm
B – 200 nm
C – 300 nm
D – 400 nm

Ref: all

Ans: A

21446. ADF bearings by an aeroplane by day within the published protection range should be accurate to within a maximum error of:

A - +/-10°
B - +/-2.5°
C - +/-2°
D - +/-5°

Ref: all

Ans: D

21520. 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

Ref: all

Ans: A

21522. A VOR and an ADF are co-located. You cross the VOR radial of 240 on a heading of 360° (M). In the vicinity of the station you should read an ADF bearing of:

A – 60
B – 240
C – 300
D – 120

Ref: all

Ans: A

21526. An ADF provides the aircraft with bearing information with respect of a ground station. To do this, the ground station emits a signal pattern which is:

A – a beam rotating at 30 Hertz
B – frequency modulated at 30 Hertz
C – omni-directional
D – unidirectional

Ref: all

Ans: C

21534. An NDB is on a relative bearing of 316° from an aircraft.
Given:
Compass heading 270°
At aircraft deviation 2°W, Variation 30°E
At station Variation 28°E
Calculate the true bearing of the NDB from the aircraft:

A – 252°
B – 254°
C – 072°
D – 074°

Ref: all

Ans: B

21535. 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

Ref: all

Ans: D

21543. Given:
W/V (T): 230/20 kt
Var: 6E
TAS: 80 kt
What relative bearing from an NDB should be maintained in order to achieve an outbound course of 257° (M) from overhead the beacon?

A – 172
B – 188
C – 008
D – 352

Ref: all

Ans: B

21546. If a failed RMI rose is stuck on 090° and the ADF pointer indicates 225°, the relative bearing to the station will be:

A – 135°
B – Impossible to read, due to the RMI failure
C – 315°
D – 225°

Ref: all

Ans: A

21548. In accordance with Doc 8168, a pilot flying an NDB approach must achieve a tracking accuracy within ___ of the published approach track.

A - +/-10°
B - +/- 5°
C - +/- 2.5°
D - +/- 2°

Ref: all

Ans: A

21555. In order to obtain an ADF bearing on a system using sense and loop aerials, the:

A – mode selector should be switched to 'loop'
B – sense aerial must be tuned separately
C – signal must be received by both the sense and loop aerials
D – BFO switch must be selected to 'ON'

Ref: all

Ans: C

21565. 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°

Ref: all

Ans: D

21568. 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

Ref: all

Ans: B

21571. The BFO selector switch on the ADF control panel must be in the 'on' position to enable the pilot to:

A – stop the loop rotation
B – adjust the loop to the aural null position
C – hear the IDENT of NDBs using NON A1A transmissions
D – hear the IDENT of NDBs using NON A2A transmissions

Ref: all

Ans: C

21579. There are two NDBs, one 20 NM inland, and the other 50 NM inland from the coast. Assuming that the error caused by coastal refraction is the same for both propagations, the extent of the error in a position line plotted by an aircraft that is over water:

A – greater from the beacon that is 20 NM inland
B – the same from both beacons when the aircraft is on a relative bearing of 180° and 360°
C – greater from the beacon that is 50 NM inland
D – the same from both beacons when the aircraft is on a relative bearing of 090° and 270°

Ref: all

Ans: C

21583. What according to ICAO Annex 10 is the range of a locator?

A – 50 – 100 NM
B – 25 – 50 NM
C – 10 – 25 NM
D – 100 – 300 NM

Ref: all

Ans: C

21584. What actually happens in the ADF receiver when the BFO position is selected?

A – The BFO circuit is activated, and the receiver accepts only A1A modulated signals
B – The BFO circuit oscillates at an increased frequency in order to allow identification of A2A NDBs
C – The BFO circuit is de-activated
D – The BFO circuit imposes a tone onto the carrier wave to make the NDB's ident audible

Ref: all

Ans: D

21600. 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 affect on the range

Ref: all

Ans: B

21613. You are on a magnetic heading of 055^{o} and your ADF indicates a relative bearing of 325^{o}. The QDM is:

A – 235^{o}
B – 200^{o}
C – 055^{o}
D – 020^{o}

Ref: all

Ans: D

21618. Which combination gives the greatest reduction in reliability of ADF:

A – Station interference; Static interference; Lane slip
B – Mountain effect; Station interference; site error
C – Night effect; Static interference; Quadrantal error
D – Nigh effect; Quadrantal error; Station interference

Ref: all

Ans: C

21629. What gives the greatest error in ADF:

A – Coastal effect
B – Night effect
C – Static interference from thunderstorms
D – Quadrantal error

Ref: all

Ans: C

21654. The nominal maximum range of an NDB with a transmitter power is 200 watts is:

A – 40 to 45 NM
B – 100 to 120 NM
C – 150 to 170 NM
D – 200 to 220 NM

Ref: all

Ans: A

21752. The ICAO allocated band of frequencies for NDB is:

A – 255 – 455 KHz
B – 200 – 1750 KHz
C – 255 – 1750 KHz
D – 200 – 455 KHz

Ref: all

Ans: B

21757. An aircraft 10 nm from a north-south coastline takes two three-position line fixes from an inland NDB. The aircraft's indicated position is:

A – Nearer to the coastline than its actual position
B – Further from the coastline than its actual position
C – Correct because the coastal refraction errors will cancel out because two fixes have been taken
D – Correct in azimuth but false in range

Ref: all

Ans: A

21772. Using an ADF loop aerial the maximum signal will be received when:

A – The loop is in line with the NDB aerial
B – The loop is at 90o to the NDB aerial
C – Within the promulgated range
D – During daytime only

Ref: all

Ans: A

21779. 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

Ref: all

Ans: A

21781. Which of the following are all errors associated with ADF:

A – selective availability, coastal refraction, night effect
B – night effect, quadrantal error, lane slip
C – mountain effect, station interference, static interference
D – selective availability, coastal refraction, quadrantal error

Ref: all

Ans: C

21782. 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

Ref: all

Ans: C

21783. Which of the following is the most significant error in ADF:

A – quadrantal error
B – coastal refraction
C – precipitation static
D – static from Cb

Ref: all

Ans: D

22328. When using ADF (i), the accuracy is (ii) than (iii), because the surface wave is (iv):

A – (i) by day; (ii) greater; (iii) by night; (iv) not present
B – (i) by night; (ii) greater; (iii) by day; (iv) not present
C – (i) by night; (ii) less; (iii) by day; (iv) contaminated by sky waves
D – (i) by day; (ii) less; (iii) by night; (iv) contaminated by sky waves

Ref: all

Ans: C

22332. Snow will affect ADF by:

A – Decreasing the range
B – Decreasing the accuracy
C – Having no effect
D – Decreasing the range and accuracy

Ref: all

Ans: C

22344. An NDB has a range of 50 nm with a power output of 80 watts: The power required to increase the range to 75 nm is:

A – 120 watts
B – 150 watts
C – 180 watts
D – 320 watts

Ref: all

Ans: C

22349. 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

Ref: all

Ans: A

22350. If an NDB signal is received at a range of 1000 nm:

A – The signal is a surface wave and is quite usable
B – It will be a ground wave and will be inaccurate
C – It is a space wave and will be inaccurate
D – It is a sky wave and is inaccurate

Ref: all

Ans: D

22353. 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^{o}
B – (i) Well inland; (ii) 90^{o}
C – (i) On the coast; (ii) 15^{o}
D – (i) Well inland; (ii) 20^{o}

Ref: all

Ans: D

22356. NDB operate in the:

A – VLF and LF bands

B – LF and MF bands
C – VLF, LF and MF bands
D – VLF and MF bands

Ref: all

Ans: B

22357. 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 polarised signal
D – At dawn and dusk

Ref: all

Ans: D

22362. An aircraft over the sea will experience (i) coastal refraction effect when the radio waves cross the coastline at (ii) and the NDB is (iii):

A – (i) More; (ii) 90°; (iii) Near the coast
B – (i) Less; (ii) 45°; (iii) Well inland
C – (i) Less; (ii) 90°; (iii) Near the coast
D – (i) More; (ii) 45°; (iii) On the coast

Ref: all

Ans: C

22365. An ADF is correctly tuned to an NDB, the needle is "hunting" and the signal is fading and growing louder alternately, the reason for this is:

A – The required sky wave is being interfered with by the ground wave from another NDB
B – The required ground wave is being contaminated by sky waves
C – Scalloping
D – The aircraft is flying outside the designated operational coverage

Ref: all

Ans: B

22378. When converting VOR and ADF bearings to true, the variation at the (i) should be used for VOR and at the (ii) for ADF:

A – (i) Aircraft; (ii) aircraft
B – (i) Aircraft; (ii) station
C – (i) Station; (ii) aircraft
D – (i) Station; (ii) station

Ref: all

Ans: C

22763. Two NDBs, one 20 nm from the coast and the other 50 nm further inland. Assuming Coastal Refraction is the same for each, from which NDB will an aircraft flying over the sea receive the greatest error?

A – The NDB at 20 nm
B – The NDB at 50 nm
C – Same when the relative bearing is 090/270
D – Same when the relative bearing is 180/360

Ref: all

Ans: B

22768. The allocated coverage of NDBs is:

A – 250 – 450 KHz
B – 190 – 1750 KHz
C – 108 – 117.95 MHz
D – 200 – 500 KHz

Ref: all

Ans: B

22868. What antennae must be used to obtain an ADF bearing?

A - Loop
B – Sense
C – Loop and sense
D – Radome

Ref: all

Ans: C

22869. For long range NDB's the most common type is:

A – LF NON A1A

B – LF NON A2A
C – MF NON A1A
D – MF NON A2A

Ref: all

Ans: A

24507. RMI rose is mechanically stuck on 090 degrees. The ADF pointer indicates 225 degrees. What is the relative bearing to the beacon?

A – 225 degrees
B – 135 degrees
C – Cannot be determined
D – 000 degrees

Ref: all

Ans: B

24961. NDBs transmit mainly in the:

A – VHF band
B – UHF band
C – HF band
D – MF band

Ref: all

Ans: D

24962. The 95% accuracy for ADF bearings of an NDB by day is:

A – ±2°
B – ±7°
C – ±10°
D – ±3°

Ref: all

Ans: B

24966. When receiving an NDB signal on an ADF receiver the BFO can be selected OFF for the:

A – tone signal on NONA1A
B – ident signal on NONA1A
C – tone signal on NONA2A
D – ident signal on NONA2A

Ref: all

Ans: D

24974. An aircraft is tracking 060° (T) in still air. The relative bearing of an NDB is 035° at 1300. 12 min later the relative bearing is 070°. If the G/S is 180kt, what is the aircraft's distance from the NDB at 1312:

A – 18 nm
B – 36 nm
C – 24 nm
D – 30 nm

Ref: all

Ans: B

24977. A radio beacon has range of 10 nm. By what factor should the power be increased to achieve a range of 20 nm?

A – 16
B – 2
C – 4
D – 8

Ref: all

Ans: C

24980. A NDB transmits a signal pattern which is:

A – A 30 Hz polar diagram
B – Omni-directional
C – A bi-lobal pattern
D – A beam rotating at 30 Hz

Ref: all

Ans: B

24989. The frequency band chosen for NDB's is:

A – upper MF and lower LF
B – VLF
C – upper LF and lower MF
D – LF

Ref: all

Ans: C

24990. To maintain the 314° QDR inbound to a NDB with 7° starboard drift, the heading in °M and relative bearing will be:

A – 321; 173
B – 127; 007
C – 141; 353
D – 307; 183

Ref: all

Ans: B

24993. 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

Ref: all

Ans: D

062-01-03 CVOR & DVOR (incl. use of RMI)

8054. If the signal from a VOR is lost, how is this shown on the B737-400 EHSI display?

A – By removal of the deviation bar and pointer
B – By showing a fail flag alongside the deviation bar
C – A flashing red FAIL message appears in the frequency location
D – An amber FAIL message appears in the frequency location

Ref: all

Ans: A

11115. An aircraft is flying on the true track 090° towards a VOR station located near the equator where the magnetic variation is 15°E. The variation at the aircraft position is 8°E. The aircraft is on VOR radial:

A – 255°
B – 278°
C – 262°
D – 285°

Ref: all

Ans: A

11118. The frequency range of a VOR receiver is:

A – 108 to 117.95 MHz
B – 108 to 111.95 MHz
C – 118 to 135.95 MHz
D – 108 to 135.95 MHz

Ref: all

Ans: A

11120. An aircraft is 100 NM from a VOR facility. Assuming no error when using a deviation indicator where 1 dot = 2° deviation, how many dots deviation from the centre line of the instrument will represent the limits of the airway boundary? (Assume that the airway is 10 NM wide)

A – 6.0
B – 3.0
C – 4.5
D – 1.5

Ref: all

Ans: D

11129. When tracking a VOR radial inbound the aircraft would fly?

A – a constant track
B – a great circle track
C – a rhumb line track
D – a constant heading

Ref: all

Ans: B

11134. (Refer to figure 062-04)

An aircraft is attempting to track 186°M on an airway defined by a VOR 80 nm away. The VOR indicates the aircraft position. With these indications the aircraft is on the ___ radial and ___ the airway.

A – 001° outside
B – 181° inside
C – 001° inside
D – 181° outside

Ref: all

Ans: A

11135. An aircraft is on radial 120 with a magnetic heading of 300°, the track selector (OBS) reads: 330. The indications on the Course Deviation Indicator (CDI) are fly:

A – left with FROM showing
B – right with TO showing
C – right with FROM showing
D – left with TO showing

Ref: all

Ans: D

11138. An aircraft is on a heading of 100 degrees (m) from a VOR. To make the VOR/ILS deviation indicator needle centralise with the TO flag showing, the following bearing should be selected on the OBS:

A – 100 degrees
B – 110 degrees
C – 290 degrees
D – 280 degrees

Ref: all

Ans: D

11143. The basic principle of operation of a standard VOR is by:

A – phase comparison between a 108 Mhz reference signal and a 30 Hz variable signal
B – phase difference between a frequency modulated reference signal and an amplitude modulated variable signal
C – phase comparison between an amplitude modulated reference signal and a frequency modulated variable signal
D – phase comparison between a 30 Hz reference signal and a 108 Mhz variable signal

Ref: all

Ans: B

11147. Given:
Magnetic heading 280° VOR radial 090°
What bearing should be selected on the omni-bearing selector in order to centralise the VOR deviation needle with a TO indication?

A – 100°
B – 280°
C – 270°
D – 090°

Ref: all

Ans: C

11153. 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

Ref: all

Ans: A

11155. Transmissions from VOR facilities may be adversely affected by:

A – static interference
B – uneven propagation over irregular ground surfaces
C – night effect
D – quadrantal error

Ref: all

Ans: B

11159. Given:
VOR station position N61° E025°, variation 13°E. Estimated position of an aircraft N59° E025°, variation 20°E
What VOR radial is the aircraft on?

A – 167°
B – 347°
C – 160°
D – 193°

Ref: all

Ans: A

11170. 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: ½ Scale deflection to the left
B – FROM: ½ Scale deflection to the left
C – TO: ½ Scale deflection to the right
D – FROM: ½ Scale deflection to the right

Ref: all

Ans: A

11180. If an aircraft flies along a VOR radial it will follow a:

A – rhumbline track
B – great circle track
C – line of constant bearing
D – constant magnetic track

Ref: all

Ans: B

11183. What is the maximum theoretical range that an aircraft at FL 150 can receive signals from a VOR situated 609 feet above MSL?

A – 156 NM
B – 220 NM
C – 147 NM
D – 184 NM

Ref: all

Ans: D

11189. 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

Ref: all

Ans: B

11193. A VOR is sited at position 58°00 N 073°00 W where the magnetic variation equals 32°W. An aircraft is located at position 56°00 N 073°00 W where the magnetic variation equals 28°W. The aircraft is on VOR radial:

A – 360
B – 208
C – 212
D – 180

Ref: all

Ans: C

11203. The VOR system is limited to about 1° of accuracy. One degree at 200 NM represents a width of:

A – 2.0 NM
B – 3.5 NM
C – 2.5 NM
D – 3.0 NM

Ref: all

Ans: B

11204. Using a VOR outside the DOC may result in interference from:

A – other beacons
B – other aircraft
C – sky waves
D – ground waves

Ref: all

Ans: A

11205. The antenna polar diagram of a conventional VOR:

A – Is always directed towards the aircraft
B – Is like a figure of 8
C – Is a pencil beam
D – Rotates at 30 revolutions per second

Ref: all

Ans: D

11210. The two signals transmitted by a conventional VOR ground station are 90^{o} out of phase on magnetic:

A – west
B – south
C – east
D – north

Ref: all

Ans: C

11215. The RMI indicates aircraft magnetic heading. To convert the RMI bearings of NDBs and VORs to true bearings the correct positions to read magnetic variation are: (VOR), (NDB)

A – aircraft position, beacon position
B - beacon position, beacon position
C – beacon position, aircraft position
D – aircraft position, aircraft position

Ref: all

Ans: C

11222. With reference to the VOR:

A – Failure of the monitor will cause the beacon to cease its ident
B – A typical VOR frequency is 118.15 Mhz
C – The TO/FROM indicator shows whether the aircraft is heading towards or away from the beacon
D – Wide coverage is obtained from only a few beacons

Ref: all

Ans: A

11229. Which of the following statements concerning the variable, or directional, signal of a conventional VOR is correct?

A - The transmitter varies the amplitude of the variable signal by 30 Hz each time it rotates
B – The rotation of the variable signal at a rate of 30 times per second gives it the characteristics of a 30 Hz amplitude modulation
C – The transmitter changes the frequency of the variable signal by 30 Hz either side of the allocated frequency each time it rotates
D – The receiver adds 30 Hz to the variable signal before combining it with the reference signal

Ref: all

Ans: B

11235. Given:
Course Deviation Indicator (CDI) 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

Ref: all

Ans: B

11240. 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

Ref: all

Ans: A

11241. The captain of an aircraft flying at FL 100 wishes to obtain weather information at the destination airfield (0 ft MSL) from the airfields VOR. At what maximum theoretical range will it be possible to obtain this information?

A – 1230 km
B – 123 km
C – 12.3 NM
D – 123 NM

Ref: all

Ans: D

11244. If the reference phase differs 30^{o} with the variable phase the radial from the VOR station will be:

A – 030^{o}
B – 330^{o}
C – 210^{o}
D – 150^{o}

Ref: all

Ans: A

11252. Which frequency band is used by VOR transmissions?

A – SHF
B – UHF
C – VHF
D – HF

Ref: all

Ans: C

11253. An aircraft at FL 100 should be able to receive a VOR ground station at 100 FT above MSL at an approximate maximum range of:

A – 135 NM
B – 123 NM
C – 128 NM
D – 142 NM

Ref: all

Ans: A

11255. For a conventional VOR a phase difference of 090 deg would be achieved by flying ___ from the beacon.

A – west
B – north
C – east
D – south

Ref: all

Ans: C

11258. An airway 10 NM wide is to be defined by two VORs each having a resultant bearing accuracy of plus or minus 5.5°. In order to ensure accurate track guidance within the airway limits the maximum distance apart for the transmitter is approximately:

A – 165 NM
B – 50 NM
C – 105 NM
D – 210 NM

Ref: all

Ans: C

11261. An RMI slaved to a remote indicating compass has gone unserviceable and is locked on to a reading of 090°. The tail of the VOR pointer shows 135°. The available information from the VOR is:

A – Radial 315°, relative bearing unknown
B – Radial unknown, relative bearing 225°
C – Radial unknown, relative bearing 045°
D – Radial 135°, relative bearing unknown

Ref: all

Ans: D

11270. (Refer to figure 062-05)
Refer to the diagram of a VOR/ILS deviation indicator. Assume that the indicator is set to define the centreline of an airway, that the aircraft is 90 nm from the VOR and inbound to the facility. At the time of observation the aircraft was located on radial:

A – 063°
B – 253°
C – 245°
D – 243°

Ref: all

Ans: A

11272. An aircraft on a heading of 280°(M) is on a bearing of 090°(M) from a VOR. The bearing you should select on the OMNI bearing selector to centralise the VOR/ILS left/right deviation needle with a TO indication is:

A – 100°
B – 090°
C – 270°
D – 280°

Ref: all

Ans: C

11274. 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

Ref: all

Ans: B

11275. If the compass providing information to the RMI suddenly gets a 20º deviation:

A – the magnetic track to the VOR station may be read on the compass card under the tip of the VOR needle
B – the number of the received radial may still be read on the compass card under the tail of the VOR needle
C – the relative bearing to the VOR, as observed on the RMI, will jump 20o
D – all 3 answers are correct

Ref: all

Ans: D

11281. An aircraft is flying on a heading of 270o(M). The VOR OBS is also set to 270o 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

Ref: all

Ans: C

11283. 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 manoeuvre the aircraft towards or from the CDI needle
D – Tells whether you should turn the aircraft towards or away from the CDI indication

Ref: all

Ans: B

11288. Using a VOR beyond the limits of the DOC may result in:

A – loss of signal due to line of sight limitations
B – interference from other VORs operating on the same frequency
C – sky wave contamination of the VOR signal
D – scalloping errors

Ref: all

Ans: B

11294. The maximum theoretical range at which an aircraft at FL 210 may receive signals from a VOR facility sited 340 feet above mean sea level is approximately:

A – 163 NM
B – 245 NM
C – 204 NM
D – 183 NM

Ref: all

Ans: C

11296. Using a 5 dot CDI, how many dots would show for an aircraft on the edge of an airway at 100 nm from the VOR beacon?

A – 5
B – 2.5
C – 1.5
D – 3

Ref: all

Ans: C

15477. A VOR is sited at position A (45°00N, 010°00E). An aircraft is located at position B (44°00N, 010°00E). Assuming that the magnetic variation at A is 10°W and at B is 15°W, the aircraft is on VOR radial:

A – 185°
B – 180°
C – 190°
D – 195°

Ref: all

Ans: C

15480. The principle used in VOR bearing measurement is:

A – envelope matching
B – beat frequency discrimination
C – difference in depth of modulation
D – phase comparison

Ref: all

Ans: D

15481. 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

Ref: all

Ans: B

15488. In which frequency band do VOR transmitters operate?

A – VHF
B – UHF
C – SHF
D – EHF

Ref: all

Ans: A

15489. An Omni-bearing selector (OBS) shows full deflection to the left when within range of a serviceable VOR. What angular deviation are you from the selected radial?

A – 10^{o} or more
B – less than 10^{o}
C – 1.5^{o} or more
D – 2.5^{o} or more

Ref: all

Ans: A

15499. An aircraft at 6400 FT will be able to receive a VOR ground station at 100 FT above MSL at an approximate maximum range of:

A – 100 NM
B – 120 NM
C – 110 NM
D – 90 NM

Ref: all

Ans: C

15518. (Refer to figure 062-10)
The letters QTX and adjacent symbol indicate a:

A – VOR/DME
B – TACAN
C – VOR
D – Airport

Ref: all

Ans: A

15525. Which of the following lists information required to input a way point or Phantom Station into a basic VOR/DME-based Area Navigation System?

A – Magnetic track and distance from the aircraft to the way point or Phantom Station
B – Magnetic track and distance to a VOR/DME from the way point or Phantom Station
C – Radials from a minimum of two VORs to the way point or Phantom Station
D – Radial and distance from a VOR/DME to the way point or Phantom Station

Ref: all

Ans: D

15542. Given:
Aircraft heading 160° (M)
Aircraft is on radial 240° from a VOR
Selected course on HIS 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

Ref: all

Ans: C

16235. The variable signal of a conventional VOR is:

A – 30 Hz frequency modulated
B – 30 Hz amplitude modulated
C – 9960 Hz frequency modulated
D – 9960 Hz amplitude modulated

Ref: all

Ans: B

16238. 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

Ref: all

Ans: D

16240. When using a DVOR, the pilot should be aware that the reference and variable signals are reversed. This:

A – does not affect the VOR indications in any way
B – reverses the indications
C – improves the accuracy
D – improves the range

Ref: all

Ans: D

16241. An aeroplane is on radial 070º of a VOR, HDG is 270º. If the OBS is set to 260º, the CDI will show:

A – fly left TO
B – fly right TO
C – fly left FROM
D – fly right FROM

Ref: all

Ans: A

16242. A VOT is:

A – a test VOR
B – a terminal VOR
C – a trial VOR
D – a tracking VOR

Ref: all

Ans: A

16392. 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

Ref: all

Ans: D

16393. If you correctly tuned in a VOR situated to your east, your RMI should read ___ and your OBS would read ___

A – 000; 000 with needle central and TO indicated
B – 090; 090 with needle central and FROM indicated
C – 000; 000 with needle central and FROM indicated
D – 090; 090 with needle central and TO indicated

Ref: all

Ans: C

16845. With reference to a VOR, the cone of confusion is:

A – the area outside the DOC
B – the area directly overhead a VOR
C – the change over from TO to FROM when the OBS is set 90° to the radial
D – the change over from FROM to TO when the OBS is set 90° to the radial

Ref: all

Ans: B

16848. 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

Ref: all

Ans: D

21444. The maximum theoretical range at which an aircraft at FL 230 may receive signals from a VOR facility sited at mean sea level is:

A – 190 NM
B – 230 NM
C – 170 NM
D – 151 NM

Ref: all

Ans: A

21515. (Refer to figure 062-12)

What is the value of the selected course?

A – 260° (M)
B – 272° (M)
C – 299° (M)
D – 280° (M)

Ref: all

Ans: C

21521. A pilot flying an aircraft at FL 80, tunes in a VOR which has an elevation of 313 m. Given ISA conditions, what is the maximum theoretical distance at which a pilot might expect to receive the VOR signals?

A – 120 NM
B – 180 NM
C – 100 NM
D – 151 NM

Ref: all

Ans: D

21527. 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 – 018°
C – 010°
D – 342°

Ref: all

Ans: C

21529. An aircraft is on the 120° radial from a VOR station. Course 340° is selected on the HIS (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

Ref: all

Ans: A

21530. An airraft is situated at 30°N – 005°E with a magnetic variation of 10°W. A VOR is located at 30°N – 013°E with a magnetic variation of 15°W. The aircraft is situated on the VOR radial:

A – 101°
B – 281°
C – 286°
D – 256°

Ref: all

Ans: C

21533. An aircraft, on a heading of 180°M is on a bearing of 270°M from a VOR. The bearing you should select on the OMNI bearing selector to centralise the VOR/ILS left/right deviation needle is:

A – 360°
B – 270°
C – 090°
D – 180°

Ref: all

Ans: C

21554. In order to measure the radial from a VOR, the aircraft VOR receiver:

A – uses pulse technique to determine the radial
B – measures the time difference between reception of the two signals transmitted from the ground installation
C – measures the phase difference between the reference phase and the variable phase of the signal
D – measures the time difference between sending the interrogation signal and receiving the transponder signal

Ref: all

Ans: C

21576. The maximum theoretical range at which an aircraft at FL 230 may receive signals from a VOR facility sited at mean sea level is:

A – 170 NM
B – 230 NM
C – 190 NM
D – 151 NM

Ref: all

Ans: C

21577. 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°

Ref: all

Ans: D

21598. Which of the following errors is associated with the use of VOR?

A – Scalloping
B – Coastal refraction
C – Quadrantal error
D – Night effect

Ref: all

Ans: A

21612. You are on a 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

Ref: all

Ans: B

21614. Your aircraft is heading 075°M. The OBI 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 – 025° and 115°
D – 205° and 295°

Ref: all

Ans: D

21619. Heading 270° with 270° set on the OBS with FROM indicated the VOR indicator shows 4 dots to the left. Which segment are you in:

A – NE
B – NW
C – SE
D – SW

Ref: all

Ans: B

21622. A VOR receiver with a phase comparison of 90° will be on what radial:

A – North
B – East
C – South
D – West

Ref: all

Ans: B

21632. What use if any does 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

Ref: all

Ans: C

21656. The reference signal of a conventional VOR is:

A – 30 Hz frequency modulated
B – 30 Hz amplitude modulated
C – 9960 Hz frequency modulated
D – 9960 amplitude modulated

Ref: all

Ans: A

21657. A frequency most suitable for a terminal VOR would be:

A – 108.20
B – 108.15
C – 108.10
D – 118.05

Ref: all

Ans: A

21658. At an altitude of 20000 ft you would expect to detect a sea level VOR at a range of:

A – 143NM
B – 200NM
C – 260NM
D – 178NM

Ref: all

Ans: D

21659. The Declared Operational Coverage of a VOR is:

A – An altitude and range limited by transmitter power
B – A range limited by transmitter power
C – An altitude and range limited by signal to noise ratio
D – A range limited by signal to noise ratio

Ref: all

Ans: C

21748. When comparing conventional and Doppler VOR, which of the following applies to the Doppler VOR:

A – The reference and variphase signals are reversed but the phase difference remains the same
B – The reference and variphase signals are the same but the phase difference is reversed
C – The reference and variphase signals are reversed and the phase relationship remains the same
D – The reference and variphase signals are reversed and the phase relationship is reversed

Ref: all

Ans: A

21762. 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 eg “Aberdeen Doppler VOR”

Ref: all

Ans: B

21765. With regard to the monitoring of a VOR, the monitor will remove the identification or switch off the VOR transmitter if there is a change of measured bearing greater than:

A – 0.5^{o}
B – 1^{o}
C – 1.5^{o}
D – 2^{o}

Ref: all

Ans: B

21769. An aircraft at FL 350 is using a VOR (2060 amsl). The maximum theoretical range at which the VOR can be used is:

A – 290 nm
B – 240 nm
C – 225 nm
D – 200 nm

Ref: all

Ans: A

21784. What is the maximum distance between VOR beacons designating the centreline of an airway (10 nm wide), if the expected VOR bearing error is 5.5^{o}:

A – 120 nm
B – 109 nm
C – 60 nm
D – 54 nm

Ref: all

Ans: B

21785. On a CVOR the phase difference between the AM and FM signals is 30^{o}. The VOR radial is:

A – 210
B – 030
C – 330
D – 150

Ref: all

Ans: B

21787. The maximum range an aircraft at FL 270 can receive transmissions from a VOR/DME at 800 ft is:

A – 275 nm
B – 200 nm
C – 240 nm
D – 220 nm

Ref: all

Ans: C

21788. Which of the following is a valid frequency (MHz) for a VOR:

A – 107.75
B – 109.90
C – 118.35
D – 112.20

Ref: all

Ans: D

21789. What is the maximum range a transmission from a VOR beacon at 169 ft can be received by an aircraft at FL 012.

A – 60 nm
B – 80 nm
C – 120 nm
D – 220 nm

Ref: all

Ans: A

21794. What information does military TACAN provide for civil aviation users:

A – magnetic bearing
B – DME
C – Nothing
D – DME and magnetic bearing

Ref: all

Ans: B

21795. In a conventional VOR the direction of rotation of the signal will be (i) and the variable signal is (ii). In doppler VOR the reference signal is (iii) and the direction of rotation will (iv):

A – (i) Clockwise; (ii) FM; (iii) FM; (iv) Clockwise
B – (i) Anticlockwise; (ii) AM; (iii) AM; (iv) Clockwise
C – (i) Clockwise; (ii) AM; (iii) AM; (iv) Anticlockwise
D – (i) Anticlockwise; (ii) FM; (iii) AM; (iv) Anticlockwise

Ref: all

Ans: C

21799. An aircraft is inbound to VOR X on the 073 radial and has a Doppler 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

Ref: all

Ans: D

22316. The JAR OPS recommendation for the colour of a VORTAC which is not in use by the FMC is:

A – white
B – green
C – magenta
D – cyan

Ref: all

Ans: D

22343. The principle of operation of VOR is:

A – Calculating the frequency difference of separate transmissions
B – Calculating the frequency difference of separate transmissions
C – Phase comparison of signals at the same frequency
D – Secondary radar technique

Ref: all

Ans: C

22358. When the term “radial” is used in reference to 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

Ref: all

Ans: B

22361. When using a VOR outside the DOC, the equipment:

A – May give reverse readings
B – May suffer from scalloping
C – May suffer interference from other VORs
D – Will indicate normally but the accuracy will always be less than 5^{o}

Ref: all

Ans: C

22363. (Refer to figure 062-01)

The indication was obtained when the aircraft was at a range of 50 nm from the VOR. Assuming that the VOR is correctly set-up, the radial and horizontal distance the aircraft is off track are:

A – 269 radial and 5 nm right of track
B – 089 radial and 5 nm left of track
C – 269 radial and 3.3 nm left of track
D – 089 radial and 3.3 nm right of track

Ref: all

Ans: D

22367. The maximum width of the cone of silence above a VOR at 30 000 ft is:

A – 4.1 nm
B – 8.2 nm
C – 11.6 nm
D – 5.8 nm

Ref: all

Ans: C

22372. (Refer to figure 062-02)
The indication was obtained when the aircraft was at a range of 90 nm from the VOR. Assuming that the VOR is correctly set-up, the radial and horizontal distance the aircraft is off track are:

A – 062 radial and 9 nm right of track
B – 074 radial and 6 nm left of track
C – 242 radial and 6 nm left of track
D – 254 radial and 9 nm right of track

Ref: all

Ans: A

22380. If the VOR accuracy has a limit of 1°, what is the maximum cross track error at 200 nm:

A – 3 nm
B – 2.5 nm
C – 2 nm
D – 3.5 nm

Ref: all

Ans: D

22382. An aircraft is flying a heading of 090° along the Equator, homing to a VOR. If the variation at the aircraft is 10E and 15E at the VOR, what is the inbound radial:

A – 075
B – 105
C – 255
D – 285

Ref: all

Ans: C

22767. In a VOR the reference signal and the variable signal have a 30 Hz modulation. The variable signal modulation is produced by:

A – Adding 30 Hz to the transmitted signal
B – A 30 Hz rotation producing a 30 Hz modulation
C – Varying the amplitude up and down at ±30 Hz
D – Varying the frequency up and down at ±30 Hz

Ref: all

Ans: B

22775. The quoted 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

Ref: all

Ans: A

22800. The Course Deviation Indicator shows 248 TO and 3 dots FLY LEFT. If the DME range is 90 nm your VOR radial and distance from the centre line will be:

A – 074; 9 nm
B – 242; 6 nm
C – 062; 9 nm
D – 254; 9 nm

Ref: all

Ans: C

22863. 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

Ref: all

Ans: A

22865. A VOR indication of 240° FROM is given. Variation at the aircraft is 9W and at the VOR is 7W. The heading °(T) in nil wind to reach the station is:

A – 231
B – 051
C – 053
D – 233

Ref: all

Ans: C

22866. An aircraft is maintaining an airway centreline of 000° defined by a VOR ahead of the aircraft. Variation at the VOR is 5E. At 60 nm to go the QDM is 004. The aircraft's position relative to the airway lateral boundary is:

A – 3 nm inside the airways eastern boundary
B – 1 nm inside the airways western boundary
C – 1 nm outside the airways western boundary
D – 1 nm inside the airways eastern boundary

Ref: all

Ans: B

22873. Your QUJ is 335° by VDF. The variation of a VOR at the same location is 12°W. What is the phase difference between the reference and variable signals in the aircraft's receivers from that VOR?

A – 323°
B – 347°
C – 143°
D – 167°

Ref: all

Ans: D

24944. An aircraft bears 036° (T) from a VOR beacon. Its heading is 330° (T) and the variation at the beacon 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°

Ref: all

Ans: B

24950. The phase difference between the VOR reference signal and the variable phase signal measured at an aircraft bearing 297° (T) from a VOR, where the magnetic variation is 23E, is:

A – 320°
B – 274°
C – 297°
D – None of the above

Ref: all

Ans: B

24963. The indications of a VOR in an aircraft tracking towards a VOR are 075° (M) TO and deviation indicator central. A co-located NDB shows 012° relative. What are the drift and heading in °(M)?

A – 12°S; 087
B – 12°P; 063
C – 12°S; 063
D – 12°P; 087

Ref: all

Ans: C

24994. The principle used to measure VOR bearings is:

A – phase comparison
B – switched cardioids
C – difference in depth of modulation
D – pulse technique

Ref: all

Ans: A

24995. What is the maximum distance apart a VOR and TACAN can be located and have the same identification?

A – 2000 m
B – 60 m
C – 600 m
D – 6 m

Ref: all

Ans: C

24996. The maximum range an aircraft at FL 370 can receive transmissions from a VOR/DME at 800 ft is:

A – 275 nm
B – 200 nm
C – 243 nm
D – 220 nm

Ref: all

Ans: A

24997. When tracking the 090 radial outbound from a VOR, the track flown is:

A – a straight line
B – a rhumb line
C – a great circle
D – a constant true heading

Ref: all

Ans: C

24998. The frequency band of VOR is:

A – VHF
B – UHF
C – HF
D – LF & MF

Ref: all

Ans: A

24999. On which radial from a VOR at 61N025E (VAR 13ºE) is an aircraft at 59N025E (VAR 20ºE)?

A – 160
B – 347
C – 193
D – 167

Ref: all

Ans: D

25000. What is the minimum height an aircraft must be to receive signals from a VOR at 196 ft amsl at a range of 175 nm?

A – 26000 ft
B – 16000 ft
C – 24000 ft
D – 20000 ft

Ref: all

Ans: B

25001. At a range of 200 nm from a VOR, if there is an error of 1°, how far off the centreline is the aircraft?

A – 3.5 nm
B – 1.75 nm
C – 7 nm
D – 1 nm

Ref: all

Ans: A

25094. On the B737-400 EHSI what happens if the selected VOR fails?

A – the display blanks and a fail warning appears
B – the deviation bar is removed
C – a fail flag is displayed alongside the display bar
D – the display flashes

Ref: all

Ans: B

062-01-04 DME (distance measuring equipment)

11139. An aircraft at FL 360 is 10 nm plan range from a DME. The DME reading in the aircraft will be:

A – 8 nm
B – 11.7 nm
C – 10 nm
D – 13.6 nm

Ref: all

Ans: B

11152. The aircraft DME receiver is able to accept replies to its own transmission and reject replies to other aircraft interrogations because:

A – transmission frequencies are 63 MHz different for each aircraft
B – pulse pairs are amplitude modulated with the aircraft registration
C – aircraft interrogation signals and transponder responses are 63 MHz removed from each other
D – pulse pairs are discreet to a particular aircraft

Ref: all

Ans: D

11167. The time taken for the transmission of an interrogation pulse by a Distance Measuring Equipment (DME) to travel to the ground transponder and return to the airborne receiver was 2000 micro-second. The slant range from the ground transponder was:

A – 165 NM
B – 186 NM
C – 296 NM
D – 330 NM

Ref: all

Ans: A

11168. If a VOR station and a DME station, having different locations, are selected to provide a fix:

A – two difference IDs will have to be checked
B – two positions, being ambiguous, will be presented
C – two sets, with separate frequency control, are required in the aircraft
D – all 3 answers above are correct

Ref: all

Ans: D

11176. What is the maximum distance between VOR and DME/TACAN ground installations if they are to have the same Morse code identifier?

A – 60 m
B – 2000 m
C – 600 m
D – 300 m

Ref: all

Ans: C

11187. When identifying a co-located VOR/DME the following signals are heard in the Morse code every 30 seconds?

A – 4 identifications in the same tone
B – 4 identifications with the DME at a higher tone
C – 4 identifications with the DME at a lower tone
D – no DME identification, but if the VOR identification is present and a range is indicated then this shows that both are serviceable

Ref: all

Ans: B

11201. In which situation will speed indications on an airborne Distance Measuring Equipment (DME) most closely represent the groundspeed of an aircraft flying at FL 400?

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

Ref: all

Ans: B

11202. A VOR and DME are co-located. You want to identify the DME by listening to the call sign. Having heard the same call sign 4 times in 30 seconds the:

A – VOR and DME call signs were the same and broadcast with the same pitch
B – DME call sign was not transmitted, the distance information is sufficient proof of correct operation
C – DME call sign is the one with the lower pitch that was broadcast several times
D – DME call sign is the one with the higher pitch that was broadcast only once

Ref: all

Ans: D

11211. A DME in tracking mode subsequently experiences a reduction in signal strength will switch the equipment in the first instance to:

A – standby mode
B – search mode
C – memory mode
D – signal controlled search

Ref: all

Ans: C

11213. The accuracy of a DME:

A – is approximately ±0.5nm
B – decreases with increase of range
C – increases with increase of altitude
D – is approximately ±2 nm

Ref: all

Ans: B

11217. 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

Ref: all

Ans: C

11218. 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

Ref: all

Ans: C

11251. Groundspeed measurement using DME equipment is most accurate flying:

A – from the station at long range
B – over the station
C – towards the station at short range
D – past the station at short range

Ref: all

Ans: A

11279. 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

Ref: all

Ans: C

11287. An aircraft DME receiver does not lock on to its own transmissions reflected from the ground because:

A – the pulse recurrence rates are varied
B – DME transmits twin pulses
C – they are not on the receiver frequency
D – DME uses the UHF band

Ref: all

Ans: C

11290. A DME is located at MSL. An aircraft passing vertically above the station at flight level FL 360 will obtain a DME range of approximately:

A – 11 NM
B – 7 NM
C – 6 NM
D – 8 NM

Ref: all

Ans: C

11301. The DME in an aircraft, cruising at FL 210, fails to achieve lock on a DME at MSL at a range of 210 nm. The reason for this is:

A – the beacon is saturated
B – the aircraft is beyond the maximum usable range for DME
C – the aircraft is beyond line of sight range
D – the aircraft signal is too weak at that range to trigger a response

Ref: all

Ans: C

11303. During a flight at FL 210, a pilot does not receive any DME distance indication from a DME station located approximately 220 NM away. The reason for this is that the:

A – aeroplane is below the line of sight altitude
B – aeroplane is circling around the station
C – altitude is too high
D – range of a DME system is always less than 200 NM

Ref: all

Ans: A

11304. A DME that has difficulty obtaining a lock-on: (NOTE: PRF = pulse recurrence frequency, PPS = pulses per second)

A – alternates search mode with periods of memory mode lasting 10 seconds
B – stays in search mode without a reduction in PRF
C – stays in search mode but reduces PRF to max. 60 PPS after 100 seconds
D – stays in search mode but reduces PRF to max. 60 PPS after 15000 pulse pairs have been transmitted

Ref: all

Ans: D

11306. On a DME, display counters rotating throughout their range indicates:

A – ground equipment failure
B – airborne equipment failure
C – the airborne receiver is conducting a range search
D – the airborne equipment is conducting a frequency search

Ref: all

Ans: C

15476. The DME (Distance Measuring Equipment) operates within the following frequencies:

A – 329 to 335 MHz
B – 962 to 1213 KHz
C – 962 to 1213 MHz
D – 108 to 118 MHz

Ref: all

Ans: C

15478. A DME station is located 1,000 feet above MSL. An aircraft flying at FL 370, 15 NM away from the DME station, will have a DME reading of:

A – 17 NM
B – 16 NM
C – 14 NM
D – 15 NM

Ref: all

Ans: B

15479. 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 DME station sited across the flight route
C – A DME station sited on the flight route
D – An ADF sited on the flight route

Ref: all

Ans: C

15482. A typical frequency employed in Distance Measuring Equipment (DME) is:

A – 100 MHz
B – 100 GHz
C – 1000 MHz
D – 10 MHz

Ref: all

Ans: C

15483. For a conventional DME facility Beacon Saturation will occur whenever the number of simultaneous interrogations exceeds:

A – 80
B – 100
C – 200
D – 60

Ref: all

Ans: B

15484. The aircraft DME receiver cannot lock on to interrogation signals reflected from the ground because:

A – DME pulse recurrence rates are varied
B – aircraft transmitter and DME ground station are transmitting on different frequencies
C – reflections are subject to Doppler frequency shift
D – DME transmits twin pulses

Ref: all

Ans: B

15485. The design requirements for DME stipulate that, at a range of 100 NM, the maximum systematic error should not exceed:

A - + or – 1.5 NM
B - + or – 3 NM
C - + or – 0.25 NM
D - + or – 1.25 NM

Ref: all

Ans: A

15493. ICAO specifications are that range errors indicated by Distance Measuring Equipment (DME) should not exceed:

A - + or – 0.5 NM or 3% of the distance measured whichever is the greater
B - + or – 1.25 NM plus 0.25% of the distance measured
C - + or – 0.25 NM plus 3% of the distance measured up to a maximum of 5 NM
D - + or – 0.25 NM plus 1.25% of the distance measured

Ref: all

Ans: D

15541. DME channels utilise frequencies of approximately:

A – 600 MHz
B – 1000 MHz
C – 300 MHz
D – 110 MHz

Ref: all

Ans: B

16210. Height error has the greatest effect on accuracy when an aeroplane is:

A – over the base line extensions at low altitude
B – at the base line bisector at low altitudes
C – at the base line bisector at high altitude
D – over the base line extension at high altitude

Ref: all

Ans: D

16231. In which of the following frequency bands does DME operate:

A – UHF
B – SHF
C – VHF
D – EHF

Ref: all

Ans: A

16233. Given:
Height of aircraft 32,000 feet
DME indicated range 16 nm
The actual range is:

A – 22.8 NM
B – 16.58 NM
C – 15.1 NM
D – 6.58 NM

Ref: all

Ans: C

16234. A DME and VOR have the same ident, are associated and are:

A – always co-located
B – within 2,000 feet of each other
C – within 100 feet of each other
D – within 600 feet of each other

Ref: all

Ans: B

16248. 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

Ref: all

Ans: C

16394. 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

Ref: all

Ans: B

16626. Which of the following statements is TRUE in respect to microwave landing system?

A – Azimuth and elevation signals use the same aerial on a time share basic
B – Azimuth and elevation signals are transmitted at the same UHF frequency
C – A special precision DME, operating in the SHF band, provides range information
D – Range information is provided by precision DME operating in the UHF

Ref: all

Ans: D

21528. An aircraft at FL 300, with a ground speed of 300 kt, is about to pass overhead a DME station at MSL. The DME receiver is capable of determining ground speed. One minute before the overhead, DME speed and distance indications are respectively:

A – 300 kt and 7 NM
B – less than 300 kt and 7 NM
C – less than 300 kt and 5 NM
D – 300 kt and 5 NM

Ref: all

Ans: B

21531. An aircraft passes overhead a DME station at 12000 feet above the station. At that time, the DME reading will be:

A – approximately 2 NM
B – 0 NM
C – FLAG/OFF the aircraft is within the cone of silence
D – fluctuating and not significant

Ref: all

Ans: A

21532. An aircraft, at FL 410 is passing overhead a DME station at mean sea level. The DME indicates approximately:

A – 6.8 km
B – 6.8 NM
C – 6.1 NM
D – 6.1 km

Ref: all

Ans: B

21540. DME channels operate in the frequency band which includes:

A – 600 MHz
B – 110 MHz
C – 300 MHz
D – 1000 MHz

Ref: all

Ans: D

21570. 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 0

Ref: all

Ans: C

21572. The design requirements for DME stipulate that at a range of 100 NM the maximum systematic error should not exceed:

A - + or – 1.5 NM
B - + or – 3 NM
C - + or – 0.25 NM
D - + or – 1.25 NM

Ref: all

Ans: A

21575. The indicated range from a DME station is:

A – slant range
B – ground range
C – 0 when passing overhead the station
D – ground range only if the beacon is co-located with VOR

Ref: all

Ans: A

21578. 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

Ref: all

Ans: A

21594. When flying at 6000 feet above ground level, the DME indicates 5 NM. What is the horizontal distance from the aircraft to the overhead DME?

A – 4.6 NM
B – 5.2 NM
C – 4.9 NM
D – 4.3 NM

Ref: all

Ans: C

21606. 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 200 Nm
D – Has unlimited range due to ground wave propagation

Ref: all

Ans: C

21609. 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

Ref: all

Ans: B

21626. An aircraft at FL 210 cannot receive a signal from a DME 220 nm away. Why:

A – The aircraft is too high
B – The aircraft is not in line of sight of the DME
C – DME is never more than 200 nm
D – The DME is saturated

Ref: all

Ans: B

21627. How many aircraft will DME accommodate before reaching saturation:

A – 50
B – 100
C – 120
D – 150

Ref: all

Ans: B

21660. The DME ground transponder has a PRF of:

A – 2700 pulses per second
B – 27 pulses per second
C – 150 pulses per second
D – 1500 pulses per second

Ref: all

Ans: A

21661. The maximum number of aeroplanes that can be responded to by the DME ground facility is:

A – 100
B – 10
C – 150
D – Unlimited

Ref: all

Ans: A

21662. DME is a radar type of facility and its maximum range is limited by:

A – The pulse repetition interval
B – The height of the aeroplane
C – The transmitter power
D – The receiver sensitivity

Ref: all

Ans: B

21663. In DME interrogation and responses are separated by 63 MHz in order to:

A – Avoid station saturation
B – Differentiate between precision and ordinary DME
C – Facilitate channel selection
D – Prevent self-triggering

Ref: all

Ans: D

21666. A DME which is listed as operating on an “X” channel is one which:

A – Is paired exclusively with an ILS frequency
B – Is paired exclusively with a TACAN frequency
C – Responds on a frequency 63 MHz higher than the interrogation frequency
D – Responds on a frequency 63 MHz lower than the interrogation frequency

Ref: all

Ans: D

21756. The accuracy of DME is:

A – ±1nm
B – ±¼ nm + 1.25% of range
C – ±3% of the range
D – ±¼ nm or 1.25% of the range whichever is the greater

Ref: all

Ans: B

21760. The nominal maximum coverage of a DME station is:

A – 150 nm at 20,000 ft
B – 175 nm at 25,000 ft
C – 190 nm at 25,000 ft
D – 200 nm at 30,000 ft

Ref: all

Ans: D

21766. A VOR and DME are frequency paired. The DME identification ends with Z. This denotes that:

A – The two beacons are co-located
B – The beacons are supporting the same site but are not co-located
C – The beacons are greater than 2000 m apart
D – The beacons are at the same location but are more than 1000 m apart

Ref: all

Ans: B

21773. The time interval between a transmitted DME pulse and the reply pulse is 120 μseconds. The slant range is:

A – 9.7 nm
B – 9.7 km
C – 5.7 nm
D – 5.7 km

Ref: all

Ans: C

21775. Where a DME uses mechanical counters for displaying the range, continuous rotation of the counters means:

A – The DME is in a search mode
B – The DME is in a memory mode
C – The DME is in a tracking mode due to a turn
D – None of the above

Ref: all

Ans: A

21786. In a certain VORTAC installation the VOR is coding STN and the DME is coding STZ. This means that the distance between the two beacons is in excess of:

A – 600 m
B – 100 m
C – 2000 m
D – 300 m

Ref: all

Ans: A

21790. Which of the following provides distance information:

A – DME
B – VOR
C – ADF
D – VDF

Ref: all

Ans: A

21791. What happens when a DME in the search mode fails to achieve lock-on:

A – it stays in the search mode, but reduces to 60 pulse pairs per second (ppps) after 100 seconds
B – it stays in the search mode, but reduces to 60 ppps after 15000 pulse pairs
C – it stays in the search mode at 150 ppps
D – it alternates between search and memory modes every 10 seconds

Ref: all

Ans: B

21792. A DME beacon will become saturated when more than about ___ aircraft are using the transponder.

A – 10
B – 50
C – 100
D – 200

Ref: all

Ans: C

21793. A DME Transceiver does not lock onto its own reflections because:

A – the PRF of the pulse pairs is jittered
B – it uses MTI
C – the interrogation and reply frequencies differ
D – the reflections will all fall within the fly back period

Ref: all

Ans: C

21810. The DME in an aircraft flying at FL 430 shows a range of 15 nm from a beacon at an elevation of 167 ft. The plan range is:

A – 13.5 nm
B – 16.5 nm
C – 15 nm
D – 17.6 nm

Ref: all

Ans: A

22278. What are the DME frequencies?

A – 1030 and 1090 MHz
B – 1030 – 1090 MHz
C – 960 and 1215 MHz
D – 960 – 1215 MHz

Ref: all

Ans: D

22329. An aircraft flying at FL 430 obtains a DME range of 25 nm. The true aircraft range from the DME is between:

A – 24.5 and 25.5 nm
B – 23.25 and 24.75 nm
C – 25.2 and 26.8 nm
D – 22.5 nm and 23.5 nm

Ref: all

Ans: B

22335. DME uses (i) radar in the (ii) band:

A – (i) Primary; (ii) UHF
B – (i) Primary; (ii) SHF
C – (i) Secondary; (ii) UHF
D – (i) Secondary; (ii) SHF

Ref: all

Ans: C

22342. DME pulses are transmitted as pulse pairs. This is done:

A – So that the pulses are square and are easily identified
B – So that stray radar emissions do not interfere with the DME equipment
C – To increase the range
D – To prevent a lock on to the ground

Ref: all

Ans: B

22348. How does the DME tell different aircraft apart:

A – By using a jittered PRF
B – By the different frequencies transmitted
C – By the differences in wavelength
D – By the phase of the received pulses

Ref: all

Ans: A

22373. DME is a secondary radar operating in the (i) band using frequencies between (ii):

A – (i) SHF; (ii) 962 – 1215 MHz
B – (i) UHF; (ii) 962 – 1215 MHz
C – (i) SHF; (ii) 962 – 1215 MHz
D – (i) UHF; (ii) 962 – 1215 GHz

Ref: all

Ans: B

22384. An aircraft at FL 200 is 220 nm from a DME (0 ft amsl). The aircraft equipment fails to lock on, this is because:

A – DME is limited to 200 nm
B – The aircraft is too high to receive the signal
C – The aircraft is too low to receive the signal
D – The beacon is saturated

Ref: all

Ans: C

22769. A typical DME frequency is:

A – 1000 MHz
B – 1300 MHz
C – 1000 KHz
D – 113.55 MHz

Ref: all

Ans: A

22774. 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

Ref: all

Ans: C

22793. An aircraft DME receiver will not lock on to signals reflected from the ground because:

A – DME uses the UHF band
B – DME transmits twin pulses
C – The pulse recurrence rates are varied
D – The reflection are not at the receiver frequency

Ref: all

Ans: D

22795. A DME transmitter is operating in the search-for-lock phase. Which of the following statements is correct?

A – the PRF increases, the range counters count down from maximum, the output power is increased
B – The PRF increases and the range counters count up from 300 to maximum
C – The PRF increases and the range counters count down from the maximum
D – The PRF increases and the power is increased

Ref: all

Ans: C

22797. If the DME ground transmitter fails

A – the last measured range is frozen for 20 secs
B - all range information is immediately lost
C – the last recorded range is retained until the ground transmitter is restored
D – the counters continue to rotate for 8 to 10 seconds

Ref: all

Ans: D

22801. If a DME beacon becomes saturated by interrogations it:

A – It switches off its identification signal
B – Adjusts the gain to reply to the 100 strongest signals
C – Adjusts its PRF to cope with all aircraft
D – Replies to the nearest 100 aircraft

Ref: all

Ans: B

22878. "DME is a ___ radar which provides ___ distances between the aircraft and a ground ___". Which sequence most accurately completes the above statement?

A – primary; accurate; transmitter
B – secondary; earth; transmitter
C – secondary; slant; transponder
D – primary; slant; transponder

Ref: all

Ans: C

22879. If a DME transponder becomes saturated it will:

A – give preference to the nearest 100 aircraft
B – give preference to the furthest aircraft up to a maximum of 70
C – give preference to the aircraft with the strongest transmissions
D – give preference to the first 100 aircraft which interrogated it

Ref: all

Ans: C

24949. By using a random PRF the airborne DME can:

A – prevent interference from random transmissions
B – recognise a beacons reply among a mass of ground returns
C - reduce the effect of weather interference
D – distinguish between its own replies and those replies triggered by other aircraft

Ref: all

Ans: D

25002. The aircraft DME receiver accepts replies to its own transmissions but rejects replies to other aircraft transmissions because:

A – the PRF of the interrogations is unique to each aircraft
B – the pulse pairs from each aircraft have a unique amplitude modulation
C – the interrogation frequencies are 63 MHz different for each aircraft
D – the interrogation and reply frequencies are separated by 63 MHz

Ref: all

Ans: A

25003. When an aircraft at FL 360 is directly above a DME, at mean sea level, the range displayed will be:

A – 6 nm
B - 9 nm
C – 0 nm
D – 12 nm

Ref: all

Ans: A

25004. The time from the transmission of the interrogation pulse to the receipt of the reply from the DME ground station is 2000 microseconds (ignore the delay at the DME). The slant range is:

A – 330 nm
B – 185 nm
C – 165 nm
D – 370 nm

Ref: all

Ans: C

25005. The DME counters are rotating continuously. This indicates that:

A – the DME is unserviceable
B – the DME is trying to lock onto range
C – the DME is trying to lock onto frequency
D – the DME is receiving no response from the ground station

Ref: all

Ans: B

25006. On a DME presentation the counters are continuously rotating. This indicates:

A – the DME is in the search mode
B – the DME is unserviceable
C – the DME is receiving no response from the transponder
D – the transponder is unserviceable

Ref: all

Ans: A

062-01-05 ILS (instrument landing system)

8252. A category III ILS system provides accurate guidance down to:

A – the surface of the runway
B – less than 50 ft
C – less than 100 ft
D – less than 200 ft

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11095. The OUTER MARKER of an Instrument Landing System (ILS) facility transmits on a frequency of:

A – 300 MHz and is modulated by Morse at two dashes per second
B – 200 MHz and is modulated by alternate dot/dash in Morse
C – 75 MHz and is modulated by alternate dot/dash in Morse
D – 75 MHz and is modulated by Morse at two dashes per second

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11114. An aircraft carrying out a 3° glidepath ILS approach experiences a reduction in ground speed from 150 kt at the outer marker to 120 kt over the threshold. The effect of this change in ground speed on the aircrafts rate of descent will be a decrease of approximately:

A – 150 FT/MIN
B – 250 FT/MIN
C – 50 FT/MIN
D – 100 FT/MIN

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11116. Every 10 kt decrease in ground speed, on a 3° ILS glide path, will require an approximate:

A – increase in the aircraft's rate of descent of 50 FT/MIN
B – decrease in the aircraft's rate of descent of 50 FT/MIN
C – decrease in the aircraft's rate of descent of 100 FT/MIN
D – increase in the aircraft's rate of descent of 100 FT/MIN

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11124. The rate of descent required to maintain a 3.25° glide slope at a ground speed of 140 kt is approximately:

A – 850 FT/MIN
B – 800 FT/MIN
C – 670 FT/MIN
D – 700 FT/MIN

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11125. An aircraft carrying out an ILS approach is receiving more 90 Hz than 150 Hz modulation notes from both the localiser and glide path transmitters. The ILS indication will show:

A – Fly right and fly down
B – Fly left and fly down
C – Fly right and fly up
D – Fly left and fly up

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11140. Using the 1 in 60 rule calculate the height on a 3 degree glide path of an aircraft 4.5 NM from touchdown.

A – 1480 ft
B – 1420 ft
C – 1370 ft
D – 1230 ft

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11141. The visual and aural indications of the ILS outer marker are:

A – A blue light and 2 dashes per second of a 1300 Hz modulated tone
B – An amber light and alternate dots and dashes of a 1300 Hz modulated tone
C – A white light and 6 dots per second of a 30 Hz modulated tone
D – A blue light and 2 dashes per second of 400 Hz modulated tone

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11145. The MIDDLE MARKER of an Instrument Landing System (ILS) facility is identified audibly and visually by a series of:

A – alternate dots and dashes and an amber light flashing
B – two dashes per second and a blue light flashing
C – dots and a white light flashing
D – dashes and an amber light flashing

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11149. What approximate rate of descent is required in order to maintain a 3^{o} glide path at a ground speed of 120 kt?

A – 550 FT/MIN
B – 600 FT/MIN
C – 800 FT/MIN
D – 950 FT/MIN

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11156. The heading rose of an HSI is frozen on 200°. Lined up on the ILS of runway 25, the localiser needle will be:

A – right of centre
B – left of centre
C – centred
D – centred with the fail flag showing

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11158. The sensitive area of an ILS is the area aircraft may not enter when:

A – ILS operations are in progress
B – category 1 ILS operations are in progress
C – category II/III ILS operations are in progress
D – the ILS is undergoing calibration

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11164. Using the 1 in 60 rule, calculate the rate of descent (in ft/min) for a 3.3 degree glide path at a ground speed of 115 kts.

A – 172 ft/min
B – 325 ft/min
C – 641 ft/min
D – 522 ft/min

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11178. ILS is subject to false glide paths resulting from:

A – back-scattering of antennas
B – spurious signals reflected by nearby obstacles
C – multiple lobes of radiation patterns in the vertical plane
D – ground returns ahead of the antennas

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11185. For a category one ILS glide path of 3.3 degrees the coverage is:

A – 1.49 to 5.77 degrees
B – 1.49 to 5.94 degrees
C – 1.65 to 5.77 degrees
D – 1.65 to 5.94 degrees

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11186. What is the colour sequence when passing over an Outer, Middle and Inner Marker beacon?

A – white – amber – blue
B – amber – white – green
C – blue – amber – white
D – blue – green – white

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11195. The coverage of the ILS glide slope with respect to the localiser centreline is:

A - +/- 10 deg to 8 nm
B - +/- 10 deg to 25 nm
C - +/- 8 deg to 10 nm
D - +/- 35 deg to 17 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11208. The reason why pre take-off holding areas are sometimes further from the active runway when ILS Category 2 and 3 landing procedures are in progress than during good weather operations is:

A – heavy precipitation may disturb guidance signals
B – aircraft manoeuvring near the runway may disturb guidance signals
C – to increase distance from the runway during offset approach operations
D – to increase aircraft separation in very reduced visibility conditions

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11212. The coverage of the ILS localiser at 17 nm is guaranteed up to an angle either side of the extended centreline of:

A – 30 degrees
B – 25 degrees
C – 35 degrees
D – 10 degrees

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11219. Assuming a five dot display, what does each of the dots on either side of the ILS localiser cockpit display represent:

A – 2.0 degrees
B – 1.5 degrees
C – 2.5 degrees
D – 0.5 degrees

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11228. Instrument Landing Systems (ILS) Glide Paths provide azimuth coverage (i) each side of the localiser centreline to a distance of (ii) NM from the threshold.

A – (i) 8º (ii) 10
B – (i) 25º (ii) 17
C – (i) 35º (ii) 25
D – (i) 5º (ii) 8

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11231. In which frequency band does an ILS glide slope transmit?

A – VHF
B – UHF
C – SHF
D – EHF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11234. On an ILS approach you receive more of the 90 Hz modulation than the 150 Hz modulation. The action you should take is:

A – fly left and up
B – fly left and down
C – fly right and up
D – fly right and down

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11254. A HSI compass rose is stuck on 200 deg. When the aircraft is lined up on the centreline of the ILS localiser for runway 25, the localiser needle will be:

A – left of the centre
B – centred
C – right of the centre
D – centred with the fail flag showing

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11257. An aircraft on an ILS approach is receiving more 90 Hz modulation than 150 Hz modulation in both localiser and glide path. The correct action to regain the centreline and glide path would be to:

A – increase rate of descent and fly left
B – reduce rate of descent and fly right
C – increase rate of descent and fly right
D – reduce rate of descent and fly left

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11277. What is the approximate angular coverage of reliable navigation information for a 3° ILS glide path out to a distance of 10 NM?

A – 0.45o above the horizontal to 1.75° above the glide path and 8° each side of the localiser centreline
B – 1.35° above the horizontal to 5.25° above the horizontal and 8° each side of the localiser centreline
C – 0.7° above and below the glide path and 2.5° each side of the localiser centreline
D – 3° above and below the glide path and 10° each side of the localiser centreline

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11284. Where, in relation to the runway, is the ILS localiser transmitting aerial normally situated?

A – On the non-approach end of the runway about 300m from the runway on the extended centreline
B – At the approach end of the runway about 300m from touchdown on the centreline
C – At the non-approach end about 150 m to one side of the runway and 300m along the extended centreline
D – At the approach end about 150m to one side of the runway and 300m from touchdown

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11289. An aircraft tracking to intercept the Instrument Landing System (ILS) localiser inbound on the approach side, outside the published ILS coverage angle:

A – will receive signals without identification coding
B – will not normally receive signals
C – may receive false course indications
D – can expect signals to give correct indications

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11291. Outer marker transmits on 75 MHz and has an aural frequency of:

A – 1300 Hz
B – 400 Hz
C – 2000 Hz
D – 3000 Hz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11297. At 5.25 nm from the threshold an aircraft on an ILS approach has a display showing it to be 4 dots low on a 3 degree glide path. Using an angle of 0.15o per dot of glide slope deviation and the 1 in 60 rule calculate the height of the aircraft from touchdown.

A – 1280 ft
B – 1325 ft
C – 1375 ft
D – 1450 ft

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11299. The amplitude modulation and the colour of an outer marker (OM) is:

A – 400 Hz, blue
B – 3000 Hz, blue
C – 1300 Hz, blue
D – 400 Hz, amber

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11300. Which of the following is an ILS localiser frequency?

A – 112,10 MHz
B – 108,25 MHz
C – 110,20 MHz
D – 109,15 MHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

15487. The outer marker of an ILS with a 3° glide slope is elevated 4.6 NM from the threshold. Assuming a glide slope height of 50 FT above the threshold, the approximate height of an aircraft passing the outer marker is:

A – 1,400 FT
B – 1,450 FT
C – 1,350 FT
D – 1,300 FT

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

15496. The principle of operation of an ILS localiser transmitter is based on two overlapping lobes that are transmitted on (i) frequencies and carry different (ii).

A – (i) the same; (ii) modulation frequencies
B – (i) the same; (ii) phases
C – (i) different; (ii) modulation frequencies
D – (i) different; (ii) phases

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

15502. A Cat III ILS glide path transmitter provides reliable guidance information down to:

A – the surface of the runway
B – a maximum height of 200 ft above the runway
C – a maximum height of 100 ft above the runway
D – a maximum height of 50 ft above the runway

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

15504. What approximate rate of descent is required in order to maintain a 3o glide path at a ground speed of 90 kt?

A – 450 FT/MIN
B – 400 FT/MIN
C – 500 FT/MIN
D – 600 FT/MIN

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16396. What frequency is assigned to all ILS marker beacons?

A – One chosen from between 108-112 MHz at odd tenths
B – 75 MHz
C – 90 Hz
D – 150 Hz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16615. Which of the following statements is true, in respect of an ILS?

A – If the glide path is not operating, the ILS will be switched off
B – An ILS cannot be used if either of the outer or middle markers is switched off
C – The glide path frequency is paired with the marker frequency
D – The glide path transmits on UHF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16616. Which of the following statements is TRUE?

A – A localiser back beam should only be used for approaches if there is a published procedure
B – All localisers have back beams. They provide guidance in the event of a missed approach
C – Localiser back beams are never checked for accuracy
D – A localiser back beam will always provide reversed steering signals

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16617. An ILS category II ground installation is one that is capable of providing guidance to a height of:

A – 15m above the horizontal plane containing the threshold
B – 60m above the horizontal plane containing the threshold
C – 15m on QNH
D – 60m on QNH

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16618. A localiser must provide horizontal coverage to a distance of:

A – 17 nm all around
B – 10 nm all around
C – 17 nm over a sector of 35° each side of centre line
D – 25 nm over a sector of 15° each side of centre line

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16619. On a localiser the modulations are at 150 Hz and 90 Hz. Which of the following statements is correct?

A – The 90 Hz modulation predominates to the right of the centre line
B – The 150 Hz modulation predominates to the right of the centre line
C – If the 150 Hz modulations predominates, the needle on the CDI moves to the right of centre
D – When both modulations are received, the aeroplane will be on the centre line

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16620. The upper limit of the vertical coverage of the localiser must be:

A – not less than 300 m above the highest point on the approach
B – not less than 7° above the horizontal (drawn from the localiser)
C – not less than 600 m above the horizontal
D – not less than 35° above the horizontal

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16621. The glide path signals must be received to a range of 10 nm over a sector:

A – 10° each side of the localiser centre line
B - 10° wide centred on the localiser centre line
C – 8° each side of the localiser centre line
D – 8° wide centred on the localiser centre line

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16622. In order to maintain a 3o glide path at an approach speed of 150 kts, the rate of descent required is approximately:

A – 600 feet per minute
B – 300 feet per minute
C – 450 feet per minute
D – 750 feet per minute

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16623. Which of the following is TRUE in respect of using ILS?

A – When using a CDI you must set the OBS to the localiser course
B – When using a CDI in the overshoot sector you must disobey the needles
C – When using an HSI you must set the course arrow to the localiser course
D – When using an HSI the glide path must be set before approach

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21448. A Category 1 Instrument Landing System (ILS) ground installation provides accurate guidance from coverage limit down to:

A – runway surface
B – 200 feet above the inner marker
C – 200 feet above the runway threshold
D – 50 feet above ILS reference point

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21518. (Refer to figure 062-09)

What is the heading bug selected to?

A – 260° (M)
B – 272° (M)
C – 280° (M)
D – 300° (M)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21523. According to ICAO 8168, what is regarded as the maximum safe deviation below the glide path during ILS approach?

A – Half scale deflection
B – One quarter scale deflection
C - Three quarter scale deflection
D – Full scale deflection

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21537. Assuming a five dot display on either side of the CDI on the ILS localiser cockpit display, what does each of the dots represent approximately?

A – 2.5 degrees
B – 1.5 degrees
C – 0.5 degrees
D – 2.0 degrees

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21538. Assuming a five dot display on either side of the ILS localiser cockpit display, what is the angular displacement of the aircraft from the localiser centre line when the CDI is deflected 2 dots to the right?

A – 1.0^{o} to the right
B – 2.0^{o} to the left
C – 2.0^{o} to the right
D – 1.0^{o} to the left

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21541. Full deflection on a glide slope indicator indicates that the aircraft is:

A – 2.5^{o} above or below the correct glide path
B – 0.7^{o} above or below the correct glide path
C – 0.5^{o} above or below the correct glide path
D – 1.25^{o} above or below the correct glide path

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21542. Full scale deflection of the localiser needle indicates that the aircraft is approximately:

A – 10° offset from the localiser centre line
B – 5° offset from the localiser centre line
C – 1.25° offset from the localiser centre line
D – 2.5° offset from the localiser centre line

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21566. On what carrier frequency does the inner marker transmit?

A – Same frequency as the localiser
B – 75 MHz
C – Same frequency as the glide path
D – 3000 Hz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21585. What are the modulation frequencies of the two overlapping lobes that are used on an ILS approach?

A – 75 kHZ 135 kHZ
B – 90 HZ 150 HZ
C – 328 mHZ 335 mHZ
D – 63 mHZ 123 mHZ

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21587. What is measured in order to establish aircraft position in relation to the localiser beam on an ILS?

A – The difference in phase between the 90 Hz modulation and the 150 Hz modulation
B – The difference in depth between the 90 Hz modulation and the 150 Hz modulation
C – The bearing to the localiser antenna found by means of a loop antenna
D – The difference in time between the 90 Hz modulation and the 150 Hz modulation

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21589. What is the audio frequency of the inner marker?

A – 400 Hz
B – 1300 Hz
C – 3000 Hz
D – 75 MHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21596. Which of the following alternatives is correct regarding audio and visual signals in cockpit when passing overhead a middle marker?

A – Audio: 400 Hz, 2 dashes per second. Visual: Blue light flashes
B – Audio: 1300 Hz, alternating dots and dashes. Visual: Amber light flashes
C – Audio: 75 MHz, 2 dashes per second. Visual: Blue light flashes
D – Audio: 3000 Hz, alternating dots and dashes. Visual: Amber light flashes

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21597. Which of the following correctly describes the Instrument Landing System (ILS) localiser radiation pattern?

A – Two overlapping lobes on the same UHF carrier frequency
B – Two overlapping lobes on the same VHF carrier frequency
C - pencil beam comprising a series of smaller beams each carrying a different modulation
D – Two overlapping lobes on different radio carrier frequencies but with the same modulation

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21599. Which of the following is correct regarding false beams on a glide path?

A – False beams will only be found more than 10 degrees
B – False beams will only be found above the correct glide path
C – False beams are only present when flying a back beam ILS approach
D – False beams will only be found below the correct glide path

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21610. Which range facility associated with the ILS may be identified by a two-letter identification group?

A – Locator
B – Inner marker
C – Outer marker
D – Glide path

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21667. Which of the following elements of an ILS transmit in the VHF band?

A – Localiser only
B – Market beacons only
C – Glide path and marker beacons
D – Localiser and marker beacons

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21680. Which of the following is true with respect to marker beacons?

A – An airway marker and an ILS inner marker carry the same modulation
B – Airway markers and ILS middle markers have the same modulations
C – Airway markers and ILS outer markers have the same modulations
D – No two markers have the same modulations

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21681. ILS marker beacons do not interfere with each other because:

A – They operate on different modulations
B – They operate at different frequencies
C – They transmit in narrow vertical beams
D – They transmit low power signals, which cannot be detected by the aeroplane’s receiver

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21682. ILS markers are identified in the aeroplane by colour light and audio signal. The identification of the outer marker is:

A – High-pitched dashes; amber light
B – Low-pitched dots and dashes; amber light
C – High-pitched dots and dashes; blue light
D – Low-pitched dashes; blue light

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21754. The azimuth and area coverage of a Cat I ILS localiser is:

A – 8° at 10 nm, 25° at 25 nm
B – 35° at 17 nm, 10° at 25 nm
C – 8° at 35 nm, 25° at 10 nm
D – 8° at 10 nm, 10° at 25 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21767. The rate of descent required to maintain a 32.5o glide slope at a ground speed of 140 kt is approximately:

A – 850 fpm
B – 670 fpm
C – 800 fpm
D – 700 fpm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21770. ILS back beams may be received:

A – When flying outside the area of coverage
B – Never
C – When approaching the ILS from behind the glide path aerial
D – When approaching the ILS from behind the localiser aerial

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21771. An ILS localiser can give reverse sense indications on the approach side and outside the protected coverage:

A – Beyond 25 nm
B – Beyond 35º azimuth either side of the approach
C – Beyond 10º azimuth either side of the approach
D – At anytime

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21777. The emission characteristics of the ILS and a typical localiser frequency are:

A – A9W 329.30 MHz
B – A8W 110.30 MHz
C – A9W 110.70 MHz
D – A8W 113.30 MHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21778. The ILS glide path coverage in elevation is accurate to:

A – An angle 1.35º to an angle of 5.25º above the horizontal for a 3º glide path
B – An angle 1.35º to an angle of 5.25º above the horizontal for a 3.25º glide path
C – An angle 0.45º to an angle of 1.75º above the horizontal for a 3º glide path
D – An angle 0.45º to an angle of 1.75º above the horizontal for a 3.25º glide path

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22279. The sequence of marker colours when flying an ILS approach are:

A – white, blue, amber
B – blue, white, amber
C – blue, amber, white
D – amber, blue, white

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22280. The ILS localiser is normally positioned:

A – 300 m from the downwind end of the runway
B – 300 m from the threshold
C – 300 m from the upwind end of the runway
D – 200 m abeam the threshold

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22281. An aircraft is flying downwind outside the coverage of the ILS. The CDI indications will be:

A – unreliable in azimuth and elevation
B – reliable in azimuth, unreliable in elevation
C – no indications will be shown
D – reliable in azimuth and elevation

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22282. The frequency band of the ILS glide path is:

A – UHF
B – VHF
C – SHF
D – VLF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22283. In which band does the ILS glide path operate:

A – Metric
B – Centimetric
C – Decimetric
D – Hectometric

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22346. The minima for a AT 1 ILS are:

A – Height: 100 ft ; RVR: 550 m
B – Height: 100 ft ; RVR: 700 m
C – Height: 200 ft ; RVR: 550 m
D – Height: 200 ft ; RVR: 700 m

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22347. The minima for a CAT II ILS are:

A – Height: 100 ft ; RVR: 300 m
B – Height: 100 ft ; RVR: 400 m
C – Height: 50 ft ; RVR: 300 m
D – Height: 50 ft ; RVR: 400 m

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22354. (Refer to figure 062-03)

According to the diagram of the ILS display, the aircraft is:

A – High on the approach and to the left of the centre line
B – Low on the approach and to the left of the centre line
C – High on the approach and to the right of the centre line
D – Low on the approach and to the right of the centre line

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

22355. ILS glide path transmits lobes which are:

A – On the same frequency and are separated by phase comparison
B – On different frequencies which are then phase compared
C – On different frequencies and have different modulations
D – On the same frequency and have different modulations

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

22370. An aircraft is flying an ILS glide path of 2.8°. What height should it be passing as it approaches the outer marker at 3.9 nm from the ILS touchdown point.

A – 950 ft
B – 1000 ft
C – 1100 ft
D – 1200 ft

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22371. The middle marker of an ILS has an aural and visual identification of:

A – Alternating dots and dashes (3 per second) with an amber light
B – Alternating dots and dashes (3 per second) with a blue light
C – Continuous dashes (3 per second) with an amber light
D – Continuous dashes (3 per second) with a blue light

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22375. An aircraft on a 3o ILS approach is flying a ground speed of 150 knots. At the outer marker (4.5 nm from the threshold) the speed must be reduced to 120 knots. The ROD should be reduced by:

A – 120 fpm
B – 150 fpm
C – 170 fpm
D – 190 fpm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22386. The errors of an ILS localiser beam are due to:

A – Emission side lobes
B – Ground reflections
C – Spurious signals from objects near the runway
D – Interference from other systems operating on the same frequency

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22792. The coverage of the ILS localiser at 17 nm for a CAT 1 ILS is guaranteed up to an angle either side of the extended centreline of (i) using the signal outside the coverage limits on the approach side of the localiser aerial (ii) result in reverse sense indications.

A – (i) 35^{o} ; (ii) can
B – (i) 25^{o} ; (ii) cannot
C – (i) 35^{o} ; (ii) cannot
D – (i) 25^{o} ; (ii) can

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22870. The maximum safe 'fly-up' indication on the glide path needle (assuming a 5-dot indicator) is:

A – 2 dots
B – 1.5 dots
C – 2.5 dots
D – 1 dot

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22875. Use the 1 in 60 rule to determine the approximate height of an aircraft 3 nm from touch down on a 2.9^{o} glide slope:

A – 880 ft
B – 765 ft
C – 840 ft
D – 825 ft

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

24953. The rate of descent (in ft/min) for a 3^{o} glide-slope at a GS of 140 kt is:

A – 325
B – 640
C – 710
D – 520

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

24970. The ILS localiser transmits VHF frequencies between:

A – 108 and 117,95 MHz
B – 112 and 117,95 MHz
C – 108 and 111,95 MHz
D – 118 and 136,95 MHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

24972. The ILS localiser signal provides azimuth guidance. The signal is made up of two lobes:

A – on the same frequency with the same modulation
B – on different frequencies with the same modulation
C – on different frequencies with different modulations
D – on the same frequency with different modulations

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

25007. The amplitude modulation of the ILS outer marker is and it illuminates the light in the cockpit:

A – 400 Hz; blue
B – 1300 Hz; amber
C – 400 Hz; amber
D – 1300 Hz; blue

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

25008. The principle of operation of the ILS localiser transmitter is that it transmits two overlapping lobes on:

A – different frequencies with different phases
B – the same frequency with different phases
C – the same frequency with different amplitude modulations
D – different frequencies with different amplitude modulations

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25009. The middle marker is usually located at a range of ___, with an audio frequency of ___ and illuminates the ___ light:

A – 4-6 nm, 1300 Hz, white
B – 1 km, 400 Hz, white
C – 1 km, 1300 Hz, amber
D – 1 km, 400 Hz, amber

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25010. The audio frequency of the outer marker is:

A – 3000 Hz
B – 400 Hz
C – 1300 Hz
D – 1000 Hz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

25011. In which band does the ILS glide path operate?

A – metric
B – centmetric
C – decimetric
D – hectometric

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25571. For a 2.7^{o} glide path on a Category I ILS the vertical coverage is:

A – 1.22^{o} – 4.73^{o}
B – 2.05^{o} – 5.55^{o}
C – 1.85^{o} – 4.75^{o}
D – 1.35^{o} – 5.25^{o}

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

25572. For reliable navigation information the approximate coverage of a 3° ILS glide slope is:

A – 0.7° above and below the glide path and 8° either side of the localiser centre line
B – 0.45° from the horizontal to 1.75° above the glide path and 8° either side of the localiser centre line
C – 1.5° to 5° from the horizontal and 8° either side of the localiser
D – 3° above and below the glide path and 10° either side of the localiser centre line

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25573. Accurate glide path signals cannot be guaranteed above a certain angle relative to the horizontal. That angle is:

A – 0.45 x the glide path angle
B – 5.25 x the glide path angle
C – 1.75 x the glide path angle
D – 1.35 x the glide path angle

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

062-01-06 MLS (micro landing system)

11123. Which of the following is an advantage of MLS?

A – Can be used in inhospitable terrain
B – Uses the same aircraft equipment as ILS
C – Has a selective access ability
D – Is not affected by heavy precipitation

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11191. The coverage of MLS is ___ either side of the centre line to a distance of ___

A – 40 deg ; 40 nm
B – 40 deg ; 20 nm
C – 20 deg ; 20 nm
D – 20 deg ; 40 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11196. Which answer correctly completes the following statement? The characteristics of an MLS installation are that it uses:

A – an azimuth transmitter at the approach end of the runway, an elevation transmitter at the upwind end of the runway and two frequencies
B – one transmitter for both elevation and azimuth and two frequencies
C – one transmitter for both elevation and azimuth and a single frequency
D – an elevation transmitter at the approach end of the runway, an azimuth transmitter at the upwind end of the runway and a single frequency

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11199. Which one of the following is an advantage of a Microwave Landing System (MLS) compared with an Instrument Landing System (ILS)?

A – It does not require a separate azimuth (localiser) and elevation (azimuth) transmitter
B – It is insensitive to geographical site and can be installed at sites where it is not possible to use an ILS
C – The installation does not require to have a separate method (marker beacons or DME) to determine range
D – There is no restriction on the number of ground installations that can be operated because there is an unlimited number of frequency channels available

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11225. In which frequency band does the Microwave Landing System (MLS) operate?

A – EHF
B – SHF
C – VHF
D – UHF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11232. The azimuth transmitter of a Microwave Landing System (MLS) provides a fan-shaped horizontal approach zone which is usually:

A - + or – 50° of the runway centre-line
B - + or – 40° of the runway centre-line
C - + or – 60° of the runway centre-line
D - + or – 30° of the runway centre-line

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11256. Which one of the following methods is used by a Microwave Landing System (MLS) to indicate distance from the runway threshold?

A – Timing the interval between the reception of sequential secondary radar pulses from the MLS station to the aircraft
B – Timing the interval between the transmission and reception of primary radar pulses from the aircraft to MLS station
C – Measurement of the frequency shift between the MLS azimuth and elevation transmissions
D – A DME co-located with the MLS transmitters

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11263. The principle of operation of MLS is:

A – time referenced scanning beams
B – phase comparison directional beams
C – lobe comparison of scanning beams
D – frequency comparison of reference beams

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11268. Which one of the following correctly lists the major ground based components of a Microwave Landing System (MLS)?

A – Combined azimuth and elevation transmitter, outer and inner marker beacons
B – Separate azimuth and elevation transmitters, outer and middle marker beacons
C – Combined azimuth and elevation transmitter, DME facility
D – Separate azimuth and elevation transmitters, DME facility

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11302. MLS installations notified for operation, unless otherwise stated, provide azimuth coverage of:

A - + or – 20o about the nominal courseline out to a range of 10 NM
B - + or – 20o about the nominal courseline out to a range of 20 NM
C - + or – 40o about the nominal courseline out to a range of 30 NM
D - + or – 40o about the nominal courseline out to a range of 20 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16397. The MLS utilises a:

A – clock referenced scanning beam system
B – phase referenced scanning beam system
C – time referenced scanning beam system
D – magnetic referenced scanning beam system

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16398. In a MLS the time that elapses between the passage of the TO scan and the FROM scan at the aircraft position is:

A – not related to the angular position of the aircraft
B – indirectly proportional to the angular position of the aircraft
C – directly proportional to the angular position of the aircraft
D – none of the above are correct

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16624. Microwave Landing Systems use guidance signals formed from:

A – time referenced scanning beams
B – radar beams
C – intersecting modulated signals transmitted on very narrow beams
D – phase differences between an amplitude modulated reference signal and a frequency modulated variable signal

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16625. A microwave landing system operates:

A – on one of 200 channels in the band 5030 to 5090 GHz
B – on one of 200 channels in the band 5.03 GHz to 5090 GHz
C – on one of 400 channels in the band 5030 GHz to 5090 GHz
D – on one of 400 channels in the band 5.03 GHz to 5.09 GHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16627. The scanning beam of the MLS system is called:

A – frequency reference scanning beam (FRSB)
B – phase reference scanning beam (PRSB)
C – time reference scanning beam (TRSB)
D – angle reference scanning beam (ARSB)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16628. In an MLS system, the azimuth coverage is:

A - +/- 10º
B - +/- 8º
C - +/- 35º
D - +/- 40º

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

22285. Distance on MLS is measured by:

A – measuring the time taken for the primary radar pulse to travel from the MLS transmitter to the aircraft receiver
B – measuring the time taken for the secondary radar pulse to travel from the MLS transmitter to the aircraft receiver
C – phase comparison between the azimuth and elevation beams
D – co-located DME

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

22286. The frequency band of MLS is:

A – UHF
B – VHF
C – SHF
D – VLF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22867. MLS consists of:

A – a common azimuth and elevation transmitter
B – overlapping centre-line lobe transmission in azimuth angled to provide glide slope information
C – an azimuth transmitter and an elevation transmitter on separate frequencies and a DME
D – an azimuth transmitter and an elevation transmitter operating on a shared frequency and a DME

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

24946. Microwave Landing Systems allow the aircraft to fix its position accurately in three dimensions by means of:

A – timing the interval between pulses in azimuth and elevation and timing the delay for pulses to reach the aircraft to define range
B – information from four satellites transmitting microwaves
C – timing the passage of two scanning beams integrated with DME
D – directional aerials and DME

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

062-02 BASIC RADAR PRINCIPLES

062-02-01 Pulse Techniques and Associated Terms

8165. With regards to radio waves, which statement is true?

A – They are reflected by metallic objects with a size compatible to the wavelength
B – The longer the wavelength the greater the surface attenuation
C – They travel at 186,000 nm a second in a vacuum
D – High frequencies need large aerials

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8168. The main factor which affects the maximum range of a pulse radar is:

A – the pulse repetition frequency
B – the size of the radar screen
C – the frequency of the radar transmission
D – the aerial system size

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8169. In relation to radar systems that use pulse technology, the term Pulse Recurrence Rate (PRR) signifies the:

A – ratio of pulse period to pulse width
B – delay after which the process re-starts
C – the number of cycles per second
D – number of pulses per second

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8186. The advantages of CW radar systems over pulse radar systems are:

A – they are more reliable
B – the transmitter/receiver aerial system is smaller and less complex
C – there is no minimum range
D – they offer better long range performance

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8212. The main advantage of a slotted scanner is:

A – reduces side lobes and directs more energy into the main beam
B – removes the need for azimuth slaving
C – side lobe suppression
D – can produce simultaneous map and weather information

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8217. For any given circumstances, in order to double the effective range of a primary radar the power output must be increased by a factor of:

A – 2
B – 16
C – 4
D – 8

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8227. The prime factor in determining the maximum unambiguous range of a primary radar is the:

A – pulse recurrence rate
B – power output
C – size of parabolic receiver aerial
D – height of the transmitter above the ground

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8230. Ignoring pulse length, the maximum pulse repetition frequency (PRF) that can be used by a primary radar facility to detect targets unambiguously to a range of 200 NM is: (pps = pulses per second)

A – 375 pps
B – 782 pps
C – 308 pps
D – 405 pps

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8232. The interval in time between the commencement of two consecutive pulses is:

A – pulse rate
B – pulse width
C – pulse recurrence frequency
D – pulse recurrence period

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8233. The main advantage of a continuous wave radar over a pulsed radar is:

A – more complex equipment but better resolution and accuracy
B – removes the minimum range restriction
C – smaller more compact equipment
D – permits measurement of Doppler in addition to improved range and bearing

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8245. The maximum range of primary radar depends on:

A – a pulse recurrence frequency
B – wave length
C – frequency
D – pulse length

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8248. A Primary radar operates on the principle of:

A – transponder interrogation
B – pulse technique
C – phase comparison
D – continuous wave transmission

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8251. The speed of a radio wave in nm/sec is:

A – 300,000
B – 161,842
C – 163,842
D – 186,000

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11151. A radio wave with a horizontal magnetic component would be best received by a ___ aerial.

A – magnetic
B – parabolic
C – horizontal
D – vertical

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11309. Which one of the following statements is correct concerning the use in primary radar of continuous wave transmissions as compared with pulse transmissions?

A – A smaller common transmitter and receiver aerial can be used
B – It eliminates the minimum target reception range
C - It is less effective in short range radars but more effective in long range radars
D – The equipment required is more complex in continuous wave radar but this is offset by greater reliability and accuracy

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11320. The main factor which determines the minimum range that can be measured by a pulsed radar is pulse:

A – repetition rate
B – amplitude
C – length
D – frequency

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11324. A radar facility transmitting at a Pulse Recurrence Frequency (PRF) of 1200 pulses/second will have a maximum unambiguous range of approximately:

A – 135 NM
B – 69 NM
C – 270 NM
D – 27 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11329. The minimum range of a primary radar, using the pulse technique, is determined by the (i); the maximum unambiguous range by the (ii)

A – (i) transmission frequency (ii) pulse recurrence frequency
B – (i) transmission frequency (ii) transmitter power output
C – (i) pulse length (ii) length of the time-base
D – (i) pulse length (ii) pulse recurrence frequency

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11330. The term Doppler shift refers to:

A – the change in depression angle measured at the receiver
B – the change in the speed measured at the receiver
C – the change in phase angle measured at the receiver
D – the change in frequency measured at the receiver

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11333. Which combination of characteristics gives best screen picture in a primary search radar?

A – Short pulse length and narrow beam
B – Long pulse length and wide beam
C – Long pulse length and narrow beam
D – Short pulse length and wide beam

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

15546. In a primary radar using pulse technique, pulse length determines:

A – target discrimination
B – maximum measurable range
C – beam width
D – minimum measurable range

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

15547. In a primary radar using pulse technique, pulse recurrence frequency (PRF)/pulse recurrence rate (PRR) determines:

A – minimum range
B – beam width
C – maximum theoretical range
D – target discrimination

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16262. The pulse recurrence frequency of a signal having a pulse interval (pulse recurrence period) of 5 microseconds is:

A – 6 MHz
B – 200 KHz
C – 60 MHz
D – 2000 KHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16400. What is the maximum theoretical range for a primary radar with a PRF of 324 pps?

A – 250 nm
B – 500 nm
C – 463 nm
D – 463 sm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16633. The beam width from a parabolic reflector aerial is:

A – dependant on the transmitted pulse length
B – dependant on the transmitted pulse repetition frequency
C – dependant on the transmitted pulse repetition interval
D – dependant on the transmitted frequency

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16634. In a Cathode Ray Tube the grid is used to:

A – control the focus
B – control the brilliance
C – drain electrons from the tube
D – deflect the electron stream to form a time-base

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16635. A primary pulse radar system operates with a pulse repetition frequency of 400 pps. The maximum theoretical range of the system is:

A – 202 nm
B – 303 nm
C – 404 nm
D – 505 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16637. In a cathode ray tube the grid potential is:

A – negative with respect to the cathode
B – the same as the cathode
C – zero
D – the same as the second anode

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21556. In relation to primary radar, what does the term Pulse Recurrence Frequency signify?

A – The radar frequency used
B – The number of revolutions performed by the radar antenna per minute
C – The number of pulses transmitted per second
D - The time between each transmission of pulses

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21615. What most determines a primary radars' ability to accurately determine target range:

A – Aerial rpm
B – Beam width
C – Transmitter power
D – Pulse length

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21620. What technique is employed by primary radar employing a single aerial dish:

A – Pulse technique
B – Continuous wave
C – Phase comparison
D – Pseudo random noise

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21628. What is the PRF given 50μS pulse width and a range of 30 nm:

A – 1620 pps
B – 810 pps
C – 3240 pps
D – 3086 pps

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21647. If a radar has a pulse length of 2.0 ms and it transmits 330 pulses per second, its maximum non-ambiguous range is:

A – 450 km
B – 2250 metres
C – 225 km
D – 4500 metres

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21710. If the pulse length used in a radar is 4µs, ignoring receiver recovery time, the minimum range at which a target can be detected is:

A – 1200 metres
B – 2400 metres
C – 600 metres
D – 0 metres

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21711. If a radar has a beam width of 3o and a pulse length of 4µs, the target azimuth resolution at a range of 60 NM will be approximately:

A – 4 NM
B – 3 NM
C – 2 NM
D – 1 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21755. Disregarding pulse width and the fly-back period of a radar, if the maximum range is 139 nm, the PRF will be:

A – 582 pps
B – 1164 pps
C – 1718 pps
D – 2328 pps

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22289. Short range aerodrome radars will have ___ wave lengths

A – millimetric
B – centimetric
C – decimetric
D – metric

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22290. What does pulse recurrence rate refer to:

A – the number of cycles per second
B – the number of pulses per second
C – the ratio of pulse width to pulse repetition period
D – the delay known as fly-back or dead time

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22291. Which is the most suitable radar for measuring short ranges:

A – millimetric pulse
B – continuous wave primary
C – centimetric pulse
D – continuous wave secondary

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22388. The definition of a radar display will be best with:

A – Narrow beam width and narrow pulse width
B – Narrow beam width and wide pulse width
C – Wide beam width and narrow pulse width
D – Wide beam width and wide pulse width

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22871. Attenuation of radio waves means:

A – the weakening of the radiated waves
B – the atmospheric bending of the waves
C – only the scattering of the waves by the tropopause
D – only the absorption of radio energy by the sea

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

24964. The factor which determines the minimum range of a radar is:

A – PRF
B – Pulse interval
C – Pulse length
D – Radio frequency of transmission

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

24979. A monochrome radar operating in the contour mode ___ and indicates them as hollow centres:

A – adjusts the gain to exclude returns above the iso-echo level
B – is incapable of painting returns above the iso-echo level because of the limitations of the system
C – cancels returns above the iso-echo level
D – adjusts the gain to exclude returns below the iso-echo level

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25079. On what principle does primary ATC radar work?

A – pulse technique
B – pulse comparison
C – continuous wave
D – transponder interrogation

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

062-02-02 Ground radar

8160. An SRA may be flown to:

A – 0.5 nm using QNH unless the pilot advises the controller the approach is to be flown on QFE
B – 2.0 nm using QFE unless the pilot advises the controller the approach is to be flown on QNH
C – 0.5 nm using QNH only
D – 2.0 nm using QFE only

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8162. In a primary radar system:

A – the radar is primarily used for range-finding
B – all radio frequency energy is produced by the radar located at the radar site
C – the aircraft plays the secondary role, just listening to the radar signals from the ground radar
D – the radar is the primary aid for ATC

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8171. In which frequency band do most airborne weather, and ground based ATC, radar systems operate?

A – SHF
B – UHF
C – EHF
D – VHF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8181. A ground radar transmitting at a PRF of 1200 pulses/second will have a maximum unambiguous range of approximately:

A – 270 NM
B – 135 NM
C – 67 NM
D – 27 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8192. A radio facility transmits on a wave length of 2.22 cm. The facility could be a ___ operating on a frequency of ___

A – VDF; 135 MHz
B – DME; 1350 MHz
C – Doppler; 13500 MHz
D – radio altimeter; 13500 MHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8193. The maximum range obtainable from an ATC Long Range Surveillance Radar is approximately:

A – 100 NM
B – 200 NM
C – 300 NM
D – 400 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8203. DME is having difficulties in obtaining a “lock-on” while interrogating a ground station. The PRF is:

A - 150 pps for 100 secs then reduces to 60 pps until locked on
B – 150 pps for 15,000 pulse pairs then reduces to 60 pps until locked on
C – 150 pps until locked on
D – 24 pps until locked on

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8211. To double the range of a primary radar, the power must be increased by a factor of:

A – 2
B – 4
C – 8
D – 16

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8214. A saw tooth voltage is used to generate the time-base of a simple non-rotating radar because:

A – a linear time base is required to correctly represent range and the fly-back period is short
B – range resolution is optimised
C – this achieves the maximum range
D – bearing resolution is optimised

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8215. The maximum unambiguous (theoretical) range for a PRF of 1200 pps is:

A – 134 nm
B – 180 nm
C – 67 nm
D – 360 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8216. The maximum PRF required for a range of 50 nm is:

A – 300 pulses per second (pps)
B – 600 pps
C – 1620 pps
D – 3240 pps

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8223. Complete the following statement. Aircraft Surface movement Radar operates on frequencies in the (i) band employing an antenna that rotates at approximately (ii) revolutions per minute; it is (iii) possible to determine the type of aircraft from the return on the radar screen.

A – (i) SHF (ii) 10 (iii) always
B – (i) EHF (ii) 30 (iii) never
C – (i) SHF (ii) 60 (iii) sometimes
D – (i) EHF (ii) 100 (iii) never

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8224. What is the maximum theoretical range, in nm, of a radar whose PRF is 750 pps?

A – 132 NM
B – 218 NM
C – 200 NM
D – 108 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8236. What is the range of long range ground radar?

A – 200 nm
B – 50 nm
C – 1000 nm
D – 300 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8238. An aerodrome ground movement radar is likely to operate in the ___ band with a scan rate of ___ revolutions per minute.

A – EHF, 1000
B – EHF, 20
C – UHF, 200
D – SHF, 60

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8247. Why does surface movement radar use a frequency in the SHF band and not EHF?

A – SHF gives better definition of aircraft type than EHF
B – EHF is absorbed and scattered by moisture in the air. Switching to SHF reduced the problem
C – The power requirements of EHF were unsustainable in the UK
D – EHF is potentially hazardous to personnel on the area. This was completely overcome by switching to SHF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11307. The maximum pulse repetition frequency (PRF) that can be used by a primary radar facility in order to detect targets unambiguously at a range of 50 NM is: (pps = pulses per second)

A – 610 pps
B – 3240 pps
C – 1620 pps
D – 713 pps

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11313. A radar has a PRF of 800 pps. What is the maximum theoretical range and the PRP?

A – 325 nm, 0.0125 micro seconds
B – 325 nm, 1250 micro seconds
C – 187.5 km, 0.0125 micro seconds
D – 187.5 km, 1250 micro seconds

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11314. Assuming sufficient transmission power, the maximum range of a ground radar with a pulse repetition frequency of 450 pulses per second is: (Given: velocity of light is 300,000 km/second)

A – 150 km
B – 666 km
C – 1333 km
D – 333 km

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11322. The maximum range of a ground radar is limited by:

A – pulse width
B – peak power
C – average power
D – pulse recurrence rate

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11323. Ignoring pulse length and fly-back, a radar facility designed to have a maximum unambiguous range of 50 km will have a PRF (pulses per second) of:

A – 330
B – 6000
C – 167
D – 3000

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11338. The PRF of a primary radar is 500. Its maximum range is:

A – 300 km
B – 150 km
C – 200 km
D – 250 km

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

15524. Which of the following types of radar systems are most suited for short range operation?

A – Primary continuous wave
B – Centimetric pulse
C – Millimetric pulse
D – Secondary continuous wave

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

15548. In a primary radar using pulse technique, the ability to discriminate between targets in azimuth is a factor of:

A – pulse length
B – beam width
C – aerial rotation rate
D – Pulse Recurrence Rate (PRR)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

15550. On which of the following radar displays is it possible to get an indication of the shape and to some extent the type, of the aircraft generating the return?

A – Aerodrome Surveillance (approach) Radar
B – Airborne Weather Radar (AWR)
C – Aerodrome Surface Movement Radar (ASMR)
D – Secondary Surveillance Radar (SSR)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16401. What is a typical range for an EN-route surveillance radar (RSR)?

A – Up to 25 nm
B – Up to 80 nm
C – Up to 250 nm
D – Up to 2.500 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16402. What is the typical range for a Terminal Area surveillance Radar (TAR)?

A – Up to 25 nm
B – Up to 80 nm
C – Up to 250 nm
D – Up to 2.500 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21440. Which of the following radar equipments operate by means of the pulse technique?

1. Aerodrome Surface Movement Radar
2. Airborne Weather Radar
3. Secondary Surveillance Radar (SSR)
4. Aerodrome Surveillance (approach) Radar

A – 1, 2, 3 and 4
B – 1, 2 and 4 only
C – 2, 3 and 4 only
D – 2 and 4 only

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21539. Considering a primary radar system, what kind of aerials are used?

A – One directional antenna both for transmitting and for receiving
B – A directional antenna for transmitting, and an omni-directional antenna for receiving
C – One directional antenna for transmitting and one for receiving
D – An omni-directional antenna for transmitting, and a directional antenna for receiving

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21593. When an aircraft is operating its Secondary Surveillance Radar in Mode C an air traffic controller's presentation gives information regarding the aircraft's indicated flight level in increments of:

A – 200 FT
B – 100 FT
C – 250 FT
D – 150 FT

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21607. Which one of the following is an advantage of a secondary radar system when compared to a primary radar system?

A – The relatively small ground antenna transmits no side lobes, thus eliminating the danger of false replies from the airborne transponder
B – The required power of transmission from the ground equipment is reduced
C – Possibility of obtaining speed information for aircraft within range
D – Is not limited to line of sight

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21648. What is the minimum PRI for a radar with a design range of 200 NM?

A – 1333 microseconds
B – 667 microseconds
C – 1235 microseconds
D – 2470 microseconds

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21665. When in tracking mode, the airborne interrogator operates at:

A – A PRR variable between 24 and 30 pulses per second
B – A PRR fixed at a rate selected from the range 24 to 30 PPS
C – A PRR of 150 PPS
D – A PRR of 2700 PPS

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21714. An ATC radar unit, which is used in the approach, has a high aerial rotation rate. This is so that:

A – Target information is rapidly refreshed
B – Compensation can be made for the long PRI
C – Compensation is made for the narrow beam width
D – The rigidity of the aerial can be improved by inertia

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21716. A surveillance radar element (SRE) used to provide approach guidance:

A – Does not have a height determination capacity
B – Can be used to give guidance both horizontally and vertically
C – Can only be used to a point 3 miles from threshold
D – May not be used in heavy rain because of the high levels of signal loss

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21717. PAR at a military airfield has both azimuth and an elevation element. It must be able to provide an accuracy within:

A – ±30 feet elevation, ±20 feet azimuth
B – ±30 feet azimuth, ±20 feet elevation
C – ±30 feet elevation and azimuth
D – ±20 feet elevation and azimuth

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21758. Surface movement radars operate mainly in the SHF band as opposed to the EHF band because:

A – The EHF band does not provide sufficient frequency spacing
B – EHF radiated power is more dangerous to the user's health
C – EHF is more expensive
D – EHF is likely to detect more moisture in the atmosphere

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21774. A radar has a PRF of 1200 pps. The theoretical maximum range is:

A – 134 nm
B – 134 km
C – 67 nm
D – 67 km

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21796. An airfield surface movement radar operates in the (i) and rotates at (ii) rpm:

A – (i) SHF; (ii) 120
B – (i) EHF; (ii) 60
C – (i) UHF; (ii) 120
D – (i) SHF; (ii) 60

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21801. The size of a target on a primary radar screen is governed in azimuth by 9i) and in range by (ii):

A – (i) Beam width; (ii) Pulse length
B – (i) Pulse width; (ii) Pulse length
C – (i) Pulse length; (ii) Beam width
D – (i) Pulse width; (ii) Beam width

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22288. The best radar for measuring very short ranges is:

A – a continuous wave primary radar
B – a pulsed secondary radar
C – pulsed primary radar
D – a continuous wave secondary radar

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22374. A high resolution surveillance radar will be terminated at a range from touchdown of:

A – 0.25 nm
B – 0.5 nm
C – 1 nm
D – 2 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22390. The best picture on a primary radar will be obtained using:

A – Low frequency, narrow beam
B – Short wavelength, narrow beam
C – High frequency, wide beam
D – Long wavelength, wide beam

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

24948. The PRF of a primary radar is 500. Its maximum range in nm is approximately:

A – 300
B – 160
C – 320
D – 600

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

24965. The max theoretical range of a radar whose PRF is 750 pps is:

A – 218 nm
B – 132 nm
C – 200 nm
D – 108 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

24698. In order to be able to penetrate cloud, a primary radar signal must have:

A – a short pulse length
B – a high frequency
C – a long wavelength
D – a high PRF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25076. In a primary pulsed radar the ability to discriminate in azimuth is a factor of:

A – Pulse width
B – Beam width
C – Pulse recurrence rate
D – Rate of rotation

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

25077. The PRF of a radar is 450 pps. If the speed of light is 300,000 kps, what is the maximum range of the radar?

A – 150 km
B – 333 km
C – 666 km
D – 1326 km

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

25078. Which of the following is a primary radar system?

A – SSR
B – DME
C – GPS
D – AWR

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

062-02-03 Airborne Weather Radar

2812. In which frequency band do most airborne weather radars operate?

A – SHF
B – UHF
C – EHF
D - VHF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8167. On switching on the AWR a single line appears on the display. This means that:

A – the transmitter is unserviceable
B – the receiver is unserviceable
C – the CRT is not scanning
D – the antenna is not scanning

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8172. In an Airborne Weather Radar that has a colour cathode ray tube (CRT) increasing severity of rain and turbulence is generally shown by a change of colour from:

A – green to yellow to red
B – yellow to amber to blue
C – green to red to black
D – yellow to orange to red

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8173. Which of the following is a complete list of airborne weather radar antenna stabilisation axes?

A – Roll, pitch and yaw
B – Roll and pitch
C – Pitch and yaw
D – Roll and yaw

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8180. Typical Airborne Weather Radar (AWR) is gyro stabilised within limits in:

A – pitch and yaw
B – yaw and turn
C – pitch and roll
D – pitch, roll and yaw

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8183. In which mode of operation does the aircraft weather radar use a cosecant radiation pattern?

A – MAPPING
B – CONTOUR
C – WEATHER
D – MANUAL

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8184. If the AWR transmitter is required to be switched on before take-off the scanner should be tilted up with:

A – either of these modes selected
B – the mapping mode selected
C – the weather mode selected
D – none of these

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8187. The main factors which affect whether an AWR will detect a cloud are:

A – the size of the water droplets and the diameter of the antenna reflector
B – the scanner rotation rate and the frequency/wavelength
C – the size of the water droplets and the wavelength/frequency
D – the size of the water droplets and the range of the cloud

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8189. A weather radar, set to the 100 NM scale, shows a squall at 50 NM. By changing the scale to 50 NM, the return on the radar screen should:

A – decrease in area and move to the top of the screen
B – increase in area and appear nearer to the bottom of the screen
C – decrease in area but not change in position on the screen
D – increase in area and move to the top of the screen

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8191. Airborne weather radar systems use a wavelength of approximately 3 cm in order to:

A – detect the larger water droplets
B – transmit at a higher pulse repetition frequency for extended range
C – obtain optimum use of the Cosecant squared beam
D – detect the smaller cloud formations as well as large

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8194. Which of the following cloud types is most readily detected by airborne weather radar when using the weather beam?

A – Stratus
B – Cirrocumulus
C – Cumulus
D – Altostratus

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8195. In the MAPPING MODE the airborne weather radar utilises a:

A – fan shaped beam effective up to a maximum of 50 NM to 60 NM range
B – fan shaped beam effective up to a range of 150 NM
C – pencil beam to a maximum range of 60 NM
D – pencil beam effective from zero to 150 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8198. The pencil shaped beam of an airborne weather radar is used in preference to the mapping mode for the determination of ground features:

A – when approaching coast-lines in polar regions
B – beyond 100 NM because insufficient antenna tilt angle is available with the mapping mode
C – beyond 150 NM because the wider beam gives better definition
D – beyond 50 to 60 NM because more power can be concentrated in the narrower beam

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8201. In weather radar the use of a cosecant beam in Mapping mode enables:

A – better reception of echoes on contrasting terrain such as ground to sea
B – scanning of a large ground zone producing echoes whose signals are practically independent of distance
C – a greater radar range to be achieved
D – higher definition echoes to be produced giving a clearer picture

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8205. In order to ascertain whether a cloud return on an Aircraft Weather Radar (AWR) is at or above the height of the aircraft, the tilt control should be set to: (Assume a beam width of 5^{o})

A – 2.5^{o} up
B – 5^{o} up
C – 0^{o}
D – 2.5^{o} down

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8206. The ASMR operates in the ___ band, the antenna rotates at ___ rpm can ___ distinguish between aircraft types.

A – UHF; 120; sometimes
B – SHF; 60; always
C – UHF; 120; never
D – SHF; 60; sometimes

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8208. In Airborne Weather Radar (AWR), the main factors which determine whether a cloud will be detected are:

A – size of the water drops and diameter of radar scanner
B – range from cloud and wavelength/frequency used
C – size of the water drops and wavelength/frequency used
D – rotational speed of radar scanner and range from cloud

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8219. When switching on the weather radar, after start-up a single very bright line appears on the screen. This means that the:

A – scanner is not rotating
B – transmitter is faulty
C – scanning of the cathode ray tube is faulty
D – receiver is faulty

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8222. When using the AWR to detect long range ground features the most suitable mode of operation or beam selected would be:

A – the manual mode
B – the fan shaped beam
C – the mapping mode
D – the contour mode

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8229. A frequency of airborne weather radar is:

A – 9375 MHz
B – 9375 GHz
C – 9375 kHz
D – 93.75 MHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8235. On the AWR display the most severe turbulence will be shown:

A – in flashing red
B – by a black hole
C – by a steep colour gradient
D – alternating red and white

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8237. The frequency of AWR is:

A – 9375 MHz
B – 937.5 MHz
C – 93.75 GHz
D – 9375 GHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8242. The ISO-ECHO facility of an airborne weather radar is provided in order to:

A – give an indication of cloud tops
B – detect areas of possible severe turbulence in cloud
C – inhibit unwanted ground returns
D – extend the mapping range

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8244. In an AWR with a 5 deg beam width, how do you orientate the scanner to receive returns from clouds at or above your level?

A – 0 deg tilt
B – 2.5 deg uptilt
C – 2.5 deg downtilt
D – 5 deg uptilt

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11315. The AWR transmitter is not normally selected on the ground because:

A – it can interfere with radars and approach aids
B – its radiated energy can damage people and equipment
C – it can overload the electrical system
D – none of these answers are correct

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11316. Which of the following lists phenomena that CANNOT be detected by weather radar?

A – Dry hail; clear air turbulence
B – Snow; clear air turbulence
C – Clear air turbulence; turbulence in cloud with precipitation
D – Snow; turbulence in clouds with precipitation

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11327. A frequency of 10 GHz is considered to be the optimum for use in an airborne weather radar system because:

A – the larger water droplets will give good echoes and the antenna can be kept relatively small
B – greater detail can be obtained at the more distant ranges of the smaller water droplets
C – static interference is minimised
D – less power output is required in the mapping mode

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11331. The advantage of the use of slotted antennas in modern radar technology is to:

A – simultaneously transmit weather and mapping beams
B – virtually eliminate lateral lobes and as a consequence concentrate more energy in the main beam
C – have a wide beam and as a consequence better target detection
D – eliminate the need for azimuth slaving

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11334. The tilt angle on the AWR at which an active cloud just disappears from the screen is 4 degrees up. If the beam width is 5 degrees and the range of the cloud is 40 NM use the 1 in 60 rule to calculate the approximate height of the cloud relative to the aircraft.

A – 4000 above
B – 6000 above
C – 4000 below
D – 6000 below

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11337. The colours used on a conventional AWR to indicate increasing intensity of returns are:

A – blue, green and red
B – green, yellow and orange
C – blue, amber and red
D – green, amber and red

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11345. AWR in the ___ mode progressively ___ as distances ___ to equalise screen brightness

A – weather, decreases gain, increase
B – mapping, decreases power, decrease
C – weather, increases power, decrease
D - mapping, increases gain, decrease

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

15491. In an Airborne Weather Radar that has a colour cathode ray tube (CRT) the areas of greatest turbulence are indicated on the screen by:

A – large areas of flashing red colour
B – iso-echo areas which are coloured black
C – colour zones being closest together
D – blank iso-echo areas where there is no colour

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

15494. In general the operation of airborne weather radar equipment on the ground is:

A – unrestrictedly permitted in aerodrome maintenance areas
B – only permitted with certain precautions, to safeguard health of personnel and to protect equipment
C – permitted anywhere
D – totally prohibited

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

15535. Which of the following equipment uses primary radar principles?

A – Distance Measuring Equipment (DME)
B – Global Positioning System (GPS)
C – Airborne Weather Radar (AWR)
D – Secondary Surveillance Radar (SSR)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

15538. The theoretical maximum range for an Airborne Weather Radar is determined by the:

A – pulse recurrence frequency
B – transmission power
C – size of the aerial
D – transmission frequency

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16223. Before commencing a flight the weather radar should:

A – be switched to stand-by but not used until airborne
B – not be switched on until clear of buildings
C – be switched to a range function after push back to make sure it is functioning
D – be kept at stand-by until line up with the runway

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16224. Weather radar is used by the pilot to assist in the:

A – detection and avoidance of all turbulence
B – detection and avoidance of potentially turbulent cloud cells
C – detection and determination of a route through active cloud formations
D – detection of other aircraft through clouds

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16225. An airborne weather radar unit transmits a 5° beam from a parabolic dish aerial reflector assembly. If the wavelength is 4 cm, the diameter of the dish is:

A – 20 cm
B – 87.5 cm
C – 87.5 ins
D – 56.0 cm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16226. A height ring can be used:

A – to determine that the weather radar is functioning
B – to determine the aeroplanes height above the surface
C – as a range marker
D – as the zero point for range measurement

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16227. The airborne weather radar is using a 5° beam. A cloud is detected at a range of 60 miles. If the scanner is tilted up to 5° the cloud echo disappears. Using the tangent formula to determine the height of the top of the cloud, in relation to the aeroplanes cruising level and select the nearest answer from the following:

A – 31,900 ft above the level
B – 15,900 ft below the level
C – 15,900 ft above the level
D – 31,900 ft below the level

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16228. On a colour radar, the greatest turbulence is likely in an area where the targets:

A – coloured red
B – coloured magenta
C – show a clearly defined hole
D – show a rapid gradient of change from magenta to yellow

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16229. AWR in the contour mode is used for:

A – identifying areas of maximum turbulence within a cloud
B – identifying rain bearing clouds
C – long range mapping
D – short range mapping

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16230. While using the AWR in the weather mode, the strongest returns on the screen indicate:

A – areas of high concentration of large water droplets
B – areas of probable wind shear
C – areas of severe turbulence
D – areas of severe icing

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16404. What wavelength is typically chosen for AWR systems?

A – 9.375 MHz
B – 93.75 MHz
C – 9.375 GHz
D – 93.75 GHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21525. Airborne weather radars are generally based on the use of:

A – primary radar in the UHF band
B – primary radar in the SHF band
C – secondary radar in the SHF band
D – secondary radar in the VHF band

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21549. In an Airborne Weather Radar the areas of greatest turbulence are usually indicated on the screen by:

A – colour zones of green and yellow
B – blank areas where there is no colour
C – colour zones of red and magenta
D – areas which are coloured black

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21603. Which of the following lists the phenomena least likely to be detected by radar?

A – turbulence in cloud that has precipitation
B – precipitation
C – clear air turbulence
D – wet snow and turbulence in cloud that has precipitation

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21712. Which of the following wavelengths would give the best penetration of weather?

A – 25 cm
B – 50 cm
C – 10 cm
D – 3 cm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21723. An airborne weather radar unit transmits a 4º beam from a parabolic dish aerial reflector assembly. If the wavelength is 3 cm, what is the diameter of the dish?

A – 20 cm
B – 20 ins
C – 52.5 ins
D – 52.5 cms

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21724. A side lobe from the aerial of a weather radar may produce an echo on the screen known as A 'height ring'. The pilot can use this:

A – to determine that the weather radar is functioning
B – to determine the aeroplane's height above the surface
C – as a range marker
D –as the zero point for range measurement

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21725. An airborne weather radar is using a 3º beam. A cloud is detected at a range of 40 miles. If the scanner is tilted up to 3º the cloud echo disappears. The top of the cloud, in relation to the aeroplane's cruising level is approximately:

A – at the same level
B – 6000 ft above the level
C – 12000 ft above the level
D – 18000 ft above the level

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21726. On a colour radar, a bright red echo indicates:

A – An area of strong wind shear
B – An area of extreme turbulence
C – Strong rising air currents
D – Heavy concentrations of liquid/solid water

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21727. An airborne weather radar, with a beam width of 4o in azimuth, is used in mapping mode. At what maximum range would it be able to detect a 1 NM wide opening in a facing sea cliff?

A – 15 NM
B – 4 NM
C – 60 NM
D – 45 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21764. Ground checks of an AWR are:

A – Prohibited at all times
B – Unrestricted
C – Allowed under specific health and safety regulations
D – Allowed only when the aircraft has undergone major servicing

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22292. The airborne weather radar (AWR) cannot detect:

A – snow
B – moderate rain
C – dry hail
D – wet hail

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22293. The use of the AWR on the ground is:

A – not permitted
B – permitted provided reduced power is reduced
C – permitted provided special precautions are taken to safeguard personnel and equipment
D – only permitted to assist movement in low visibility conditions

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22295. On an AWR colour display, the sequence of colours indicating increasing water droplet size is:

A – Blue, green, red
B – Green, yellow, red
C – Black, amber, red
D – Blue, amber, red

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22330. The iso-echo feature of an airborne weather radar can be used to detect:

A – Wake turbulence
B – CAT
C – Turbulence in clouds
D – Areas of possible turbulence in clouds

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

22340. Weather Radar uses (i) radar in the (ii) band:

A – (i) Primary; (ii) EHF
B – (i) Primary; (ii) SHF
C – (i) Secondary; (ii) EHF
D – (i) Secondary; (ii) SHF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22359. An aircraft flying at 25,000 ft is equipped with AWR. The beam width is 5o with the radar tilted up at 3.5o. The radar is showing the top of a cloud return at 105 nm. The approximate height of the cloud is:

A – 14,300 ft
B – 25,600 ft
C – 30,300 ft
D – 35,600 ft

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

22391. The frequency band of most ATC radars and weather radars is:

A – UHF
B – SHF
C – VHF
D – EHF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22392. The ISO-ECHO circuit is incorporated in the AWR:

A – To allow ground mapping
B – To alert pilots to the presence of cloud
C – To display areas of turbulence
D – To allow simultaneous mapping and cloud detection

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22393. With the AWR set at 100 nm range a large cloud appears at 50 nm. If the range is reduced to 50 nm:

A – The image will decrease in area and remain where it is
B – The image will decrease in area and move to the top of the screen
C – The image will increase in area and move to the bottom of the screen
D – The image will increase in area and move to the top of the screen

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22762. Which axes is the AWR stabilised in:

A – Pitch, roll and yaw
B – Roll and yaw
C – Pitch and roll
D – Yaw and pitch

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22770. The AWR can be used on the ground provided:

i. The aircraft is clear of personnel, buildings and vehicles
ii. The conical beam is selected
iii. Maximum uplift is selected
iv. The AWR must never be operated on the ground

A – iv
B – i, ii
C – i, ii, iii
D – ii, iii

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22880. The tilt angle on Aircraft Weather Radar (AWR) at which an active cloud just disappears from the screen is 4o. If the beam width is 5o and the range of the cloud is 40 nm, the height of the cloud above the aircraft is approximately:

A – 3000 ft
B – 6000 ft
C – 4000 ft
D – 9000 ft

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

24978. Is it permissible for weather radar to be operated on the ground?

A – No, never
B – Yes, always
C – Yes, if operating within regulations and guidelines
D – Only whilst taxying

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

24986. In an AWR with a colour CRT areas of greatest turbulence are indicated by:

A – iso-echo areas coloured black
B – large areas of flashing red
C – iso-echo areas with no colour
D – most rapid change of colour

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

25080. Which type of cloud does the AWR detect?

A – Cirro-cumulus
B – Alto-stratus
C – Cumulus
D – Stratus

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25081. The Cosecant squared beam is used for mapping in the AWR because:

A – a greater range can be achieved
B – a wider beam is produced in azimuth to give a greater coverage
C – a larger area of ground is illuminated by the beam
D – it allows cloud detection to be effected whilst mapping

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25570. Airborne weather radar's use a frequency of approximately 9 GHz because:

A – It has a short wavelength so producing higher frequency returns
B – The short wavelength allows signals to be reflected from cloud water droplets of all sizes
C – The wavelength is such that reflections are obtained only from the larger water droplets
D – The frequency penetrates clouds quite easily enabling good mapping of ground features in the mapping mode

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

062-02-04 SSR (secondary surveillance radar) and Transponder

8070. ATC area surveillance radars will normally operate to a maximum range of:

A – 100 nm
B – 200 nm
C – 300 nm
D – 400 nm

Ref: all

Ans: C

8158. What most affects the range available from a secondary radar?

A – The transmission power of aircraft interrogator
B – The transmission power of ground transponder
C – The height of aircraft and height of ground interrogator
D – The PRP

Ref: all

Ans: C

8163. The ground Secondary Surveillance Radar (SSR) equipment incorporates a transmitter and receiver respectively operating in the following frequencies (transmitter; receiver):

A – 1090 MHz; 1090 MHz
B – 1090 MHz; 1030 MHz
C – 1030 MHz; 1090 MHz
D – 1030 MHz; 1030 MHz

Ref: all

Ans: C

8166. The frequency of an SSR ground transmission is:

A – 1050 +/- 0.5 Mhz
B – 1030 +/- 0.2 Mhz
C – 1090 +/- 0.3 Mhz
D – 1120 +/- 0.6 Mhz

Ref: all

Ans: B

8177. The ATC transponder system excluding Mode S contains:

A – four modes, each 1024 codes
B – two modes, each 4096 codes
C – four modes, each 4096 codes
D – two modes, each 1024 codes

Ref: all

Ans: B

8178. In order to indicate unlawful interference with the planned operation of the flight, the aircraft Secondary Surveillance Radar (SSR) transponder should be selected to:

A – 7600
B – 7500
C – 7700
D – 7000

Ref: all

Ans: B

8190. What is the maximum number of usable Secondary Surveillnce Radar (SSR) transponder codes?

A – 4096
B – 3600
C – 1000
D – 760

Ref: all

Ans: A

8200. Which one of the following Secondary Surveillance Radar (SSR) codes should be used by aircraft entering airspace from an area where SSR operation has not been required?

A – 0000
B – 5000
C – 7000
D – 2000

Ref: all

Ans: D

8202. The accuracy of SSR height as displayed to the air traffic controller is:

A - +/- 25 ft
B - +/- 50 ft
C - +/- 75 ft
D - +/- 100 ft

Ref: all

Ans: B

8209. When an aircraft is operating its Secondary Surveillance Radar in Mode C an air traffic controller's presentation gives information regarding the aircraft's indicated flight level that is accurate to within:

A - + or – 50 ft
B - + or – 75 ft
C - + or – 100 ft
D - + or – 25 ft

Ref: all

Ans: A

8218. Why is the effect of returns from storms not a problem with SSR?

A – The frequency is too high
B – SSR does not use the echo principle
C – The PRF is jittered
D – By the use of MTI to remove stationary and slow moving returns

Ref: all

Ans: B

8226. The SSR ground transceiver interrogates on ___ and receives responses on ___

A – 1030 MHz, 1030 MHz
B – 1030 MHz, 1090 MHz
C – 1090 MHz, 1030 MHz
D – 1090 MHz, 1090 MHz

Ref: all

Ans: B

8228. Which SSR mode A code should be selected when entering European airspace from an area where no code has been allocated:

A – 7000
B – 7500
C – 2000
D – 0000

Ref: all

Ans: C

8234. When Mode C is selected on the aircraft SSR transponder the additional information transmitted is:

A – height based on QFE
B – altitude based on regional QNH
C – aircraft height based on sub-scale setting
D – flight level based on 1013.25 hPa

Ref: all

Ans: D

8240. A secondary radar can provide up to 4096 different codes. These 4096 codes can be used in:

A – mode C only
B – mode A only
C – all modes
D – mode S

Ref: all

Ans: C

8249. The availability of 4096 codes in SSR is applicable to mode:

A – A
B – C
C – S
D – All

Ref: all

Ans: D

8250. With regard to the advantages of SSR which of the following statements is correct?

A – Little power is required to effect longish range
B – No aircraft manoeuvres are necessary for identification
C – Range, bearing and height can be calculated from reply signals
D – All of the above

Ref: all

Ans: D

11238. If an aircraft is hijacked it is recommended that the pilot set transponder code:

A – 7700
B – 7500
C – 7600
D – 7300

Ref: all

Ans: B

11310. In order to indicate radio failure the aircraft SSR transponder should be selected to code:

A – 7000
B – 7700
C – 7600
D – 7500

Ref: all

Ans: C

11311. The two main design functions of Secondary Surveillance Radar (SSR) Mode S are:

A – the elimination of ground to air communications and the introduction of automatic separation between aircraft using TCAS II
B – collision avoidance using TCAS II and improved long range (HF) communication capability
C – continuous automatic position reporting using Global Positioning System (GPS) satellites and collision avoidance using TCAS II
D – air to ground and ground to air data link communications and improved ATC aircraft surveillance capability

Ref: all

Ans: D

11312. The code transmitted by a SSR transponder consists of:

A – phase differences
B – pulses
C – frequency differences
D – amplitude differences

Ref: all

Ans: B

11336. Selection of mode C on the SSR provides ATC with information based on:

A – aircraft height above QFE
B – aircraft altitude as indicated on the captains altimeter
C – aircraft pressure altitude
D – aircraft height above the surface

Ref: all

Ans: C

11339. Which statement regarding Mode S transponders is most correct?

A – Mode S transponders reduce RT traffic and provide a datalink facility
B – Mode S transponders are used with TCAS III
C – Mode S transponders are used to assist GPS positioning
D – Mode S and Mode C transponders operate on different frequencies

Ref: all

Ans: A

11340. Why is a secondary radar display screen free of storm clutter?

A – The principle of echo return is not used in secondary radar
B – The frequencies employed are too high to give returns from moisture sources
C – A moving target indicator facility suppresses the display of static or near static returns
D – The frequencies employed are too low to give returns from moisture sources

Ref: all

Ans: A

11342. Which of the following Secondary Surveillance Radar (SSR) codes is used to indicate transponder malfunction?

A – 7600
B – 0000
C – 4096
D – 9999

Ref: all

Ans: B

15536. Which of the following equipment works on the interrogator/transponder principle?

A – Secondary Surveillance Radar (SSR)
B – Global Positioning System (GPS)
C – Airborne Weather Radar (AWR)
D – Aerodrome Surface Movement Radar

Ref: all

Ans: A

15537. In order to indicate an emergency situation, the aircraft Secondary Surveillance Radar (SSR) transponder should be set to:

A – 7600
B – 7500
C – 7000
D – 7700

Ref: all

Ans: D

15539. Which one of the following switch positions should be used when selecting a code on the Transponder?

A – NORMAL
B – OFF
C – STBY (Standby)
D – IDENT (Identification)

Ref: all

Ans: C

15540. The selection of code 2000 on an aircraft SSR transponder indicates:

A – unlawful interference with the planned operation of the flight
B – an emergency
C – transponder malfunction
D – entry into airspace from an area where SSR operation has not been required

Ref: all

Ans: D

15543. The selection of code 7500 on an aircraft SSR transponder indicates:

A – unlawful interference with the planned operation of the flight
B – an emergency
C – transponder malfunction
D – radio communication failure

Ref: all

Ans: A

15544. The selection of code 7600 on an aircraft SSR transponder indicates:

A – an emergency
B – unlawful interference with the planned operation of the flight
C – transponder malfunction
D – radio communication failure

Ref: all

Ans: D

15545. The selection of code 7700 on an aircraft SSR transponder indicates:

A – an emergency
B – radio communication failure
C – transponder malfunction
D – unlawful interference with the planned operation of the flight

Ref: all

Ans: A

16406. What are the frequencies used for interrogation and response for SSR?

A – 1090 MHz for interrogation from the ground 1030 MHz for response from the aircraft
B – 1030 MHz for interrogation from the ground 1090 MHz for response from the aircraft
C – 1090 MHz for interrogation from the aircraft 1030 MHz for response from the ground
D – 1030 MHz for interrogation from the aircraft 1090 MHz for response from the ground

Ref: all

Ans: B

16407. With regard to SSR:

A – The interrogator is on the ground and the transponder is on the ground
B – The interrogator is on the ground and the transponder is in the aircraft
C – the interrogator is in the aircraft and the transponder is on the ground
D – The interrogator is on the aircraft and the transponder is in the aircraft

Ref: all

Ans: B

16643. With SSR, interrogation and response signals:

A – are separated by 63 MHz
B – must be set by the pilot but are always 60 MHz apart
C – are at standard frequencies separated by 60 MHz
D – are at variable frequencies set by the controller but are always 63 MHz apart

Ref: all

Ans: C

16644. SSR uses wide aperture aerials to:

A – reduce side lobe effects
B – improve bearing discrimination
C – improve range discrimination
D – reduce the vertical beam width

Ref: all

Ans: D

16645. SSR, in ATC use:

A – is complementary to primary radar
B – suffers from greater attention (than primary radar) due to the higher frequency used
C – replaces primary radar
D – uses primary radar techniques

Ref: all

Ans: A

16646. In the SSR response, the operation of the transponder ident button:

A – transmits the aeroplanes registration or flight number as a data coded sequence
B – sends a special pulse after the normal response pulse train
C – sends a special pulse before the normal response pulse train
D – sends a special pulse in the X position on the pulse train

Ref: all

Ans: B

16647. When a mode C interrogation is responded to, vertical position of the aircraft is coded and transmitted. This vertical position is referred to:

A – the sub-scale of the altimeter
B – area QNH
C – 1013.2 hPa
D – any of the above as directed by ATC

Ref: all

Ans: C

16648. In special Condition signals, to signify radio failure, which of the following codes should you select on your transponder?

A – 7700
B – ident
C – 7500
D – 7600

Ref: all

Ans: D

16649. Data transmission and exchange is conducted in:

A – Mode A
B – Mode C
C – Mode D
D – Mode S

Ref: all

Ans: D

16650. Garbling is caused by:

A – an aeroplane's transponder responding to side lobes or reflections of the interrogation signal
B – aeroplane is in close proximity responding to the same interrogation
C – aeroplane at range responding to interrogations from another ATC, SSR
D – Doppler effect on targets moving radially towards or away from the SSR

Ref: all

Ans: B

16651. A mode S transponder will:

A – not respond to interrogations made on mode A
B – respond normally to mode A/C interrogations
C – respond to mode A interrogations but not mode C
D – not respond to mode A/C as it is on the different frequency

Ref: all

Ans: B

21590. What is the maximum number of usable Secondary Surveillance Radar (SSR) transponder codes in Mode A?

A – 1000
B – 3600
C – 4096
D – 760

Ref: all

Ans: C

21604. Which of the following radar equipment operate by means of the pulse technique?

1. Aerodrome Surface Movement Radar
2. Airborne Weather Radar
3. Secondary Surveillance Radar (SSR)
4. Aerodrome Surveillance (approach) Radar

A – 1, 2 and 4 only
B – 1, 2, 3 and 4
C – 2, 3 and 4 only
D – 2 and 4 only

Ref: all

Ans: B

21616. What transponder code is selected in the event of radio failure:

A – 7000
B – 7500
C – 7600
D – 7700

Ref: all

Ans: C

21617. What transponder code is selected in the event of an emergency:

A – 7000
B – 7500
C – 7600
D – 7700

Ref: all

Ans: D

21621. Why do clouds not appear on secondary radar screens:

A – Too high a frequency
B – Too low a frequency
C – They do not provide an echo by returning signals
D – The transmit and receive signals are on different frequencies

Ref: all

Ans: D

21645. If a radar pulse contains 300 cycles of RF energy at a frequency of 600 MHz, the physical lengthof the pulse is:

A – 1550 metres
B – 150 metres
C – 1.5 metres
D – 0.15 metres

Ref: all

Ans: B

21718. During a surveillance radar approach, the vertical position of the aeroplane, unless advised otherwise, is given in terms of:

A – Height above aerodrome level
B – Height above area QNH datum
C – Height above QFE threshold
D – Height above aerodrome QNH datum

Ref: all

Ans: C

21719. With SSR interrogation and response signals:

A – Are separated by 63 MHz
B – Must be set by the pilot but are always 60 MHz apart
C – Are at standard frequencies separated by 60 MHz
D – Are at variable frequencies set by the controller and are always 63 MHz

Ref: all

Ans: C

21720. In SSR, the interrogations use different modes. If altitude reporting is required, the aeroplane's transponder should be set to "ALT" and will respond to:

A – Mode C interrogations only
B – Mode A interrogations only
C – Mode C and A interrogations
D – Mode C and Ident interrogations

Ref: all

Ans: C

21721. 'Fruiting' is caused by:

A – Aeroplanes in close proximity responding to the same interrogation
B – An aeroplane's transponder responding to side lobes or reflctionsof the interrogation signal
C – Aeroplane at range responding to interrogations from another ATC, SSR
D – Doppler effect on targets moving radially towards or away from the SSR

Ref: all

Ans: C

21722. A mode A/C transponder will:

A – Not respond to interrogations made on mode S
B – Respond to mode S interrogations but cannot send data
C – Respond to mode S interrogations with limited data
D – Not respond to mode S as it is on a different frequency

Ref: all

Ans: B

21749. Which of the following statements regarding Mode S is most correct:

A – Mode S is used to assist in GPS calculations
B – Mode S transponders are used with the radio altimeter
C – Mode S transponders reduce R/T traffic and also provide the aircraft with a data link facility
D – Mode S and Mode A/C transponders use different frequencies of operation

Ref: all

Ans: C

21780. The SSR code for a total radio failure is:

A – A7500
B – A7600
C – A7500 plus mode C
D – A7600 plus mode C

Ref: all

Ans: B

22287. An area surveillance radar is most likely to use a frequency of:

A – 350 MHz
B – 600 MHz
C – 100 Hz
D – 150 Hz

Ref: all

Ans: B

22296. The vertical position provided by SSR mode C is referenced to:

A – QNH unless QFE is in use
B – 1013.25 HPa
C – QNH
D – WGS 84 datum

Ref: all

Ans: B

22366. SSR is not affected by weather clutter because:

A – It uses different frequencies for transmission and reception
B – The wavelength is too short to be reflected from cloud droplets
C – The equipment uses a moving target indicator
D – The frequency used penetrates clouds

Ref: all

Ans: D

22771. With normal SSR mode A coding the aircraft replies by sending back a train of up to 12 pulses contained between 2 framing pulses with:

A – 4096 codes in 4 boxes
B – 2048 codes in 4 boxes
C – 4096 codes in 12 boxes
D – 1096 codes in 8 boxes

Ref: all

Ans: A

22798. The SSR conspicuity code is:

A – 7000
B – 2000
C – 0033
D – 4321

Ref: all

Ans: A

24947. A radar which employs an interrogator/transponder technique is:

A – primary radar

B – continuous wave radar
C – secondary radar
D – Doppler radar

Ref: all

Ans: C

24951. With regard to SSR which of the following statements is true:

A – it is a secondary radar system operating in the UHF frequency band
B – mode A is used for identification, with mode C for automatic height information
C – it is compulsory when flying in Upper Airspace and in the whole of UK controlled airspace under IFR to carry Mode A 4096 codes and also Mode C
D – all of the above

Ref: all

Ans: D

24955. When a Mode C check is carried out, and assuming the equipment is working without error, the Mode C will report a pressure altitude of 35.064 ft as flight level:

A – 350
B – 35064
C – 3506
D – 351

Ref: all

Ans: D

25075. Which of the following systems use pulse technique?

A – secondary surveillance radar
B – airborne weather radar
C – distance measuring equipment
D – primary radar

Ref: all

Ans: A

25082. With reference to SSR, what code is used to indicate transponder altitude failure?

A – 9999
B – 0000
C – 4096
D – 7600

Ref: all

Ans: B

062-02-05 Use of Radar Observations and Application to In-flight Navigation

16632. In which of the following meteorological conditions would you expect to encounter an increased distance to the radar horizon:

A – surface inversion of temperature and humidity
B – surface steep lapse rate of temperature and humidity
C – a steep lapse rate of temperature with an inversion of humidity
D – an inversion of temperature with a steep lapse rate of humidity

Ref: AIR: atpl; HELI: atpl, cpl

Ans: D

21586. What information may be displayed on an ATC radar screen connected only to a primary radar system?

A – Aircraft position only
B – Aircraft position and SSR code
C – Aircraft position, SSR code and altitude
D – Aircraft altitude

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

21715. In ATC surveillance radar procedures, if primary radar fails but coverage continues to be provided by SSR:

A – Full radar control with standard radar separation will be maintained
B – Non-radar separation standards will be introduced as soon as possible
C – All radar assistance will be terminated immediately
D – Radar assistance will be terminated after standard separation has been introduced

Ref: AIR: atpl; HELI: atpl, cpl

Ans: B

21798. Precision Approach Radars are required under the ICAO specifications to indicate an aircraft within the following parameters:

A – Azimuth: 10°, Vertical: 4°, Range: 7 nm
B – Azimuth: 20°, Vertical: 7°, Range: 9 nm
C – Azimuth: 30°, Vertical: 10°, Range: 10 nm
D – Azimuth: 40°, Vertical: 15°, Range: 15 nm

Ref: AIR: atpl; HELI: atpl, cpl

Ans: B

22364. An aircraft is heading 045°M where the variation is 15°E. The radar shows an island on a bearing of 20R. The centre of the island is at a range of 135 nm. The true bearing and distane to plot from the island to establish the aircraft position is:

A – 230°/135 nm
B – 080°/135 nm
C – 260°/135 nm
D – 245°/135 nm

Ref: AIR: atpl; HELI: atpl, cpl

Ans: C

062-05 AREA NAVIGATION SYSTEMS

062-05-01 General philosophy

7981. Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), turbulence is coloured:

A – magenta
B – flashing red
C – white or magenta
D – high colour gradient

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8076. Under JAR-25 colour code rules, features displayed in green on an electronic Flight Instrument System (EFIS) indicate:

A – engaged modes
B – cautions, abnormal sources
C – the earth
D – the ILS deviation point

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8077. Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS) a selected heading is coloured:

A – white
B – green
C – magenta
D – yellow

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8082. The JAR OPS colour for selected heading is:

A – red
B – magenta
C – green
D – cyan

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8085. Under JAR-25 colour code rules features displayed in cyan/blue, on an Electronic Flight Instrument Systems (EFIS), indicate:

A – the sky
B – engaged modes
C – the flight director bar(s)
D – flight envelope and system limits

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8086. Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS) increasing intensity of precipitation are coloured in the order:

A – green, amber/yellow, red, magenta
B – green, red, magenta, black
C – black, amber/yellow, magenta, red
D – amber/yellow, magenta, black

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8089. Positions on a Flight Management Computer are updated with information from:

A – DME/VOR
B – DME/DME or DME/VOR
C – DME/DMe
D – VOR/ADF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8101. The colour recommended in JAR OPS for armed AFCS modes is:

A – green
B – yellow
C – white
D – magenta

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8105. According to JAA JTSOs the colour red is used on an EFIS screen for:

(i) Warnings
(ii) Flight envelope and system limits
(iii) Cautions, abnormal sources
(iv) Scales and associated figures

Which selection of the above answers is correct?

A – (ii), (iii) and (iv)
B – (i) and (iii)
C – (i) and (ii)
D – (i) only

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8115. Under JAR-25 colour code rules, features displayed in amber/yellow on an Electronic Flight Instrument System (EFIS) indicate:

A – cautions, abnormal sources
B – flight envelope and system limits
C – warnings
D – engaged modes

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8116. Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), current data and values are coloured:

A – red
B – cyan
C – white
D – magenta

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8118. Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), armed modes are coloured:

A – white
B – green
C – magenta
D – amber/yellow

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8122. ICAO Annex 11 defines Area Navigation (RNAV) as a method of navigation which permits aircraftoperation on any desired flight path:

A – within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these
B – outside the coverage of station-referenced navigation aids provided that it is equipped with a minimum of one serviceable self-contained navigation aid
C – within the coverage of station-referenced navigation aids provided that it is equipped with a minimum of one serviceable self-contained navigation aid
D – outside the coverage of station-referenced navigation aids provided that it is equipped with a minimum of two serviceable self-contained navigation aids

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8135. The colour recommended in JAR OPS 1 for the active route is:

A – cyan
B – magenta
C – green
D – amber

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8136. Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), turbulence is coloured:

A – cyan
B – red
C – black
D – white or magenta

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8139. Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), selected data and values are coloured:

A – green
B – white
C – magenta
D – yellow

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8142. A wavelength of 8.5 mm corresponds to a frequency of:

A – 2833.3 MHz
B – 35294 MHz
C – 3529.4 MHz
D – 28333 MHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8152. Basic RNAV requires a track-keeping accuracy of:

A - +/- 5 NM or better for 95% of the flight time
B - +/- 3 NM or better for 90% of the flight time
C - +/- 2 NM or better for 75% of the flight time
D - +/- 5 NM or better throughout the flight

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11166. Attenuation of a radio wave is the:

A – increase of its power by the combination of multi-path signals
B – change of its frequency by use of sidebands
C – change of its amplitude by use of sidebands
D – reduction of its power by absorption, scattering or spreading

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

11169. The limits of the VHF band are:

A – 300 – 3000 MHz
B – 30 – 300 MHz
C – 300 – 3000 KHz
D – 3 – 30 MHz

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

11347. The JAR-25 recommended colour for a downpath waypoint is:

A – white
B – green
C – magenta
D – cyan

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11378. As a storm intensifies, the colour sequence on the AWR display will change:

A – black, yellow, amber
B – green, yellow, red
C – blue, green, orange
D – green, yellow, amber

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

15506. Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), the active route/flight plan is coloured:

A – cyan
B – magenta
C – green
D – yellow

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16416. What is the period of validity of the navigational database for a Flight DATA Storage Unit?

A – 7 days
B – 14 days
C – 21 days
D – 28 days

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16636. To increase the maximum theoretical range of a pulse radar system:

A – reduce the PRF and increase the power
B – increase the PRF and reduce the power
C – reduce the PRF and increase the PRF
D – maintain the PRF and increase the power

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21569. Precision RNAV (P-RNAV) requires a track-keeping accuracy of:

A – ±10.0nm for 95% of the flight time
B – ±1.0nm for 95% of the flight time
C – ±5.0nm for 95% of the flight time
D – ±8.0nm for 95% of the flight time

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21601. Which of the following is one of the functions of the Computer in a basic RNAV system?

A – It checks the ground station accuracy using a built-in test programme
B – It transfers the information given by a VOR/DME station into tracking and distance indications to any chosen Phantom Station/waypoint
C – It automatically selects the two strongest transmitters for the Area-Nav-Mode and continues working by memory in case one of the two necessary stations goes off the air
D – It calculates cross track information for NDB approaches

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21630. Which combination will give the greatest accuracy in an RNAV system:

A – VOR/DME
B – DME/DME
C – VOR/ADF
D – VOR/Loran C

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21631. What is the accepted accuracy of PRNAV:

A – 0.5 nm
B – 1 nm
C – 1.5 nm
D – 2 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22799. On a 5 dot HSI in the RNAV approach mode (APR RNAV) what does one dot indicate?

A – 0.25 nm
B – 0.5 nm
C – 1.0 nm
D – 2.0 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

25095. In an RNAV system which combination of external reference will give the most accurate position?

A – GPS/rho
B – Rho/theta
C – Rho/rho
D – GPS/theta

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

062-05-02 Typical Flight deck Equipment and Operation

2819. Radar returns, on a B737-400, can be displayed on all Electronic Horizontal Situation Indicator (EHSI) screen modes of an Electronic Flight Instrument System (EFIS) WITH THE EXCEPTION OF :

A – EXP VOR/ILS, PLAN and MAP
B – FULL NAV, FULL VOR/ILS and PLAN
C – FULL VOR/ILS, EXP VOR/ILS and PLAN
D – FULL NAV, PLAN and MAP

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

7986. The FMC position is:

A – the average of the IRS positions
B – the average of the IRS and radio navigation positions
C – computer generated from the IRS and radio navigation positions
D – computer generated from the radio navigation positions

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8069. Which of the following gives the best information about the progress of a flight between 2 en-route waypoints from a RNAV equipment?

A – Elapsed time on route
B – ETD
C – ATA
D – ETO

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8075. In which of the following cases would ETOs and ETA at destination calculated by the Flight Management Computer (FMC) be correct?

A – When the ETOs and ETA are based on the forecast winds calculated from the actual take-off time
B – When the FMC computes each ETO and ETA using the correct GS
C – When the FMC positions and GS are accurate
D – When the actual winds match the forecast winds, and the actual cruising Mach number is equal to the FMC calculated Mach number

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8090. In an Electronic flight Instrument System (EFIS) data relating primarily to navigation is provided by:

A – Inertial Reference Systems, Aircraft Mapping Radar, Navigation radios
B – Navigation radios, Flight Management Computer, Inertial Reference Systems
C – Flight Management Computer, Aircraft Mapping Radar, Navigation radios
D – Inertial Reference Systems, Navigation radios, True airspeed and drift inputs

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8108. The databases on a FMC:

A – can be read or written on to at any time
B – can be modified by the pilot
C – are read only
D – are updated once every 28 weeks

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8110. Which of the following can be input manually to the FMC using a maximum of 5 alphanumerics?

A – Waypoints, latitude and longitude, SIDs and STARs
B – ICAO aerodrome designators, navigation facilities, SIDs and STARs
C – Waypoints, airways designators, latitude and longitude
D – Navigation facilities, reporting points, airways designators

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8114. Which component of the B737-400 Electronic Flight Instrument System generates the visual displays on the EADI and EHSI?

A – Flight Control Computer
B – Flight Management Computer
C – Symbol Generator
D – Navigation database

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8127. The database of an FMS (Flight Management System) is organised in such a way that the pilot can:

A – modify the database every 28 days
B – only read the database
C – insert navigation data between two updates
D – read and write at any time in database

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8141. The track-line on the Electronic Horizontal Situation Indicator (EHSI) or Navigation Display of an Electronic Flight Instrument System:

A – indicates to the pilot that a manually selected heading is being flown
B – corresponds to the calculated IRS TH and is correct during turns
C – indicates that the pilot has made a manual track selection
D – represents the track of the aircraft over the ground. When it coincides with the desired track, wind influence is compensated for

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8145. When is the IRS position updated:

A – at VOR beacons on route by the pilots
B – continuously by the FMC
C – at significant waypoints only
D – on the ground only

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8154. The Flight Management Computer (FMC) position is:

A – another source of aircraft position; it is independent of other position sources (IRS, Radio, ILS, etc)
B – the actual position of the aircraft at any point in time
C – the same as that given on the No. 1 IRS
D – the computed position based on a number of sources (IRS, Radio, ILS, GPS, etc)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8156. When is the FMS position likely to be least accurate?

A – TOD
B – TOC
C – Just after take-off
D – On final approach

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

11385. The FMS database can be:

A – altered by the pilots between the 28 day updates
B – read and altered by the pilots
C – only read by the pilots
D – altered by the pilots every 28 days

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

15534. Which one of the following sensors/systems is self-contained and obtains no external information?

A – VOR/DME radial/distance
B – Inertial Navigation System (INS) position
C – Pressure altitude
D – Magnetic heading

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16417. With regard to FMS, what are the possible modes of operation for dual FMC installations?

A – Dual
B – Dual and single
C – Dual, independent, and single
D – None of the above

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16418. What is Back Up FMS navigation mode?

A – When only one FMS is operational
B – When one FMS is a Master and the other is a Slave
C – When one FMS operates independently from the other
D – When the FMC is suffering from some failure but there is still lmited FMS function

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16419. Why is gate number requested by the FMC?

A – So that pilots can choose as an option this gate for the return flight
B – So that the FMS can convert the gate position into a WGS 84 co-ordinate for the inertial navigation system
C – To inform the company of departure gate by date link
D – None of the above

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16420. Why is an IRS known as a self-contained system?

A – Because it is contained in one area in the aircraft
B – Because it only depends on input from global navigation satellite systems
C – Because it derives navigational data from relative movement via in-built sensors
D – Because it only depends on input for VOR/DME facilities

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16421. The FMS is composed of:

A – the command display unit and the flight management computer
B – the automatic flight control system and the power management controls system
C – the flight management computer only
D – the EFIS and EICAM displays

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21502. (Refer to figure 062-07)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in MAP mode?

A – Figure 4
B – Figure 3
C – Figure 1
D – Figure 2

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21503. (Refer to figure 062-07)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in PLAN mode?

A – Figure 2
B – Figure 3
C – Figure 4
D – Figure 1

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21506. (Refer to figure 062-08)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in FULL VOR/ILS mode with a VOR frequency selected?

A – Figure 1
B – Figure 4
C – Figure 5
D – Figure 6

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21507. (Refer to figure 062-08)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in PLAN mode?

A – Figure 6
B – Figure 3
C – Figure 4
D – Figure 2

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21508. (Refer to figure 062-08)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in MAP mode?

A – Figure 4
B – Figure 3
C – Figure 5
D – Figure 2

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21509. (Refer to figure 062-08)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in Expanded (EXP) VOR/ILS mode with a VOR frequency selected?

A – Figure 1
B – Figure 5
C – Figure 6
D – Figure 4

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21510. (Refer to figure 062-08)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in Expanded (EXP) VOR/ILS mode with an ILS frequency selected?

A – Figure 3
B – Figure 6
C – Figure 2
D – Figure 5

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21550. In an Electronic Flight Instrument System (EFIS) data relating primarily to navigation in the FMC is provided by:

A – Navigation radios GPS Inertial Reference Systems
B – Inertial Reference Systems Aircraft Weather Radar Navigation radios
C – GPS Aircraft Weather Radar Navigation radios
D – Inertial Reference Systems Navigation radios Terrain Collision Alerting System

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21557. In the Flight Management Computer (FMC) of the Flight Management System (FMS), data relating to aircraft flight envelope computations is stored in the:

A – auto flight computers
B – air data computer
C – navigation database
D – performance database

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21558. In the Flight Management Computer (FMC) of the Flight Management System (FMS), data relating to cruising speeds is stored in the:

A – navigation database
B – air data computer
C – performance database
D – auto flight computers

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21559. In the Flight Management Computer (FMC) of the Flight Management System (FMS), data relating to flight plans is stored in the:

A – air data database
B – navigation database
C – performance database
D – auto flight database

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21560. In the Flight Management Computer (FMC) of the Flight Management System (FMS), data relating to STARs and SIDs is stored in the:

A – navigation database
B – air data computer
C – performance database
D – auto flight computers

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21561. In the Flight Management Computer (FMC) of the Flight Management System (FMS), data relating to V1, VR and V2 speeds is stored in the:

A – air data computer
B – performance database
C – navigation database
D – auto flight computer

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21562. In the Flight Management Computer (FMC) of the Flight Management System (FMS), data relating to waypoints is stored in the:

A – performance database
B – air data computer
C – navigation database
D – auto flight computers

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21574. The Flight Management System (FMS) is organised in such a way that:

A – the main navigation database of the FMC is created by the pilot
B – the pilot is able to modify the main navigation database in the FMC between two updates
C – the main navigation database of the FMC is valid for one year
D – the main navigation database is read only to the pilot

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21580. Under JAR-25 colour code rules, features displayed in red on an electronic flight Instrument System (EFIS) indicate:

A – cautions and abnormal sources; engaged modes
B – flight envelope and system limits; engaged modes
C – warnings; cautions and abnormal sources
D – warnings; flight envelope and system limits

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21602. Which of the following lists all the stages of flight when it is possible to change the route in the active flight plan on an FMS equipped aircraft?

A – Only once the aircraft is airborne
B – Only before take-off
C – Only before the flight plan is activated
D – At any time before take-off and throughout the flight

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

22310. The ETA generated by the FMS will be most accurate:

A – when the forecast W/V equals the actual W/V and the FMS calculated Mach No. equals the actual Mach No.
B – If the ground speed and position are accurate
C – If the forecast W/V at take-off is entered
D – If the ground speed is correct and the take-off time has been entered

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22311. For position fixing the FMC uses:

A – DME/DME
B – VOR/DME
C – DME/DME or VOR/DME
D – Any combination of VOR, DME and ADF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22319. The inputs the pilot will make to the FMC during the pre-flight initialisation will include:

A – ETD, aircraft position, and planned route
B – Planned route, aircraft position, and departure runway
C – Navigation database, aircraft position and departure aerodrome
D – Departure runway, planned route and ETD

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22324. In the NAV and EXP NAV modes one dot on the EHSI represents:

A – 2 nm
B – 2°
C – 5 nm
D – 5°

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22325. The colour recommended in JAR OPS 1 for engaged modes is:

A – green
B – magenta
C – cyan
D – white

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22326. The colour recommended in JAR OPS for the display of turbulence is:

A – red
B – black
C – white or magenta
D – amber

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22758. In accordance with JAR 25, which features of an EFIS display are coloured CYAN:

A – Engaged moes
B – The sky
C – The flight director bars
D – System limits and flight envelope

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22759. In an EHSI the navigation information comes from:

A – INS, weather mapping, radio navigation
B – FMC, radio navigation
C – IRS, radio navigation, TAS and drift
D – FMC, weather mapping, radio navigation

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22766. Which EHSI modes cannot show AWR information:

A – FULL VOR/ILS/NAV and MAP
B – PLAN, CTR MAP and EXP VOR/ILS/NAV
C – CTR MAP and PLAN
D – PLAN and FULL VOR/ILS/NAV

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

24987. The colour recommended in JAR OPS 1 for engaged AFCS modes is:

A – green
B – magenta
C – cyan
D – white

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

25089. For position fixing the B737-800 FMC uses:

A – DME/DME
B – VOR/DME
C – DME/DME or VOR/DME
D – Any combination of VOR, DME and ADF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

25091. According to JAR 25, for what type of message is the colour red used?

A – warnings, cautions, abnormal sources
B – flight envelope, system limits, engaged mode
C – cautions, abnormal sources, engaged mode
D – warnings, flight envelope, system limits

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

25092. Which of the following is independent of external inputs?

A – INS
B – Direct reading magnetic compass
C – VOR/DME
D – ADF

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

25093. The track line on an EFIS display indicates:

A – that a manual track has been selected
B – that a manual heading has been selected
C – the actual aircraft track over the ground, which will coincide with the aircraft heading when there is zero drift
D – the aircraft actual track which will coincide with the planned track when there is zero drift

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

062-05-03 Instrument Indications

8043. The EHSI is showing 5 deg 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

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8073. (Refer to figure 062-10)

The track from TBX to YTB is:

A – 180° (T)
B – 097° (T)
C – 073° (M)
D – 045° (T)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8079. the navigation database in the FMC:

A – is read only for the pilots
B – can be modified by the pilots to meet route requirements
C – can be amended by the pilots to update navigational data
D – is inaccessible to the flight crew

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8080. An aircraft flies from a VOR at 61N 013W to 58N 013W. The variation at the beacon is 13W and the variation at the aircraft is 5W. What radial is the aircraft of?

A – 013
B – 005
C – 193
D – 187

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8093. (Refer to figure 062-08)

The EHSI in display 1 (figure 1) is in ___ mode

A – FULL NAV
B – FULL VOR
C – EXP VOR
D – ILS

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8102. (Refer to figure 062-08)

Which EFIS diagram is in the MAP mode?

A – Figure 3
B – Figure 2
C – Figure 4
D – Figure 1

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8111. (Refer to figure 062-09)

The aircraft is:

A – left of the localiser and above the glide path
B – right of the localiser and below the glide path
C – left of the localiser and below the glide path
D – right of the localiser and above the glide path

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8144. How does the electronic Flight Instrument System display of a B737-400 respond to the failure of a VHF navigation (VOR) receiver?

A – The deviation bar and/or pointer change colour to red and flash intermittently
B – The pointer rotates around the display and a VOR 1 or 2 failure warning bar appears
C – It removes the associated magenta deviation bar and/or pointer from the display
D – The pointer flashes and a VOR 1 or 2 failure warning bar appears

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

11265. You are maintaining a track of 315°M on a heading of 299°M. The variation at the aircraft is 12°E. The true heading is ___ the true track is ___ and the drift is ___

A – 287°, 303°, 16° port
B – 326°, 311°, 16° starboard
C – 311°, 327°, 16° starboard
D – 311°, 327°, 16° port

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21425. (Refer to figure 062-07)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) Display in MAP mode?

A – Figure 2
B – Figure 3
C – Figure 4
D – Figure 5

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21426. (Refer to figure 062-08)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in Expanded (EXP) VOR/ILS mode with a VOR frequency selected?

A – Figure 4
B – Figure 5
C – Figure 6
D – Figure 1

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21428. (Refer to figure 062-08)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in FULL VOR/ILS mode with an ILS frequency selected?

A – Figure 2
B – Figure 3
C – Figure 5
D – Figure 6

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21429. (Refer to figure 062-12)

What is the manually selected heading?

A – 272º (M)
B – 280º (M)
C – 300º (M)
D – 260º (M)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21430. (Refer to figure 062-08)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in PLAN mode?

A – Figure 2
B – Figure 3
C – Figure 4
D – Figure 6

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21432. (Refer to figure 062-09)

What is the instantaneous aircraft track?

A – 280o (M)
B – 272o (M)
C – 300o (M)
D – 260o (M)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21435. Under JAR-25 colour code rules, features displayed in red on an Electronic Flight Instrument System (EFIS), indicate:

A – warnings; cautions and abnormal sources
B – cautions and abnormal sources; engaged modes
C – warnings; flight envelope and system limits
D – flight envelope and system limits; engaged modes

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21436. (Refer to figure 062-11)

The 'O' followed by the letters 'KABC' indicates:

A – the destination airport
B – an off-route airport
C – a designated alternate airport
D – an off-route VOR/DME

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21437. (Refer to figure 062-11)

What wind velocity is indicated?

A – 030° (M) / 20 KT
B – 255° (M) / 20 KT
C – 285° (M) / 20 KT
D – 105° (M) / 20 KT

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21438. (Refer to figure 062-08)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in FULL VOR/ILS mode with a VOR frequency selected?

A – Figure 4
B – Figure 5
C – Figure 6
D – Figure 1

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21439. What approximate rate of descent is required in order to maintain a 3^{o} glide path at a ground speed of 90 kt?

A – 450 ft/min
B – 400 ft/min
C – 600 ft/min
D – 700 ft/min

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21442. (Refer to figure 062-07)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in Expanded (EXP) VOR/ILS mode with a VOR frequency selected?

A – Figure 1
B – Figure 2
C – Figure 3
D – Figure 4

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21443. (Refer to figure 062-07)

Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in Expanded (EXP) VOR/ILS mode with an ILS frequency selected?

A – Figure 4
B – Figure 1
C – Figure 2
D – Figure 3

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21445. (Refer to figure 062-09)

What drift is being experienced?

A – 20° Right
B – 20° Left
C – 12° Right
D – 8° Left

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21513. (Refer to figure 062-10)

What is the value of the track from TBX to YTB?

A – 097° (T)
B – 170° (M)
C – 140° (M)
D – 280° (T)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21564. In which screen modes of an Electronic Horizontal Situation Indicator (EHSI) on a B737-400 will radar returns not be shown?

A – EXP VOR/ILS PLAN and MAP
B – FULL NAV, FULL VOR/ILS and PLAN
C – FULL NAV, PLAN and MAP
D – FULL VOR/ILS, EXP VOR/ILS and PLAN

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21664. If range indications are screen/hidden, this means:

A – The transponder is out of service
B – The aeroplane is out of range
C – The aeroplane's equipment is in search mode
D – The DME unit is in memory mode

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21713. A Moving Target Indicator:

A – Rejects all moving targets
B – Is only effective if the target moves directly towards the ground unit
C – Rejects all stationary targets
D – Is not effective if the target moves directly towards the ground unit

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21735. In the NAV message, the 'ephemeris' refers to the exact:

A – Position and orbit of all the satellites in the constellation
B – Position and orbit of all the satellites in the same orbit
C – Position and orbit of the observed satellite
D – The observed satellite clock corrections

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21800. (Refer to figure 062-04)

For the diagram below the aircraft is on an airway 80 nm from the beacon. What radial is the aircraft on and is it inside or outside the airway?

A – 181 inside
B – 191 outside
C – 001 outside
D – 011 inside

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22294. The AWR uses the cosecant squared beam in the ___ mode:

A – WEA
B – CONT
C – MAP
D – MAN

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22309. In the approach phase with a two dot lateral deviation HSI display, a one dot deviation from track would represent:

A – 5 nm
B – 0.5 nm
C – 5^{o}
D – 0.5^{o}

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

22312. When using a two dot HSI, a deviation of one dot from the computed track represents:

A – 2^{o}
B – 5^{o}
C – 5 nm
D – 2 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

22314. The JAR OPS recommended colour for the present track line in the expanded mode is:

A – white
B – green
C – magenta
D – cyan

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22315. The range arcs in the expanded and map modes are recommended by JAR OPS to be coloured:

A – white
B – green
C – magenta
D – cyan

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22317. When midway between two waypoints how can the pilot best check the progress of the aircraft:

A – by using the ATD at the previous waypoint
B – by using the computed ETA for the next waypoint
C – by using the ATA at the previous waypoint
D – by using the ETA at the destination

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22318. The inputs to the EHSI display during automatic flight include:

A – auto-throttle, IRS and FMC
B – FCC, FMC and ADC
C – IRS, FMC and radio navigation facilities
D – IRS, ADC and FCC

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22320. The JAR OPS recommended colour for an active waypoint is:

A – white
B – magenta
C – green
D – cyan

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22321. The JAR OPS recommended colour for an off route waypoint is:

A – White
B – Magenta
C – Green
D – Cyan

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

22322. The JAR OPS recommended colour for the aircraft symbol is:

A – white
B – magenta
C – green
D – cyan

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

22323. The JAR OPS recommended colour for on active route in the PLAN mode is:

A – white
B – magenta
C – green
D – cyan

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

22368. A CDI 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

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

24959. The needle of a Course Deviation Indicator is showing 3 dots right on a 5 dot OBI, with 268o set and FROM showing. What radial is the a/c on?

A – 082
B – 094
C – 262
D – 274

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25090. The colour recommended in JAR 25 for armed modes is:

A – green
B – yellow
C – white
D – magenta

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25146. On the Boeing 737-400 EFIS EHSI, on which modes is a Weather Radar Display available:

A – MAP, PLAN, FULL VOR/ILS
B – MAP, PLAN, EXP VOR/ILS
C – MAP, EXP VOR/ILS, EXP NAV
D – MAP, FULL VOR/ILS, FULL NAV

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

25147. You are homing to overhead a VORTAC and will descent from 7500 QNH to be 1000 AMSL by 6 nm DME. Your ground speed is 156 knots and the ROD will be 800 fpm. At what range from the VORTAC do you commence the descent?

A – 27.1 nm
B – 15.8 nm
C – 11.7 nm
D – 30.2 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

062-05-04 Types of Area Navigation Systems Input

8113. Which of the following combinations is likely to result in the most accurate Area Navigation (RNAV) fixes?

A – VOR/DME
B – DME/DME
C – NDB/VOR
D – VOR/VOR

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

062-05-05 VOR/DME Area Navigation (RNAV)

2824. In relation to Area Navigation Systems (RNAV) which of the following is an Air Data input?

A – Doppler drift
B – VOR/DME radial/distance
C – Inertial Navigation System (INS) position
D – True airspeed

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8012. The phantom station in a 2D RNAV system may be generated by:

A – VOR/DME
B – twin VOR
C – twin DME
D – any of the above

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8016. The operation of a 2D RNAV system may be seriously downgraded:

A – because the computer cannot determine if the aircraft is within the DOC of the programmed facilities
B – because the computer cannot determine if the heading and altitude input are in error
C – because the pilot cannot verify the correct frequency has been selectged
D – if the selected navigation facility is in excess of about 70 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8071. What is the deviation per dot on the HSI when using a 2-dot basic RNAV system in the en-route mode?

A – 1 NM
B – 5 NM
C – 2 NM
D – 10 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8081. What is the maximum off-track error permitted on P-RNAV systems?

A – ±5 nm
B – ±2 nm
C – ±1 nm
D – ±0.5 nm

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8083. In order to enter a waypoint that is designated by a VOR into an RNAV, the VOR:

A – has to be positively identified by one of the pilots
B – does not have to be in range when entered or used
C – must be in range
D – does not have to be in range when entered but must be when used

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8095. In order that a waypoint designated by a VOR can be used by a RNAV system:

A – the VOR must be identified by the pilot
B – the VOR must be within range when the waypoint is input
C – the VOR need not be in range when input or used
D – the VOR need not be in range when input but must be when used

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8107. Which one of the following lists information given by a basic VOR/DME-based Area Navigation System?

A – Crosstrack distance; alongtrack distance; angular course deviation
B – Aircraft position in latitude and longitude
C – Wind velocity
D – True airspeed; drift angle

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

8117. According to ICAO (Annex 11), the definition of an RNAV system is:

A – one which enables the aircraft to navigate on any desired flight path within the coverage of appropriate ground based navigation aids only
B – one which enables the aircraft to navigate on any desired flight path within the specified limits of self-contained on-board systems
C – one which enables the aircraft to navigate on any desired flight path within the coverage of appropriate ground based navigation aids or within the specified lmits of self-contained on-board systems but not a combination of the two
D – one which enables the aircraft to navigate on any desired flight path within the coverage of appropriate ground based navigation aids or within the specified limits of self-contained on-board systems or a combination of the two

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8131. Which of the following is one of the functions of the Course-Line-Computer in a basic Area Navigation (RNAV) system?

A – It calculates cross track information for NDB approaches
B – It checks the ground station accuracy using a built-in test programme
C – It automatically selects the two strongest transmitters for the Area-Nav-Mode and continues working by memory in case one of the two necessary stations goes off the air
D – It transfers the information given by a VOR/DME station into tracking and distance indications to any chosen Phantom Station/waypoint

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

8143. What are the primary navigation inputs used by RNAV system?

A – INS, Mapping Radar, FMC database
B – INS, Nav Aids, TAS and Drift
C – Nav Aids, INS, FMC database
D – Nav Aids, Mapping Radar, FMC database

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

8148. Erratic indications may be experienced when flying towards a basic VOR/DME-based Area Navigation System Phantom Station:

A – because, under adverse conditions (relative bearing to the Phantom Station other than 180o/360o) it takes the computer more time to calculate the necessary information
B – when operating at low altitudes close to the limit of reception range from the reference station
C – when in the cone of silence overhead the Phantom Station
D – when the Phantom Station is out of range

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

8151. The required accuracy of a precision RNAV (P-RNAV) system is:

A – 0.25 nm standard deviation or better
B – 0.5 nm standard deviation or better
C – 1 nm standard deviation or better
D – 1.5 nm standard deviation or better

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

15528. What is the deviation per dot on the HSI when using a 2-dot RNAV system in the approach mode?

A – 10 NM
B – 0.5^{o}
C – 10^{o}
D – 0.5 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

15533. Which one of the following inputs to an Area Navigation System (R-NAV) comes from an external, not on-board, system?

A – Magnetic heading
B – Inertial Navigation System (INS) position
C – Pressure altitude
D – VOR/DME radial/distance

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16409. RNAV routes are:

A – usually specified by waypoints co-incident with point source aids such as VOR, DME or NDB facilities
B – specified by waypoints defined as a position in latitude and longitude based on the WGS 84 system
C – selected according to TCAS inputs
D – none of the above are correct

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

16410. With regard to RNAV, what are gybrid navigation systems?

A – RNAV systems which use and merge information from a selection of self-contained and externally referenced navigation system
B – VOR/DME system
C – Loran C system
D – GNSS

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16412. What is an example of a self contained RNAV system?

A – GPS
B – DME/DME
C – VOR/DME
D – INS

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

16413. With VOR/DME basic area navigation, the displacement of the CDI needle represents:

A – angular displacement from the course line (eg. 5 dots = 5o off track)
B – angular displacement from the course line (eg. 5 dots = 10o off track)
C – distance of track (eg. 5 dots = 5 nm off track)
D – distance of track (eg. 5 dots = 10 nm off track)

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

16414. With regard to RNAV, what are phantom or ghost stations?

A – Waypoints defined by radials and ranges from suitable VOR/DME facilities
B – Spurious waypoints produced by the system when the aircraft exceeds the maximum theoretical range from the VOR facility
C – Waypoints which have been lost from the command display unit memory
D – Temporary waypoints which are produced when the aircraft is over the cone of confusion of a VOR facility

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

16415. The range to a required waypoint presented by RNAV system is:

A – plan range or slant range depending on RNAV settings
B – plan range
C – slant range
D – neither plan range nor slant range

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21447. (Refer to figure 062-13)

Which of the distances indicated will be shown on a basic VOR/DME bsed Area Navigation Equipment when using a ‘Phantom Station’ at position ‘X’?

A – 11 NM
B – 14 NM
C – 8 NM
D – 9 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21500. (Refer to figure 062-14)

Which of the distances indicated will be shown on a basic VOR/DME-based Area Navigation Equipment when using a ‘Phantom Station’?

A – 12 NM
B – 21 NM
C – 10 NM
D – 11 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21501. (Refer to figure 062-13)

Which of the distances indicated will be shown on a basic VOR/DME-based Area Navigation Equipment when using a ‘Phantom Station’ at position ‘X’?

A – 8 NM
B – 11 NM
C – 14 NM
D – 9 NM

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21536. Apart from radials and distances from VOR/DME stations, what information is required by the VOR/DME Area Navigation computer in order to calculate the wind?

A – Heading from the aircraft compass system and true airspeed from the air data computer
B – True airspeed from the air data computer
C – Heading from the aircraft compass system
D – Vertical speed from the air data computer

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21551. In an FMS, how does a VOR/DME Area Navigation system obtain DME information?

A – the pilot tunes the closest VOR/DME stations within range on the VOR/DME Area navigation control panel
B – The VOR/DME Area Navigation system has its own VHF NAV tuner and the system itself tunes the DME stations providing the best angular position lines
C – The VOR/DME Area Navigation system uses whatever stations are tuned on the aircraft's normal VHF NAV selector
D – The VOR/DME Area Navigation System has its own VHF NAV tuner and it always tunes the DME stations closest to the aircraft position

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21553. In order to enter a phantom waypoint that is designed by a VOR/DME simple RNAV system, the VOR/DME

A – has to be positively identified by one of the pilots
B – does not have to be in range when entered or used
C – must be in range
D – does not have to be in range when entered but must be when used

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21567. On what data is a VOR/DME Area Navigation system operating in the dead reckoning mode?

A – Radial from one VOR; distances from two DMEs; TAS from the Air Data Computer; heading from the aircraft compass
B – TAS from the Air Data Computer; heading from the aircraft compass
C – Radial from one VOR; distances from two DMEs
D – TAS from the Air Data Computer; heading from the aircraft compass; the last computed W/V

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: D

21581. Under which of the following circumstances does a VOR/DME Area Navigation system switch to Dead Reckoning mode?

A – VOR/DME Area Navigation Computer is not receiving information from the Air Data Computer
B – VOR/DME Area Navigation Computer is receiving neither radial nor distance data information from VOR/DME stations
C – VOR/DME Area Navigation Computer is not receiving information from the aircraft compass system
D – When 'DR' is selected by the pilot

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: B

21582. Under which of the following circumstances does a VOR/DME Area Navigation system switch to Dead Reckoning mode?

A – The system is receiving information from only one VOR
B – The system is receiving information from one VOR and one DME
C – The system is receiving information from one VOR and two DMEs
D – The system is receiving information from the two DMEs

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

21608. Which one of the following lists information given by a basic VOR/DME-based Area Navigation System when tracking inbound to a phantom waypoint?

A – Wind velocity
B – Aircraft position in latitude and longitude
C – Crosstrack distance; alongtrack distance
D – True airspeed; drift angle

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

21776. When operating in an RNAV mode using multiple DME, inaccuracy can be due to:

A – Sky wave interference
B – Mutual interference between the DMEs
C – Inability to confirm the aircraft is within the DOC of the DMEs because of identification problems
D – The DMEs locking onto each other's returns

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: C

22313. An aircraft, using 2D RNAV computer, is 12 nm from the phantom station, 25 nm from the VOR/DME designating the phantom station and thephantom station is 35 nm from the VOR/DME. The range read out in the aircraft will be:

A – 12 nm
B – 25 nm plan range
C – 35 nm
D – 25 nm slant range

Ref: AIR: atpl, ir; HELI: atpl, ir

Ans: A

062-06 SELF-CONTAINED AND EXTERNAL-REFERENCED NAVIGATION SYSTEMS

062-06-01 Doppler

8015. An apparent increase in the transmitted frequency which is proportional to the transmitter velocity will occur when:

A – the transmitter moves away from the receiver
B – the transmitter moves towards the receiver
C – the receiver moves towards the transmitter
D – both transmitter and receiver move towards each other

Ref: AIR: atpl; HELI: atpl

Ans: B

8035. Due to Doppler effect an apparent decrase in the transmitted frequency, which is proportional to the transmitters velocity, will occur when:

A – the transmitter and receiver move towards each other
B – the transmitter moves away from the receiver
C – the transmitter moves toward the receiver
D – both transmitter and receiver move away from each other

Ref: AIR: atpl; HELI: atpl

Ans: B

8058. The Doppler Navigation System is based on:

A – Doppler VOR (DVOR) Navigation System
B – radio waves refraction in the ionosphere
C – radar principles using frequency shift
D – phase comparison from ground station transmissions

Ref: AIR: atpl; HELI: atpl

Ans: C

16211. A LOP is inaccurate and may be ambiguous:

A – in the vicinity of the base line bisector
B – in the vicinity of the base line extensions
C – at extreme ground wave range
D – at night due to sky wave effect

Ref: AIR: atpl; HELI: atpl

Ans: B

16213. In day to day use the greatest cause of error in Doppler is:

A – input error
B – sea movement error
C – weight error
D – pitch error

Ref: AIR: atpl; HELI: atpl

Ans: A

16215. Updating Doppler is undertaken when:

A – the co-ordinates are reset to revise the position base on alternative information
B – a new database is loaded
C – the equipment is re-initialised with the data and time, and the atomic clock is actuated
D – all of the above

Ref: AIR: atpl; HELI: atpl

Ans: A

16216. After a long period in memory, Doppler:

A – falls back to INS
B – requires updating
C – should be switched to manual
D – will have wandered more over land than over sea

Ref: AIR: atpl; HELI: atpl

Ans: B

16217. Sea bias error:

A – is due to the movement of the seea and can be partially corrected by the land/sea switch
B – is due to the movement of the sea and is not affected by the land/sea switch
C – is due to a change in Doppler shift over water and is not affected by the land/sea switch
D – is due to a change in Doppler shift over water and is partially corrected by the land/sea switch

Ref: AIR: atpl; HELI: atpl

Ans: D

16218. With regard to Doppler navigation system:

A – updating is the process of entering co-ordinates after taking a fix
B – updating can be achieved using VOR/DME fix
C – updating must be carried out as soon as possible after a prolonged period in memory
D – all of the above are correct

Ref: AIR: atpl; HELI: atpl

Ans: D

16219. A radio facility transmits on a wavelength of 2,22 cm. The facility could be a:

A – radio altimeter
B – Doppler
C – LORAN-C
D – DME

Ref: AIR: atpl; HELI: atpl

Ans: B

16220. The 4-beam moving Janus array aligns with the aircraft centre line by:

A – rotating the array towards the beams with the smallest Doppler shift
B – rotating the array until matched pairs of beams receive the same difference in Doppler shift
C – measuring the drift and rotating the array by the same amount
D – all of the above

Ref: AIR: atpl; HELI: atpl

Ans: B

16221. Which of the following statements is correct when considering a Doppler navigation system?

A – aerial misalignment will produce an error to drift angle
B – sea bias can be reduced by ujsing a gyro stabilised aerial array
C – sea movement error produces higher frequency, and thus ground speed as indicated will be too low
D – all of the above

Ref: AIR: atpl; HELI: atpl

Ans: A

16222. Doppler may unlock over:

A – shallow fast running water
B – a calm sea
C – a desert surface
D – ice

Ref: AIR: atpl; HELI: atpl

Ans: B

16422. What frequencies are allocated to Doppler Navigation systems?

A – 8.8 Hz and 13.3 Hz
B – 8.8 KHz and 13.3 KHz
C – 8.8 MHz and 13.3 MHz
D – 8.8 GHz and 13.3 GHz

Ref: AIR: atpl; HELI: atpl

Ans: D

21728. The largest error and source of error on a Doppler derived position is:

A – Cross track due to compass error
B – Along track due to TAS computation error
C – Cross track due to errors in drift measurement
D – Cross track due to error in drift bias

Ref: AIR: atpl; HELI: atpl

Ans: C

21730. Which of the following statements is TRUE in respect of Doppler?

A – The lower the vehicle speed, the higher the transmission frequency used
B – The higher the vehicle speed, the higher the transmission frequency used
C – Aerials are stabilised to reduce pitching errors
D – Aerials are stabilised to reduce climb errors

Ref: AIR: atpl; HELI: atpl

Ans: C

22338. When a transmitter is moving towards a receiver, the correct description of Doppler Effect is:

A – There is a decrease in apparent wavelength which is dependent on the transmitter velocity
B – There is a decrease in apparent wavelength which is independent of the transmitter velocity
C – There is a increase in apparent wavelength which is dependent on the transmitter velocity
D – There is an increase in apparent wavelength which is independent of the transmitter velocity

Ref: AIR: atpl; HELI: atpl

Ans: A

22773. Doppler navigation systems use ___ to determine aircraft ground speed and drift:

A – DVOR
B – Phase comparison of signals from ground stations
C – Frequency shift in signals reflected from the ground
D – DME range measurement

Ref: AIR: atpl; HELI: atpl

Ans: C

062-06-03 Loran-C

8019. In which navigation system does the master station transmit a continuous string of pulses on a frequency close to 100 KHz?

A – Loran C
B – GPS
C – Decca
D – Doppler

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

8023. Which of the following statements concerning LORAN-C is correct?

A – It is a hyperbolic navigation system that works on the principle of range measurement by phase comparison
B – It is a navigation system based on secondary radar principles; position lines are obtained in sequence from up to eight ground stations
C – It is a hyperbolic navigation system that works on the principle of differential range by pulse technique
D – It is a navigation system based on simultaneous ranges being received from a minimum of four ground stations

Ref: AIR: atpl; HELI: atpl, cpl

Ans: C

8037. Loran C coverage is:

A – global
B – confined to certain limited areas of the world
C – unrestricted between latitudes 80°N and 70°S
D – unrestricted over the oceans and adjacent coastlines but limited over the major continental land masses

Ref: AIR: atpl; HELI: atpl, cpl

Ans: B

8041. Which of the following correctly gives the principle of operation of the Loran C navigation system?

A – Differential range by phase comparison
B – Frequency shift between synchronised transmissions
C – Differential range by pulse technique
D – Phase comparison between synchronised transmissions

Ref: AIR: atpl; HELI: atpl, cpl

Ans: C

8097. The principle of operation of LORAN C is:

A – differential range by phase comparison
B – differential range by pulse technique
C – range by pulse technique
D – range by phase comparison

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

8124. The frequencies used by LORAN C are:

A – 70 – 130 KHz
B – 90 – 110 KHz
C – 108 – 112 MHz
D – 190 – 1750 KHz

Ref: AIR: atpl; HELI: atpl, cpl

Ans: B

8132. LORAN C is available:

A – globally
B – in oceanic areas
C – in continental areas
D – in designated areas

Ref: AIR: atpl; HELI: atpl, cpl

Ans: D

11348. Which statement is most correct?

A – Loran C creates hyperbolic position lines based on differential range by pulse technique
B – Loran C creates hyperbolic lines based on a low sweep rate frequency modulated continuous wave
C – Loran C creates hyperbolic lines based on an atomic time standard
D – Loran C creates elliptical lines based on differential range by Doppler

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

11377. Which of the following frequency-bands is used by the Loran C navigation system?

A – 10.2 – 13.6 KHz
B – 1750 – 1950 KHz
C – 90 – 110 KHz
D – 978 – 1213 MHz

Ref: AIR: atpl; HELI: atpl, cpl

Ans: C

11383. Using a hyperbolic navigation system a position is plotted that is 20 nm further from X than Y. X and Y are 100 nm apart. The hyperbola crosses the baseline:

A – 50 nm from Y
B – 30 nm from Y
C – 40 nm from Y
D – 40 nm from X

Ref: AIR: atpl; HELI: atpl, cpl

Ans: C

11390. The accuracy of Loran is given as:

A – ±½ km on 95% of occasions between 900 km and 1000 km over the sea
B – ±1 nm on 95% of occasions between 900 nm and 1000 nm over the sea
C – ±1 km on 95% of occasions between 900 km and 1000 km over the sea
D – ±½ nm on 95% of occasions between 900 nm and 1000 nm over the sea

Ref: AIR: atpl; HELI: atpl, cpl

Ans: D

16200. Loran C is a navigation system which uses:

A – differential range measurements
B – rho/theta measurements
C – pseudo range measurements
D – slant range measurements

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

16201. Loran C operates at a frequency of:

A – 100 MHz
B – 100 KHz
C – 1000 KHz
D – 1000 MHz

Ref: AIR: atpl; HELI: atpl, cpl

Ans: B

16202. A Loran C chain is designated according to:

A – a Group Repetition Interval
B – a colour coding
C – a frequency
D – a chain sequential number

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

16203. The most accurate position lines, for a Loran C pair, are found:

A – behind the master station
B – behind the Slave station
C – on any base line extension
D – along the base line bisector

Ref: AIR: atpl; HELI: atpl, cpl

Ans: D

16204. On a Loran C station pair, the lowest value of propagation delay time difference will be found:

A – on the base line bisector
B – on the slave base line extension
C – on the master base line extension
D – at various points depending on the particular pair

Ref: AIR: atpl; HELI: atpl, cpl

Ans: B

16205. Loran is available for use:

A – in North and south America
B – worldwide, pole to pole
C – North America, North Atlantic, parts of Europe and the Mediterranean
D – every where except the old eastern bloc

Ref: AIR: atpl; HELI: atpl, cpl

Ans: C

16206. Loran position lines/fixes in the coverage area are:

A – available both day and night
B – unreliable at down and dusk
C – unreliable at night
D – unreliable along the baseline

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

16207. The time difference is measured in a Loran receiver by:

A – crystal oscillation
B – indexing
C – phase comparison
D – phase measurement

Ref: AIR: atpl; HELI: atpl, cpl

Ans: B

16208. A hyperbola is a line of surface:

A – of constant range from two fixed points
B – on which all points have a constant range difference from each other
C – on which all points have the same difference or range from two fixed points
D – which intersects the base line at 90o in all planes except the vertical

Ref: AIR: atpl; HELI: atpl, cpl

Ans: C

16209. A hyperbola cuts the base line 60 Km from the Master end and 150 Km from the Slave end. When on the same hyperbola at a range of 90 Km from the Master, the range from the Slave will be:

A – 180 km
B – 240 km
C – 150 km
D – 300 km

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

16212. Propagation error is due to:

A – coastal refraction
B – sky wave effect
C – super refraction
D – differences in surface conductivity

Ref: AIR: atpl; HELI: atpl, cpl

Ans: D

16423. LORAN C:

A – is an hyperbolic navigation system
B – operates using red, green and purple lanes
C – sends coded radio transmissions from satellites in close Earth orbit
D – utilises very high frequency radio transmissions

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

16424. LORAN C operates using ___ which one ___ as master and the others arranged around it and known as ___ secondary (slave) ___

A – networks or chains of stations; stations; W, X, Y and Z stations
B – satellites; satellite; W, X, Y and Z; satellites
C – networks or chains of stations; station; red, green and purple; stations
D – Satellites; Satellites; X, Y and Z; satellites

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

21731. In Loran C, if range difference is determined by using phase difference measurements on the carrier wave, the accuracy of these measurements is no better than:

A – ±10 μs
B – ±1 μs
C – ±50 μs
D – ±5 μs

Ref: AIR: atpl; HELI: atpl, cpl

Ans: A

21761. The master and slave stations of a hyperbolic navigation system are between 50 to 100 nm apart. What factor will govern the maximum fixing accuracy:

A – The power output of the transmitters
B – The maximum in-phase differences
C – the cut of the position lines
D – The lanes which are based on the positions of zero phase difference

Ref: AIR: atpl; HELI: atpl, cpl

Ans: C

24954. A hyperbolic position line joins all points of:

A – equal range between two ground stations
B – zero phase difference between two signals
C – equal difference in range between two stations
D – equal time taken by two simultaneous transmissions

Ref: AIR: atpl; HELI: atpl, cpl

Ans: C

062-06-04 Decca navigation system

7983. In a hyperbolic navigation system accuracy is greatest:

A – along the right bisector of the baseline
B – along the baseline
C – along the baseline extension
D – within a 30 nm radius of either station

Ref: AIR: atpl; HELI: atpl, cpl

Ans: B

16425. The principle of operation of DECCA is:

A – identification of equal time differences from signals with coded group repetition intervals (GRI)
B – comparison of phase shift
C – analysis of time referenced scanning beam
D – analysis of time of arrival and time difference by phase comparison

Ref: AIR: atpl; HELI: atpl, cpl

Ans: D

062-06-05 Global Navigation Satellite Systems GNSS: GPS/GLONASS

2827. What is the inclination to the equatorial plane of the satellites orbit in the NAVSTAR GPS constellation?

A – 55°
B – 45°
C – 35°
D – 65°

Ref: all

Ans: A

7971. What is the minimum number of satellites required for a Satellite-Assisted Navigation System (GNSS/GPS) to carry out two dimensional operation?

A – 5
B – 4
C – 3
D – 2

Ref: all

Ans: C

7972. Almanac data stored in the receiver of the satellite navigation system NAVSTAR/GPS is used for the:

A – recognition of Selective Availability (SA)
B – fast identification of received signals coming from visible satellites
C – assignment of received PRN-codes (Pseudo Random Noise) to the appropriate satellite
D – correction of receiver clock error

Ref: all

Ans: B

7973. Which of the following statements about the accuracy that can be obtained with the differential technique (D-GPS) of the satellite navigation system NAVSTAR/GPS is correct?

A – The increase in accuracy of position fixes is independent of the receiver position in relation to a D-GPS ground station
B – The nearer a receiver is situated to a D-GPS ground station, the more accurate the position fix
C – A D-GPS receiver can detect and correct for SA providing a more accurate position fix
D – Only D-GPS allows position fixes accurate enough for Non Precision Approaches

Ref: all

Ans: B

7975. The distance between a NAVSTAR/GPS satellite and receiver is:

A – determined by the time taken for the signal to arrive from the satellite multiplied by the speed of light
B – calculated from the Doppler shift of the known frequencies
C – calculated, using the WGS-84 reference system, from the known positions of the satellite and the receiver
D – determined by the phase shift of the Pseudo Random Noise code multiplied by the speed of light

Ref: all

Ans: A

7976. Which of the following is the datum for altitude information when conducting flights under IFR conditions on airways using the NAVSTAR/GPS satellite navigation system?

A – GPS altitude if 4 or more satellites are received otherwise barometric altitude
B – The average of GPS altitude and barometric altitude
C – GPS altitude
D – Barometric altitude

Ref: all

Ans: D

7977. In relation to the NAVSTAR/GPS satellite navigation system, what is involved in the differential technique (D-GPS)?

A – Receivers from various manufacturers are operated in parallel to reduce the characteristical receiver noise error
B – The difference between signals transmitted on the L1 and L2 frequencies are processed by the receiver to determine an error correction
C – Fixed ground stations compute position errors and transmit correction data to a suitable receiver on the aircraft
D – Signals from satellites are received by 2 different antennas which are located a fixed distance apart. This enables a suitable receiver on the aircraft to recognise and correct for multipath errors

Ref: all

Ans: C

7978. INMARSAT coverage is limited to below 80oN and 80oS because:

A – the satellites cross the equator at 55o and therefore do not traverse the polar region
B – the aurora borealis affects the satellite operation
C – the satellite orbits are geostationary
D – polar cap absorbtion affects the signals beyond those latitudes

Ref: all

Ans: C

7979. The height derived by a receiver from the NAVSTAR/GPS is:

A – above mean sea level
B – above ground level
C – above the WGS84 ellipsoid
D – pressure altitude

Ref: all

Ans: C

7980. The required 24 NAVSTAR/GPS operational satellites are located on:

A – 6 orbital planes with 3 satellites in each plane plus 6 reserve satellites positioned in a geostationary orbital plane
B – 3 orbital planes with 8 satellites in each plane
C – 4 orbital planes with 6 satellites in each plane
D – 6 orbital planes with 4 satellites in each plane

Ref: all

Ans: D

7982. The receiver aerial for a NAVSTAR/GPS system should be mounted:

A - under the fuselage in order to receive correction data transmitted by D-GPS stations
B – inside the tail fin to minimise the influence of reflections from the wing and fuselage
C – in the vicinity of the receiver to avoid long transmission lines
D – on the upper side of the fuselage in the vicinity of the centre of gravity

Ref: all

Ans: D

7987. In relation to the satellite navigation system NAVSTAR/GPS which of the following statements correctly describes the term Pseudo Random Noise (PRN) signal?

A – PRN describes the continuous electro-magnetical background noise that exists in space
B – PRN is the atmospheric jamming that affects the signals transmitted by the satellites
C – PRN is a code used for the identification of the satellites and the measurement of the time taken by the signal to reach the receiver
D – PRN occurs in the receiver. It is caused by the signal from one satellite being received from different directions (multipath effect)

Ref: all

Ans: C

7989. An all in view satellite navigation receiver is one which:

A – monitors all 24 satellites
B – tracks selected satellites
C – selects and tracks all (in view) satellites and selects the best four
D – tracks the closest satellites

Ref: all

Ans: C

7990. In NAVSTAR/GPS the PRN codes are used to:

A – differentiate between satellites
B – pass satgellite ephemeris information
C – pass satellite time and ephemeris information
D – pass satellite time, ephemeris and other information

Ref: all

Ans: A

7991. Which of the following satellite navigation systems has Full Operational Capability (FOC) and is approved for specified flights under IFR conditions in Europe?

A – NNSS-Transit
B – NAVSTAR/GPS
C – COSPAS-SARSAT
D – GLONASS

Ref: all

Ans: B

7994. What is the purpose of the GPS control segment?

A – To control the use of the satellites by unauthorised users
B – To monitor the satellites in orbit
C – To maintain the satellites in orbit
D – Degrade the accuracy of satellites for unauthorised users

Ref: all

Ans: B

7997. In relation to the satellite navigation system NAVSTAR/GPS, All in View is a term used when a receiver:

A – is receiving the signals of all visible satellites but tracking only those of the 4 with the best geometric coverage
B – is tracking more than the required 4 satellites and can instantly replace any lost signal with another already being monitored
C – is receiving and tracking the signals of all 24 operational satellites simultaneously
D – requires the signals of all visible satellites for navigation purposes

Ref: all

Ans: B

7998. The orbital planes of the satellite navigation system NAVSTAR/GPS are:

A – inclined 55^{o} to the equatorial plane
B – inclined 55^{o} to the earth axis
C – inclined 90^{o} to the equatorial plane
D – parallel to the equatorial plane

Ref: all

Ans: A

8000. GPS system satellites transmit their signals on two carrier waves 1575 MHz and 1227 MHz and supply two possible codes accessible according to user (civil or military). Commercial aviation uses:

A - only the 1.575 MHz carrier wave and two codes
B – only the 1.575 MHz carrier wave and one code
C – only the 1.227 MHz carrier wave and one code
D – the two carrier waves and one public code

Ref: all

Ans: B

8001. The number of satellites required for a fully operational NAVSTAR/GPS is:

A – 12
B – 21
C – 24
D – 30

Ref: all

Ans: C

8004. How long does it take a NAVSTAR/GPS satellite to orbit the earth?

A – 12 days
B – Approximately 24 hours (one sidereal day)
C – Approximately 12 hours (1/2 of a sidereal day)
D – 365 days because the satellites are located in a geostationary orbit

Ref: all

Ans: C

8005. The GPS Navstar system transmits in the L1 and L2 frequency bands. Which bands are used for the P codes and which for the C/A codes?

A – Higher frequency for the C/A code and lower frequency for the P code
B – Higher frequency for the C/A and P codes
C – Higher frequency for the P code only
D – Lower frequency for the C/A code and higher frequency for the P code

Ref: all

Ans: B

8006. Which of the following statements concerning the L1 and L2 NAVSTAR/GPS transmission frequencies and codes is correct?

A – C/A and P codes are transmitted at different times on both frequencies
B – The higher frequency is used to transmit both the C/A and P codes
C – The higher frequency is only used to transmit the P code
D – The lower frequency is used to transmit both the C/A and P codes

Ref: all

Ans: B

8007. Which of the following lists are all errors that affect the accuracy and reliability of the Satellite-Assisted Navigation System (GNSS/GPS)?

A – Satelliite to ground time lag; atmospheric propagation; satellite clock
B – Satellite mutual interference; satellite ephemeris; atmospheric propagation
C – Satellite clock; satellite ephemeris; atmospheric propagation
D – Satellite mutual interference; frequency drift; satellite to ground time lag

Ref: all

Ans: C

8009. The NAVSTAR/GPS segments are:

A – space, control, user
B – space, control, ground
C – space, control, air
D – space, ground, air

Ref: all

Ans: A

8010. During flight using NAVSTAR/GPS and conventional navigation systems, you see a large error between the positions given by the systems. The action you should take is:

A – continue the flight in VMC
B – continue using the conventional systems
C – continue using the GPS
D – switch off the faulty system after determining which one is in error

Ref: all

Ans: B

8014. The NAVSTAR/GPS constellation comprises:

A – 24 satellites in 6 orbits
B – 24 satellites in 4 orbits
C – 24 satellites in 3 orbits
D – 24 satellites in 8 orbits

Ref: all

Ans: A

8017. In the NAVSTAR/GPS satellite navigation system, receiver clock error:

A – is the biggest part of the total error, it cannot be corrected
B – is corrected by using signals from four satellites
C – can be minimised by synchronisation of the receiver clock with the satellite clocks
D – is negligible small because of the great accuracy the atomic clocks installed in the satellites

Ref: all

Ans: B

8018. Which of the following statements is correct concerning the principle behind the correction of one of the NAVSTAR/GPS satellite navigation system errors by the transmission of the signal on two frequencies (L1 and L2)?

A – The effect of signal reflections (multipath effect) can be reduced due to the interference of both frequencies
B – The effect of receiver noise can be reduced due to the interference of both frequencies
C – The path delay of the signals in the earth atmosphere is proportional to the inverse of the carrier frequency squared
D – The influence of shadowing on the GPS signals is proportional to the inverse of the carrier frequency squared

Ref: all

Ans: C

8020. In which frequency bands are the L1 and L2 frequencies used by the satellite navigation system NAVSTAR/GPS for transmission of the navigation message?

A – EHF
B – VHF
C – UHF
D – SHF

Ref: all

Ans: C

8021. Which GNSS system can be used for IFR flights in Europe?

A – NAVSTAR/GPS
B – GLONASS
C – COSPAS/SARSAT
D – TNSS transit

Ref: all

Ans: A

8022. What is the minimum number of NAVSTAR/GPS satellites required to produce an accurate independent 3-D position fix?

A – 3
B – 5
C – 24
D – 4

Ref: all

Ans: D

8024. The basic elements of the satellite navigation system NAVSTAR/GPS are the:

A – control, space and user segments
B – main control station, the monitoring station and the ground antennas
C – antenna, the receiver and the central control unit (CCU)
D – atomic clock, power supply and transponder

Ref: all

Ans: A

8025. In the NAVSTAR/GPS satellite navigation system, what is the maximum time taken to receive the complete set of almanac data from all satellites?

A – 25 seconds (= 1 second per data frame)
B – 12 hours (= period of the satellites orbit)
C – 12.5 minutes (= 30 seconds per data frame)
D – 24 seconds (= 1 second per data frame)

Ref: all

Ans: C

8026. The skysearch carried out by a GNSS receiver:

A – is done prior to each fix
B – is done when the receiver position is in error
C – involves the receiver downloading the almanac from each satellite before determining which satellites are in view
D – is the procedure carried out by the monitoring stations to check the accuracy of the satellite data

Ref: all

Ans: B

8027. The visibility of GPS satellites is:

A – dependent on the location of the user
B – greatest at the equator
C – greatest at the poles
D – the same at all points on and close to the surface of the earth

Ref: all

Ans: A

8029. Which of the following combinations of satellite navigation systems provide the most accurate position fixes in air navigation?

A – GLONASS and COSPAS-SARSAT
B – NAVSTAR/GPS and NNSS-Transit
C – NNSS-Transit and GLONASS
D – NAVSTAR/GPS and GLONASS

Ref: all

Ans: D

8030. The distance measured between a satellite and a receiver is known as a pseudo-range because:

A – it is measured using pseudo-random codes
B – it includes receiver clock error
C – satellite and receiver are continually moving in relation to each other
D – it is measured against idealised Keplerian orbits

Ref: all

Ans: B

8031. One of the tasks of the space segment of the satellite navigation system NAVSTAR/GPS is to:

A - transmit signals which can be used by sitable receivers to determine time, position and velocity
B – transmit signals to suitable receivers and to monitor the orbital planes autonomously
C – compute the user position from the received user messages and to transmit the computed position back to the user segment
D – monitor the satellites orbits and status

Ref: all

Ans: A

8032. What are the effects, if any, of shadowing by parts of the aircraft (eg. Wing) on the reception of signals from NAVSTAR/GPS satellites?

A – It may prevent the reception of signals
B – It causes multipath propagation
C – The signals will be distorted, however the error can be corrected for using an algorithm and iformation from unaffected signals
D – It has no influence because high frequency signals are unaffected

Ref: all

Ans: A

8034. Concerning the NAVSTAR/GPS satellite navigation system, what is the meaning of the term Receiver Autonomous Integrity Monitoring (RAIM)?

A – It is a method whereby a receiver ensures the integrity of the Pseudo Random Noise (PRN) code transmitted by the satellites
B – it is the abilityof the GPS satellites to check the integrity of the data transmitted by the monitoring stations of the ground segment
C – it is a technique by which a receiver ensures the integrity of the navigation information
D – It is a technique whereby the receivers of the world-wide distributed monitor stations (ground segment) automatically determines the integrity of the navigation message

Ref: all

Ans: C

8036. What datum is used for the Minimum Descent Altitude (MDA) on a non-precision approach when using the NAVSTAR/GPS satellite navigation system?

A – If using Differential-GPS (D-GPS) the altitude obtained from the D-GPS, otherwise barometric altitude
B – Barometric altitude
C – Radar altitude
D – GPS altitude

Ref: all

Ans: B

8040. In civil aviation, the height value computed by the receiver of the satellite navigation system NAVSTAR/GPS is the:

A – height above Mean Sea Level (MSL)
B – geometric height above ground
C – height above the WGS-84 ellipsoid
D – flight level

Ref: all

Ans: C

8042. Which one of the following is an advantage of a multi-sensor system using inputs from a global navigation satellite system (GNSS) and an inertial navigational system (INS)?

A – The average position calculated from data provided by both systems increases overall accuracy
B – The activation of Selective Availability can be recognised by the INS
C – The GNSS can be used toupdate a drifting INS
D – The only advantage of coupling both systems is double redundancy

Ref: all

Ans: C

8045. Which one of the following errors can be compensated for by a NAVSTAR/GPS receiver comparing L1 and L2 frequencies?

A – Ionospheric
B – Multipath
C – Tropospheric
D – Receiver noise

Ref: all

Ans: A

8046. The geometric shape of the reference system for the satellite navigation system NAVSTAR/GPS, defined as WGS 84, is

A – an ellipsoid
B – a mathematical model that describes the exact shape of the earth
C – a sphere
D – a geoid

Ref: all

Ans: A

8047. In NAVSTAR/GPS the PRN codes are used to:

A – reduce ionospheric and tropospheric errors
B – determine satellite range
C – eliminate satellite clock and ephemeris errors
D – remove recediver clock error

Ref: all

Ans: B

8049. The time required for a GNSS receiver to download the satellite almanac for

the: NAVSTAR/GPS is:

A – 12.5 minutes
B – 12 hours
C – 30 seconds
D – 15 minutes

Ref: all

Ans: A

8050. NAVSTAR GPS receiver clock error is removed by:

A – regular auto-synchronisation with the satellite clocks
B – adjusting the pseudo-ranges to determine the error
C – synchronisation with the satellite clocks on initialisation
D – having an appropriate atomic time standard within the receiver

Ref: all

Ans: B

8051. GPS satellite transmit on two L-band frequencies with different types of signals. Which of these are generally available for use by civil aviation?

A – L1-coarse acquisition (C/A) with selected availability (S/A)
B – L2-coarse acquisition (C/A)
C – L1-precise (P)
D – L2-selected availability (S/A)

Ref: all

Ans: A

8052. The main task of the user segment (receiver) of the satellite navigation system NAVSTAR/GPS is to:

A – select appropriate satellites automatically to track the signals and to measure the time taken by signals from the satellites to reach the receiver
B – transmit signals which, from the time taken, are used to determine the distance to the satellite
C – to monitor the status of the satellites, determine their positions and to measure the time
D – monitor the orbital planes of the satellites

Ref: all

Ans: A

8053. Which of the following procedures must be adopted if, on a flight under IFR conditions using a NAVSTAR/GPS satellite navigation system receiver, the position fix obtained from the GPS receiver differs from the position of conventional navigation systems by an unacceptable amount?

A – it must be continued under VFR conditions
B – It may be continued using NAVSTAR/GPS; prior to the next flight all systems must be checked
C – It may be continued using conventional navigation systems
D – The pilot must determine the reason for the deviation and correct the error or switch off the faulty system

Ref: all

Ans: C

8055. What are the basic elements transmitted by NAVSTAR/GPS satellites?

i. offset of the satellite clock from GMT
ii. edphemeris data
iii. health data
iv. ionospheric delays
v. solar activity

A – i, ii, iii, iv, v
B – i, ii, iii
C – i, ii, iv
D – ii, iii, iv

Ref: all

Ans: C

8059. The number of satellites required to provide a 3D fix without RAIM is:

A – 4
B – 5
C – 6
D – 3

Ref: all

Ans: A

8060. How does a NAVSTAR/GPS satellite navigation system receiver recognise which of the received signals belongs to which satellite?

A – Each satellite transmits its signal on a separate frequency
B – The Doppler shift is unique to each satellite
C – The receiver detects the direction from which the signals are received and compares this information with the calculated positions of the satellites
D – Each satellite transmits its signal, on common frequencies, with an individual Pseudo Random Noise code

Ref: all

Ans: D

8061. How many operational satellites are required for Full Operational Capability (FOC) of the satellite navigation system NAVSTAR/GPS?

A – 30
B – 18
C – 12
D – 24

Ref: all

Ans: D

8062. Which of the following geometric satellite constellations provides the most accurate NAVSTAR/GPS position fix?

A – 3 satellites with an azimuth of 120° from each other and an elevation of 45° above the horizon
B – 3 satellites with a low elevation above the horizon and an azimuth of 120° from each other together with a fourth directly overhead
C – 4 satellites with an azimuth of 90° from each other and a low elevation above the horizon
D – 4 satellites with an azimuth of 90° from each other and an elevation of 45° above the horizon

Ref: all

Ans: B

8063. In the NAVSTAR/GPS satellite navigation system, Selective Availability (SA) is the artificial degradation of the navigation accuracy by:

A – shutting off selected satellites
B – dithering the satellite clock
C – using a less accurate atomic clock in a satellite for signal processing
D – offsetting satellite atomic clocks by a predetermined constant amount

Ref: all

Ans: B

8064. The NAVSTAR/GPS space segment:

A – provides X, Y and Y co-ordinates and monitoring of the accuracy of the satellite data
B – provides X. Y, Z and T co-ordinates and the constellation data
C – monitors the accuracy of the satellite data and provides system time
D – provides geographic position and UTC

Ref: all

Ans: B

8065. Which of the following lists all the parameters that can be determined by a GPS receiver tracking signals from 4 different satellites?

A – Latitude, longitude and altitude
B – Latitude and longitude
C – Latitude, longitude and time
D – Latitude, longitude, altitude and time

Ref: all

Ans: D

8066. The height of the GPS Navstar system above the earth in km is:

A – 10900 km
B – 10250 km
C – 19000 km
D – 20200 km

Ref: all

Ans: D

8067. What is the minimum number of satellites required by a GPS in order to obtain a three dimensional fix?

A – 4
B – 3
C – 5
D – 6

Ref: all

Ans: A

11350. The GPS satellite navigation system suffers from the following errors:

A – Interference from other satellites, clock bias, time lag
B – Ephemeris, clock bias, propogation
C – Ephemeris, interference from other satellites, propagation
D – Ephemeris, time lag, interference from other satellites

Ref: all

Ans: B

11354. In which frequency band do Satellite-Assisted Navigation systems (GNSS/GPS) provide position information that is available to civil aircraft?

A – EHF
B – SHF
C – UHF
D – VHF

Ref: all

Ans: C

11355. At what approximate height above the WGS-84 ellipsoid are NAVSTAR/GPS satellites circling the earth?

A – 20200 km
B – 10900 km
C – 36000 km
D – 19500 km

Ref: all

Ans: A

11358. The GPS satellite navigation system operates by:

A – measuring the time for the signal to travel to the receiver and back
B – measuring the time for the signal to reach the receiver
C – phase comparison
D – measuring the phase of the incoming signal

Ref: all

Ans: B

11360. To provide 3D fixing with RAIM and allowing for the loss of one satellite requires ___ SVs:

A – 4
B – 5
C – 6
D – 7

Ref: all

Ans: C

11361. Which of the following data, in addition to the Pseudo Random Noise (PRN) code, forms part of the so called Navigation Message transmitted by NAVSTAR/GPS satellites?

A – Time; data to impair the accuracy of the position fix (Selective Availability SA)
B – Almanac data; satellite status information
C – Data to correct receiver clock error; almanac data
D – Time; position of the satellites

Ref: all

Ans: B

11363. What fix can be obtained from four satellites of the GPS system disregarding RAIM?

A – Latitude, longitude and time
B – Latitude, longitude and altitude
C – Latitude and longitude
D – Latitude, longitude, altitude and time

Ref: all

Ans: D

11364. The reason why the measured distance between a NAVSTAR/GPS satellite navigation system satellite and a receiver is called a Pseudo-Range is because the:

A – measured distance is based on the Pseudo Random Noise code
B – calculated range includes receiver clock error
C – movement of satellite and receiver during the distance calculation is not taken into account
D – calculated range is based on an idealised Keplerian orbit

Ref: all

Ans: B

11368. Which GPS frequencies are available for commercial air transport?

A – 1227.6 MHz only
B – 1575.42 MHz only
C – 1227.6 MHz and 1575.42 MHz
D – 1227.6 MHz or 1575.42 MHz

Ref: all

Ans: B

11369. What is RAIM and what is its function?

A – Integrity monitoring of satellites by the receiver to ensure accurate navigation
B – GPS integrity monitoring of master and slave stations to ensure correct alignment
C – Resolution and intensity monitoring for increased accuracy
D – Integrity monitoring of satellites by the master station to increase accuracy

Ref: all

Ans: A

11370. What is the procedure to be followed if, on a flight under IFR conditions using the NAVSTAR/GPS satellite navigation system, the number of satellites required to maintain the RAIM (Receiver Autonomous Integrity Monitoring) function are not available?

A – The flight may be continued using other certificated navigation systems
B – The flight has to be continued under VFR conditions
C – A constant heading and speed must be flown until the required number of satellites are again available
D – The flight may be continued as planned if at least 4 satellites are available and the pilot monitors the GPS-System manually

Ref: all

Ans: A

11371. In a Satellite-Assisted Navigation system (GNSS/GPS) a position line is obtained by:

A – timing the period that is taken for a satellites transmission to reach the aircraft's receiver
B – the aircrafts receiver measuring the phase angle of the signal received from a satellite in a known position
C – timing the period that is taken for a transmission from the aircraft's transmitter/receiver to reach and return from a satellite in a known position
D – the aircraft's receiver measuring the time difference between signals received from a minimum number of satellites

Ref: all

Ans: A

11373. A satellite navigation system requires information from ___ satellites to give a three dimensional fix without considering RAIM.

A – 3
B – 4
C – 5
D – 2

Ref: all

Ans: B

11374. One of the tasks of the control segment of the satellite navigation system NAVSTAR/GPS is to:

A – manipulate the signals of selected satellites to reduce the precision of the position fix (Selective Availability SA)
B – manufacture and launch the satellites
C – monitor the status of the satellites
D – grant and monitor user authorisations

Ref: all

Ans: C

11375. Unauthorised civilian users of NAVSTAR/GPS can access:

A – the P and Y codes
B – the P code
C – the C/A and P codes
D – the C/A code

Ref: all

Ans: D

11376. How many satellites are required for a 3D GPS fix using RAIM with the ability to discard one faulty satellite?

A – 6
B – 5
C – 4
D – 3

Ref: all

Ans: A

11380. The influence of the ionosphere on the accuracy of the satellite navigation system NAVSTAR/GPS is:

A – only significant if the satellites are located at a small elevation angle above the horizon
B – minimised by computing the average of all signals
C – minimised by the receiver using a model of the atmosphere and comparing signals transmitted by the satellites
D – negligible

Ref: all

Ans: C

11381. Which of the following, if any, is a prerequisite if a receiver of a NAVSTAR/GPS satellite navigation system is to be used in combination with a multi-sensor system?

A – Multi-sensor systems are not certificated for flights under IFR conditions
B – The prescribed IFR-equipment must be in working correctly and the navigation information continuously displayed
C – The RAIM-function of the GPS receiver must be able to monitor all prescribed navigation systems
D – The prescribed IFR-equipment must be installed and operational

Ref: all

Ans: D

11382. In relation to the satellite navigation system NAVSTAR/GPS, the term inclination denotes the angle between the:

A – orbital plane and the equatorial plane
B – horizontal plane at the location of the receiver and the direct line to a satellite
C – orbital plane and the earth's axis
D – horizontal plane at the location of the receiver and the orbital plane of a satellite

Ref: all

Ans: A

11386. The preferred GNSS receiver for airborne application is:

A – multiplex
B – multi-channel
C – sequential
D – fast multiplex

Ref: all

Ans: B

11389. What type of satellite navigation system NAVSTAR/GPS receiver is most suitable for use on board an aircraft?

A – Sequential
B – Multichannel
C – Multiplex
D – Any hand held type

Ref: all

Ans: B

15495. Signal reception is required from a minimum number of satellites that have adequate elevation and suitable geometry in order for a Satellite-Assisted Navigation System (GNSS/GPS) to carry out independent three dimensional operation, Receiver Autonomous Integrity Monitoring (RAIM) and to isolate any faulty satellite and remove it from contributing to the navigation solutin. The number of satellites is:

A – 4
B – 5
C – 6
D – 7

Ref: all

Ans: C

15497. Signal reception is required from a minimum number of satellites that have adequate elevation and suitable geometry in order for a Satellite-Assisted Navigation System (GPS) to carry out independent three dimensional operation without the Receiver Autonomous Integrity Monitoring (RAIM) function. The number of satellites is:

A – 3
B – 4
C – 5
D – 6

Ref: all

Ans: B

15503. Which of the following co-ordinate systems is used by the GPS receiver to determine position (Latitude, longitude and altitude)?

A – EUREF 92
B – WGS 84
C – ED 87
D – ED 50

Ref: all

Ans: B

15523. Which of the following NAVSTAR/GPS satellite navigation system codes can be processed by unauthorised civil aviation receivers?

A – C/A and P
B – P and Y
C – C/A
D – P

Ref: all

Ans: C

15529. Which of the following statements about the visibility of NAVSTAR/GPS satellites is correct?

A – It is greatest at the equator
B – It is greatest at the poles
C – It varies, depending on the time and observers location
D – It is the same throughout the globe

Ref: all

Ans: C

15530. In the event of the use of Selective Availability, how does this affect, if at all, the navigation accuracy of the NAVSTAR/GPS satellite navigation system?

A – It degrades accuracy by reducing the number of available satellites
B – It degrades position accuracy by manipulating satellitie signals
C – It increases because only signals from satellites in the roost suitable geometric constellation are selected by the receiver
D – It has no influence because, by selecting of the most suitable signals, the computing process in the receiver is quicker

Ref: all

Ans: B

15531. How does a receiver of the NAVSTAR/GPS satellite navigation system determine the elevation and azimuth data of a satellite relative to the location of the antenna?

A – The data is determined by the satellite and transmitted together with the navigation message
B – It calculates it by using Almanac data transmitted by the satellites
C – The data is stored in the receiver together with the Pseudo Random Noise (PRN) code
D - The data is based on the direction to the satellite determined at the location of the antenna

Ref: all

Ans: B

15532. In relation to the NAVSTAR/GPS satellite navigation system, Search the Sky is a:

A – continuous procedure performed by the receiver that searches the sky for satellites rising above the horizon
B – procedure that starts after switching on a receiver if there is no stored satellite data available
C – continuous process by the ground segment to monitor the GPS satellites
D – procedure performed by the receiver to recognise new satellites becoming operational

Ref: all

Ans: B

16191. A pseudo range in GNSS is in error because of:

A – ionospheric delays
B – receiver clock error
C – satellite clock error
D – all of these

Ref: all

Ans: B

16192. Clock bias is the process of correcting the pseudo range for:

A – receiver clock errors
B – satellite clock errors
C – receiver and satellite clock errors
D – UTC errors

Ref: all

Ans: A

16193. Which of the following statements is true in respect of GNSS?

A – The C/A code is the only code available for civilian use. It is transmitted only on L1
B – The P code is the only code available for civilian use. It is transmitted on L
C – The C/A code is for authorised (military) use only. It is transmitted on both L1 and L2
D – The P code is for authorised (military) use only. It is transmitted only on L2

Ref: all

Ans: A

16194. Airborne GNSS receivers are protected from the effects of selective availability (SA) by:

A – warning transmitted on the satellite Nav message
B – use of RAIM techniques
C – warning transmitted from the ground segment
D – NOTAMS

Ref: all

Ans: B

16195. What is the minimum number of satellites required for a Satellite-Assisted Navigation System (GNSS/GPS) to carry out two dimensional operation?

A – three satellites
B – two satellites
C – two satellites and altimeter
D – four satellites

Ref: all

Ans: A

16196. In respect of the use of GNSS, Dilution of Precision (DOP) is a loss of accuracy due to:

A – relative position of the visible satellites
B – ionospheric effects
C – multi-path signals from some satellites
D – use of satellites at low altitudes

Ref: all

Ans: A

16426. How many GPS satellites must be in view of a receiver in order to resolve clock bias?

A – 1
B – 2
C – 3
D – 4

Ref: all

Ans: C

21433. In a Satellite-Assisted Navigation System (GNSS/GPS) a fix is obtained by:

A – the aircraft's receiver measuring the phase angle of signals received from a number of satellites in known positions
B – measuring the time taken for an aircraft's transmissions to travel to a number of satellites, in known positions and return to the aircraft's receiver
C – measuring the pulse lengths of signals received from a minimum number of satellites received in a specific sequential order
D – measuring the time taken for a minimum number of satellites transmissions, in known positions, to reach the aircraft's receiver

Ref: all

Ans: D

21544. How many clocks are installed in each NAVSTAR/GPS satellite?

A – 2
B – 3
C – 4
D – 1

Ref: all

Ans: C

21545. How many satellites from the nominal NAVSTAR/GPS constellation?

A – 36
B – 12
C – 6
D – 24

Ref: all

Ans: D

21552. In order to carry out an independent three-dimensional fix, Receiver Autonomous Integrity Monitoring (RAIM) and failure detection and exclusion of any faulty satellite, signal reception is required from a minimum number of how many satellites?

A – 6
B – 7
C – 4
D – 5

Ref: all

Ans: A

21563. In what type of nominal orbit are NAVSTAR/GPS satellites placed?

A – Geo-stationary
B – Elliptical
C – Circular
D – Pole to pole

Ref: all

Ans: B

21573. The different segments of the satellite navigation system NAVSTAR/GPS are the:

A – antenna, the receiver and the central control unit (CDU)
B – main control station, the monitoring station and the ground antennas
C – control, space and user
D – atomic clock, power supply and transponder

Ref: all

Ans: C

21591. What is the minimum number of satellites required for the NAVSTAR/GPS to carry out two dimensional operation?

A – 3
B – 4
C – 5
D – 2

Ref: all

Ans: A

21592. What type of clock is used in NAVSTAR/GPS satellites?

A – Quartz
B – Atomic
C – Mechanical
D – Laser

Ref: all

Ans: B

21605. Which of the following statements about the accuracy that can be obtained with the LAAS (local area augmentation system) of the satellite navigation system of the satellite navigation system NAVSTAR/GPS is correct?

A – A LAAS corrects the position of the aircraft by relaying the information via a geo-stationary satellite
B – The increase in accuracy of position fixes is independent of the aircraft position in relation to the LAAS ground reference station
C – A LAAS cannot correct for satellite timing and orbital position error
D – The closer the receiver is to a LAAS ground reference station, the more accurate is the aircraft position fix

Ref: all

Ans: D

21633. How many satellites are required for a 3D fix:

A – 3
B – 4
C – 5
D – 6

Ref: all

Ans: B

21634. Where on the Earth would you have the most satellites ‘visible’:

A – At the Equator
B – At the Poles
C – It will be the same anywhere on the Earth
D – Depends on the time of day

Ref: all

Ans: A

21635. What PRN codes are accessible to unauthorised civilian users:

A – C/A only
B – C/A and P codes
C – P code only
D – P and Y code

Ref: all

Ans: A

21636. What happens with RAIM:

A – The ground stations monitor the satellites
B – The satellites monitor the ground stations
C – The receiver monitors the satellites
D – The satellites moinitor the receiver

Ref: all

Ans: C

21638. The role of the transmitter is to:

A – Create the RF signal
B – Modify the RF signal
C – Radiate the audio signal
D – Radiate the RF signal

Ref: all

Ans: D

21642. A transmission of RF energy at a wavelength of 18 metres is in which frequency band?

A – MF
B – LF
C – HF
D – VHF

Ref: all

Ans: C

21732. Propagation errors may cause distortion of the huperbola. They result from:

A – Master and slave signals travelling over different surfaces to reach the receiver
B – Sky wave effect
C – slave signal having a higher frequency than the master
D – Atmospheric refraction

Ref: all

Ans: A

21733. A pseudo range in GNSS is a range based on a:

A – Time measurement using the receiver clock
B – Time measurement using UTC
C – Time measurement using the satellite clock
D – Time measurement using secondary radar principles

Ref: all

Ans: A

21734. The GNSS receiver determines the aeroplane velocity by:

A – Integrating measured change of position with time
B – Determining satellite/aeroplane relative velocities from Doppler shift measurements
C – Determining the Doppler shift of the receiver frequency
D – Determining the rate of change of ‘pseudo ranges’

Ref: all

Ans: B

21736. Satellites are considered to be ‘in view’ for the SPS if they are:

A – More than 10^{o} above the horizon
B – More than 15^{o} above the horizon
C – More than 5^{o} above the horizon
D – Above the horizon

Ref: all

Ans: C

21737. Which of the following affects the User Equivalent Range Error (UERE)?

A – Errors in the receiver processor’s ionospheric model
B – Errors in the receiver clock
C – Failure of the altitude input
D – Poor geometry of satellites

Ref: all

Ans: B

21738. When anti-spoofing is applied it cryptographically:

A – Alters the C/A code to reduce accuracy
B – Alters the P code and the C/A code to a Y code
C – Alters the P code into a Y code and ceases transmission of ‘P’ on L1
D – Alters the P code into a Y code

Ref:ALL Ans:C

21739. When setting up the GNSS receiver before use, the present position should be entered because:

A – the receiver cannot acquire the satellites without knowing where it is
B – this will reduce the time to first fix
C – this will allow the map display to function
D – this will help any dependant equipment such as IRS to stabilise

Ref: all

Ans: B

21740. Which of the following is not improved by the application of differential GPS?

A – Multi-path effects
B – Tropospheric delays
C – Satellite clock error
D – Selective availability

Ref: all

Ans: A

21741. The Glonass satellite system differs from the Navstar GPS system in that:

A – the satellites are at a lower orbital height
B – it is intended to use less satellites
C – the orbital paths are at a smaller angle to the plane of the equator
D – the satellites are geostationary

Ref: all

Ans: A

21742. In order to determine 'Ionospheric delay' corrections on a civilian aeroplane:

A – The signals from the C/A and P codes are matched
B – The signals from the P code and the Y code are matched
C – An 'ionospheric delay' model is stored in the receiver navigation processor. It is changed every 28 days
D – An 'ionospheric delay' model is determined from the satellite Nav message

Ref: all

Ans: D

21743. On an aeroplane the GNSS receiver aerial should be located:

A – On top of the fuselage
B – Below the fuselage in order to protect it from precipitation
C – Anywhere as aerial location is not critical
D – One on top and one below the fuselage so that DGPS can be used

Ref: all

Ans: A

21744. In a Pseudolite DGPS a data link is provided:

A – To communicate satellite position information to the reference station
B – To communicate navigation signals from the satellite to the aeroplane's GNSS receiver
C – To communicate DGPS corrections and integrity information to the aeroplane's GNSS receiver
D – To communicate corrections of clock and position from the reference station to the satellite

Ref: all
Ans: C

21745. In a Wide Area Augmentation Shystem the corrections for an aeroplane's GNSS receiver are broadcast:

A – from the monitor stations
B – by the Wide Area master station
C – via a geostationary satellite
D – via the GNSS constellation

Ref: all

Ans: C

21746. In order for a GPS receiver to conduct RAIM it must use a minimum of:

A – Three satellites plus a barometric input
B – Four satellites
C – Five satellites
D – Five satellites plus a barometric input

Ref: all

Ans: C

21747. In GPS the satellite Nav message is repeated:

A – Every 12.5 minutes
B – At a rate of 1 subframe every 12.5 minutes
C – Every 12.5 seconds
D – As dictated by the master control station

Ref: all

Ans: A

21750. The GPS system uses L1 and L2 frequency bands. Which band is used for the P code and which for the C/A code:

A – L1 is modulated with the P code only
B – L1 is modulated with the P and C/A code
C – L2 is modulated with the C/A code only
D – L2 is modulated with the P and C/A code

Ref: all

Ans: B

21751. The height of a GPS satellite above the earth is:

A – 10,900 km
B – 20,200 nm
C – 20,200 km
D – 10,250 nm

Ref: all

Ans: C

21759. Which of the following will cause the greatest GPS error:

A – Ephemeris error
B – Satellite clock error
C – Ionospheric error
D – Latitude error

Ref: all

Ans: C

21763. The coverage of the maritime satellite communications system (IMMARSAT) is:

A – Between 70°N and 70°S
B – Between 80°N and 80°S
C – Between 85°N and 85°S
D – Between 90°N and 90°S

Ref: all

Ans: B

22297. The MDA for a non-precision approach using NAVSTAR/GPS is based on:

A – barometric altitude
B – radio altimeter
C – GPS altitude
D – GPS or barometric altitude

Ref: all

Ans: A

22298. If, during a manoeuvre, a satellite being used for position fixing is shadowed by the wing, the effect on position will be:

A – none
B – the position accuracy can be degraded
C – another satellite will be selected, so there will be no degradation of position
D – The GPS will maintain lock using reflections of the signals from the fuselage

Ref: all

Ans: B

22299. The positioning of a GNSS serial on an aircraft is:

A – in the fin
B – on the fuselage as close as possible to the receiver
C – on top of the fuselage close to the centre of gravity
D – under the fuselage

Ref: all

Ans: C

22300. Concerning NAVSTAR/GPS orbits, which of the following statements is correct:

A – the inclination of the orbits is 55^{o} with an orbital period of 12 hours
B – the inclination of the orbits is 55^{o} with an orbital period of 24 hours
C – the orbits are geostationary to provide global coverage
D – the orbits are inclined at 65^{o} with an orbital period of 11 hours 15 minutes

Ref: all

Ans: A

22301. The contents of the navigation and systems message from NAVSTAR/GPS SVs includes:

A – satellite clock error, almanac data, ionospheric propagation information
B – satellite clock error, almanac data, satellite position error
C – position accuracy verification, satellite clock time and clock error
D – ionospheric propagation information, X, Y and Z co-ordinates and corrections, satellite clock time and error

Ref: all

Ans: A

22302. The best accuracy from satellite systems will be provided by:

A – NAVSTAR/GPS and TNSS transit
B – GLONASS and COSPAS/SARSAT
C – GLONASS and TNSS transit
D – NAVSTAR/GPS and GLONASS

Ref: all

Ans: D

22303. The azimuth and elevation of the satellites is:

A – determined by the satellite and transmitted to the receiver
B – determined by the receiver from the satellite almanac data
C – transmitted by the satellite as part of the almanac
D – transmitted by the satellite as part of the almanac

Ref: all

Ans: B

22304. An aircraft GNSS receiver is using 5 satellites for RAIM. If the receiver deselects one satellite then the flight should be continued:

A – using 4 satellites with the pilot monitoring the receiver output
B – using alternative navigation systems
C – using alternative radio navigation systems only
D – using inertial reference systems only

Ref: all

Ans: B

22305. The number of satellites required to produce a 4D fix is:

A – 3
B – 4
C – 5
D – 6

Ref: all

Ans: B

22306. Using differential GNSS for a non-precision approach, the height reference is:

A – barometric
B – GNSS
C – radio
D – radio of GNSS

Ref: all

Ans: A

22307. When using GPS to fly airways, what is the vertical reference used:

A – barometric
B – GPS height
C – radio altitude
D – average of barometric and GPS

Ref: all

Ans: A

22308. RAIM is achieved:

A – by ground monitoring stations determining the satellite range errors which alt relayed to receivers via geo-stationary satellites
B – by ground stations determining the X, Y & Z errors and passing the corrections to receivers using pseudolites
C – within the receiver
D – any of the above

Ref: all

Ans: C

22394. The WGS 84 model of the earth is:

A – A geoid
B – A sphere
C – A mathematical model that describes the exact shape of the earth
D – An ellipsoid

Ref: all

Ans: D

22395. The frequency band of the NAVSTAR/GPS L1 and L2 frequencies is:

A – VHF
B – UHF
C – EHF
D – SHF

Ref: all

Ans: B

22396. What information can a GPS fix using 4 satellites give:

A – Latitude and longitude
B – Latitude, longitude, altitude and time
C – Latitude, longitude and altitude
D – Latitude, longitude and time

Ref: all

Ans: B

22397. The orbits of the NAVSTAR/GPS satellites are inclined at:

A – 55^{o} to the earth's axis
B – 55^{o} to the plane of the equator
C – 65^{o} to the earth's axis
D – 65^{o} to the plane of the equator

Ref: all

Ans: B

22398. The function of the receiver in the GNSS user segment is to:

A – Interrogate the satellites to determine range
B – Track the satellites to calculate time
C – Track the satellites to calculate range
D – Determine position and assess the accuracy of that position

Ref: all

Ans: C

22760. Which GNSS is authorised for use on European Airways:

A – GLONASS
B – NAVSTAR/GPS
C – Galileo
D – COSPAS/SARSAT

Ref: all

Ans: B

22761. In GPS on which frequencies are the C/A and P codes transmitted:

A – Both frequencies
B – The higher frequency
C – Neither frequency
D – The lower frequency

Ref: all

Ans: B

22764. The inclination of a satellite is:

A – The angle between the SV orbit and the equator
B – The angle between the SV orbit and the polar plane
C – 90^{o} minus the angle between the SV orbit and the Equator
D – 90^{o} minus the angle between the SV orbit and the polar plane

Ref: all

Ans: A

22765. How is the distance between the NAVSTAR/GPS SV and the receiver determined:

A – By referencing the SV and receiver positions to WGS 84
B – By synchronising the receiver clock with the SV clock
C – By measuring the time from transmission to reception and multiplying by the speed of light
D – By measuring the time from transmission to reception and dividing by the speed of light

Ref: all

Ans: C

22772. Which of the following statements concerning differential GPS is true:

A – Local area DGPS gives the same improvement in accuracy regardless of distance from the station
B – DGPS removes SV ephemeris and clock errors and propagation errors
C – DGPS can improve the accuracy of position information
D – Wide area DGPS accuracy improves the closer the aircraft is to the ground station

Ref: all

Ans: C

22794. The Navstar satellite system has ___ orbital planes crossing the equator at ___ at an altitude of ___

A – 6; 60 degrees; 10,900 nm
B – 3; 65 degrees; 10,250 km
C – 6; 65 degrees; 10,900 nm
D – 5; 60 degrees; 10,250 nm

Ref: all

Ans: C

22872. The geodetic reference system used to define latitude and longitude by GPS equipment is:

A – UKGRS 90
B – GDR 95
C – OSGB 36
D – WGS 84

Ref: all

Ans: D

22876. The transmission band used by INMARSAT is:

A – HF
B – VHF
C – UHF
D – SHF

Ref: all

Ans: C

25083. The effect of the ionosphere on NAVSTAR/GPS accuracy is:

A – only significant for satellites close to the horizon
B – minimised by averaging the signals
C – minimised by the receivers using a model of the ionosphere to correct the signals
D – negligible

Ref: all

Ans: C

25084. Selective availability may be used to degrade the accuracy of the NAVSTAR/GPS position. This is achieved by:

A – introducing an offset in the satellite's clocks
B – random dithering of the broadcast satellites clock time
C – random dithering of the broadcast satellites X, Y & Z co-ordinates
D – introducing an offset in the broadcast satellites X, Y & Z co-ordinates

Ref: all

Ans: B

25085. The orbital height of geostationary satellites is:

A – 15330 km
B – 20180 km
C – 10898 nm
D – 10313 nm

Ref: all

Ans: B

25086. How many satellites are neededfor a 2D fix?

A – 4
B – 2
C – 3
D – 5

Ref: all

Ans: C

25087. The nav/system message from GLONASS and NAVSTAR/GPS is found in the ___ band.

A – SHF
B – UHF
C – VHF
D – EHF

Ref: all

Ans: B

25088. The task of the control segment is to:

A – determine availability to users
B – monitor the SV ephemeris and clock
C – apply selective availability
D – all of the above

Ref: all

Ans: B