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

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

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

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 - +/-10º
B - +/-2.5º
C - +/-2º
D - +/-5º

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 360º (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

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

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

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

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

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

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 5.3°. 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

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

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°

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

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

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

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

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 25° 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

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

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° ; (ii) can
B – (i) 25° ; (ii) cannot
C – (i) 35° ; (ii) cannot
D – (i) 25° ; (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° 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° 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

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

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 clouds
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

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

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

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

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

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

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

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; along track 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

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

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

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

8027. 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

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

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

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

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

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

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

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

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 monitor 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

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° with an orbital period of 12 hours
B – the inclination of the orbits is 55° with an orbital period of 24 hours
C – the orbits are geostationary to provide global coverage
D – the orbits are inclined at 65° with an orbital period of 11 hours 15 minutes

Ref: all

Ans: A