# RADIO NAVIGATION

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| 4604 | 62 | In which frequency band do Satellite-Assisted Navigation systems (GNSS/GPS) provide position information that is available to civil aircraft? | UHF | SHF | EHF | VHF | | 1 | 0 | 0 | 0 |
| 4605 | 62 | The Doppler Navigation System is based on: | doppler VOR (DVOR) Navigation System | phase comparison from ground station transmissions | radar principles using frequency shift | radio waves refraction in the ionosphere | | 0 | 0 | 1 | 0 |
| 4606 | 62 | What is the maximum number of usable Secondary Surveillance Radar (SSR) transponder codes? | 760 | 4096 | 3600 | 1000 | | 0 | 1 | 0 | 0 |
| 4607 | 62 | Which of the following is a complete list of airborne weather radar antenna stabilisation axes? | roll and yaw | roll and pitch | roll, pitch and yaw | pitch and yaw | | 0 | 1 | 0 | 0 |
| 4608 | 62 | 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: | green to yellow to red | yellow to amber to blue | green to red to black | yellow to orange to red | | 1 | 0 | 0 | 0 |
| 4609 | 62 | The azimuth transmitter of a Microwave Landing System (MLS) provides a fan-shaped horizontal approach zone which is usually: | + or - 30° of the runway centre-line | + or - 40° of the runway centre-line | + or - 50° of the runway centre-line | + or - 60° of the runway centre-line | | 0 | 1 | 0 | 0 |
| 4610 | 62 | The two main design functions of Secondary Surveillance Radar (SSR) Mode S are: | air to ground and ground to air data link communications and improved ATC aircraft surveillance capability | collision avoidance using TCAS II and improved long range (HF) communication capability. | continuous automatic position reporting using Global Positioning System (GPS) satellites and collision avoidance using TCAS II | the elimination of ground to air communications and the introduction of automatic separation between aircraft using TCAS II | | 1 | 0 | 0 | 0 |
| 4611 | 62 | In the NAVSTAR/GPS satellite navigation system, 'Selective Availability' (SA) gives the option to artificially degrade the accuracy by : | offsetting satellite atomic clocks by a predetermined constant amount | dithering the satellite clock | shutting off selected satellites | using a less accurate atomic clock in a satellite for signal processing | | 0 | 1 | 0 | 0 |
| 4612 | 62 | In a Satellite-Assisted Navigation system (GNSS/GPS) a position line is obtained by: | the aircraft's receiver measuring the phase angle of the signal received from a satellite in a known position | 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 | the aircraft's receiver measuring the time difference between signals received from a minimum number of satellites | timing the period that is taken for a satellite's transmission to reach the aircraft's receiver | | 0 | 0 | 0 | 1 |

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| 4613 | 62 | 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? | Aerodrome Surveillance (approach) Radar | Airborne Weather Radar (AWR) | Aerodrome Surface Movement Radar (ASMR) | Secondary Surveillance Radar (SSR) | | 0 | 0 | 1 | 0 |
| 4614 | 62 | Which of the following statements concerning LORAN-C is correct? | It is a navigation system based on secondary radar principles; position lines are obtained in sequence from up to eight ground stations | It is a hyperbolic navigation system that works on the principle of range measurement by phase comparison | It is a navigation system based on simultaneous ranges being received from a minimum of four ground stations | It is a hyperbolic navigation system that works on the principle of differential range by pulse technique | | 0 | 0 | 0 | 1 |
| 4615 | 62 | What is the colour sequence when passing over an Outer, Middle and Inner Marker beacon? | amber - white - green | white - amber - blue | blue - green - white | blue - amber - white | | 0 | 0 | 0 | 1 |
| 4616 | 62 | Which of the following statements concerning the variable, or directional, signal of a conventional VOR is correct? | The receiver adds 30 Hz to the variable signal before combining it with the reference signal | The rotation of the variable signal at a rate of 30 times per second gives it the characteristics of a 30 Hz amplitude modulation | The transmitter varies the amplitude of the variable signal by 30 Hz each time it rotates | The transmitter changes the frequency of the variable signal by 30 Hz either side of the allocated frequency each time it rotates | | 0 | 1 | 0 | 0 |
| 4617 | 62 | What is the minimum number of NAVSTAR/GPS satellites required to produce an accurate independent 3-D position fix? | 5 | 24 | 3 | 4 | | 0 | 0 | 0 | 1 |
| 4618 | 62 | The receiver aerial for a NAVSTAR/GPS system should be mounted: | on the upper side of the fuselage in the vicinity of the centre of gravity | inside the tail fin to minimise the influence of reflections from the wing and fuselage | in the vicinity of the receiver to avoid long transmission lines | under the fuselage in order to receive correction data transmitted by D-GPS stations | | 1 | 0 | 0 | 0 |
| 4619 | 62 | 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: | + or - 50 FT | + or - 75 FT | + or - 100 FT | + or - 25 FT | | 1 | 0 | 0 | 0 |
| 4620 | 62 | Which of the following correctly gives the principle of operation of the Loran C navigation system? | Differential range by phase comparison | Phase comparison between synchronised transmissions | Differential range by pulse technique | Frequency shift between synchronised transmissions | | 0 | 0 | 1 | 0 |
| 4621 | 62 | Which of the following lists phenomena that CANNOT be detected by weather radar? | snow; clear air turbulence | dry hail; clear air turbulence | clear air turbulence; turbulence in cloud with precipitation | snow; turbulence in clouds with precipitation | | 1 | 0 | 0 | 0 |

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| 4622 | 62 | Given:<br><br>Aircraft heading 160°(M),<br><br>Aircraft is on radial 240° from a VOR,<br><br>Selected course on HSI is 250°. | ahead of the aeroplane symbol with the FROM flag showing | ahead of the aeroplane symbol with the TO flag showing | behind the aeroplane symbol with the FROM flag showing | behind the aeroplane symbol with the TO flag showing | | 0 | 0 | 1 | 0 |
| 4623 | 62 | A frequency of 10 GHz is considered to be the optimum for use in an airborne weather radar system because: | less power output is required in the mapping mode | the larger water droplets will give good echoes and the antenna can be kept relatively small | greater detail can be obtained at the more distant ranges of the smaller water droplets | static interference is minimised | | 0 | 1 | 0 | 0 |
| 4624 | 62 | When switching on the weather radar, after start-up, a single very bright line appears on the screen.<br><br>This means that the: | receiver is faulty | scanning of the cathode ray tube is faulty | transmitter is faulty | scanner is not rotating | | 0 | 1 | 0 | 0 |
| 4625 | 62 | In relation to radar systems that use pulse technology, the term 'Pulse Recurrence Rate (PRR)' signifies the: | delay after which the process re-starts | the number of cycles per second | ratio of pulse period to pulse width | number of pulses per second | | 0 | 0 | 0 | 1 |
| 4626 | 62 | The heading rose of an HSI is frozen on 200°.<br><br>Lined up on the ILS of runway 25, the localizer needle will be: | right of centre | centred with the 'fail' flag showing | centred | left of centre | | 0 | 0 | 1 | 0 |
| 4627 | 62 | Which of the following gives the best information about the progress of a flight between 2 en-route waypoints from a RNAV equipment? | ATA | Elapsed time on route. | ETO | ETD | | 0 | 0 | 1 | 0 |
| 4628 | 62 | What is the minimum number of satellites required for a Satellite-Assisted Navigation System (GNSS/GPS) to carry out two dimensional operation? | 5 | 2 | 3 | 4 | | 0 | 0 | 1 | 0 |
| 4629 | 62 | The frequency range of a VOR receiver is : | 108 to 135.95 MHz | 108 to 117.95 MHz | 108 to 111.95 MHz | 118 to 135.95 MHz | | 0 | 1 | 0 | 0 |
| 4630 | 62 | The maximum theoretical range at which an aircraft at FL230 may receive signals from a VOR facility sited at mean sea level is: | 190 NM | 230 NM | 170 NM | 151 NM | | 1 | 0 | 0 | 0 |
| 4631 | 62 | A radar facility transmitting at a Pulse Recurrence Frequency (PRF) of 1200 pulses/second will have a maximum unambiguous range of approximately: | 27 NM | 69 NM | 135 NM | 270 NM | | 0 | 1 | 0 | 0 |
| 4632 | 62 | Which of the following combinations is likely to result in the most accurate Area Navigation (RNAV) fixes? | NDB/VOR | VOR/VOR | DME/DME | VOR/DME | | 0 | 0 | 1 | 0 |
| 4633 | 62 | Which one of the following is an advantage of a Microwave Landing System (MLS) compared with an Instrument Landing System (ILS)? | It does not require a separate azimuth (localiser) and elevation (azimuth) transmitter | The installation does not require to have a separate method (marker beacons or DME) to determine range | There is no restriction on the number of ground installations that can be operated because there is an unlimited number of frequency channels available | It is insensitive to geographical site and can be installed at sites where it is not possible to use an ILS | | 0 | 0 | 0 | 1 |
| 4634 | 62 | In an Airborne Weather Radar that has a colour cathode ray tube (CRT) the areas of greatest turbulence are indicated on the screen by: | large areas of flashing red colour | iso-echo areas which are coloured black | colour zones being closest together | blank iso-echo areas where there is no colour | | 0 | 0 | 1 | 0 |
| 4635 | 62 | The frequency of an SSR ground transmission is: | 1120 +/- 0.6 Mhz | 1030 +/- 0.2 Mhz | 1050 +/- 0.5 Mhz | 1090 +/- 0.3 Mhz | | 0 | 1 | 0 | 0 |

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| 4636 | 62 | A VOR and DME are co-located.<br><br>You want to identify the DME by listening to the callsign.<br><br>Having heard the same callsign 4 times in 30 seconds the: | DME callsign is the one with the higher pitch that was broadcast only once | DME callsign was not transmitted, the distance information is sufficient proof of correct operation | DME callsign is the one with the lower pitch that was broadcast several times | VOR and DME callsigns were the same and broadcast with the same pitch | | 1 | 0 | 0 | 0 |
| 4637 | 62 | 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? | The data is determined by the satellite and transmitted together with the navigation m essage | It calculates it by using Almanac data transmitted by the satellites | The data is stored in the receiver together with the Pseudo Random Noise (PRN) code | The data is based on the direction to the satellite determined at the location of the antenna | | 0 | 1 | 0 | 0 |
| 4638 | 62 | A Cat III ILS glidepath transmitter provides reliable guidance information down to: | the surface of the runway | a maximum height of 200 ft above the runway | a maximum height of 100 ft above the runway | a maximum height of 50 ft above the runway | | 1 | 0 | 0 | 0 |
| 4639 | 62 | Which of the following equipments works on the interrogator/transponder principle? | Secondary Surveillance Radar (SSR) | Global Positioning System (GPS) | Airborne Weather Radar (AWR) | Aerodrome Surface Movement Radar | | 1 | 0 | 0 | 0 |
| 4640 | 62 | Which of the following equipments uses primary radar principles? | Distance Measuring Equipment (DME) | Global Positioning System (GPS) | Airborne weather radar (AWR) | Secondary Surveillance Radar (SSR) | | 0 | 0 | 1 | 0 |
| 4641 | 62 | 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? | FL50 | FL80 | FL100 | FL60 | | 0 | 0 | 0 | 1 |
| 4642 | 62 | An aircraft at FL 100 should be able to receive a VOR groundstation at 100 FT above MSL at an approximate maximum range of : | 130 NM | 142 NM | 135 NM | 123 NM | | 0 | 0 | 1 | 0 |
| 4643 | 62 | In relation to Area Navigation Systems (RNAV), which of the following is an Air Data input? | Doppler drift | True airspeed | Inertial Navigation System (INS) positio n | VOR/DME radial/distanc e | | 0 | 1 | 0 | 0 |
| 4644 | 62 | In which frequency band do most airborne weather, and ground based ATC, radar systems operate? | EHF | VHF | SHF | UHF | | 0 | 0 | 1 | 0 |
| 4645 | 62 | Which one of the following correctly lists the major ground based components of a Microwave Landing System (MLS)? | Separate azimuth and elevation transmitters, outer and middle marker beacons | Combined azimuth and elevation transmitter, DME facility | Combined azimuth and elevation transmitter, outer and inner marker beacons | Separate azimuth and elevation transmitters, DME facility | | 0 | 0 | 0 | 1 |
| 4646 | 62 | An aircraft at 6400 FT will be able to receive a VOR groundstation at 100 FT above MSL at an approximate maximum range of : | 100 NM | 120 NM | 110 NM | 90 NM | | 0 | 0 | 1 | 0 |
| 4647 | 62 | If an aircraft flies along a VOR radial it will follow a: | line of constant bearing | constant magnetic track | great circle track | rhumbline track | | 0 | 0 | 1 | 0 |

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| 4648 | 62 | Which one of the following methods is used by a Microwave Landing System (MLS) to indicate distance from the runway threshold? | A DME co-located with the MLS transmit ters | Timing the interval between the transmission and reception of primary radar pulses from the aircraft to MLS station | Measurement of the frequency shift between the MLS azimuth and elevation transmissions | Timing the interval between the reception of sequential secondary radar pulses from the MLS station to the aircraft | | 1 | 0 | 0 | 0 |
| 4649 | 62 | Which of the following geometric satellite constellations provides the most accurate NAVSTAR/GPS position fix? | 3 satellites with an azimuth of 120° from each other and an elevation of 45° above the horizon | 4 satellites with an azimuth of 90° from each other and a low elevation above the horizon | 4 satellites with an azimuth of 90° from each other and an elevation of 45° above the horizon | 3 satellites with a low elevation above the horizon and an azimuth of 120° from each other together with a fourth directly overhead | | 0 | 0 | 0 | 1 |
| 4650 | 62 | The theoretical maximum range for an Airborne Weather Radar is determined by the: | pulse recurrence frequency | transmission power | size of the aerial | transmission frequency | | 1 | 0 | 0 | 0 |
| 4651 | 62 | 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? | Only D-GPS allows position fixes accurat e enough for 'Non Precision Approaches' | The nearer a receiver is situated to a D-GPS ground station, the more accurate the position fix | The increase in accuracy of position fixes is independent of the receiver position in relation to a D-GPS ground station | A D-GPS receiver can detect and correct for SA providing a more accurate position fix | | 0 | 1 | 0 | 0 |
| 4652 | 62 | 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': | left with 'FROM' showing | left with 'TO' showing | right with 'TO' showing | right with 'FROM' showing | | 0 | 1 | 0 | 0 |
| 4653 | 62 | In relation to the NAVSTAR/GPS satellite navigation system, 'Search the Sky' is a: | continuous procedure performed by the receiver that searches the sky for satellites rising above the horizon | procedure that starts after switching on a receiver if there is no stored satellite data available | continuous process by the ground segment to monitor the GPS satellites | procedure performed by the receiver to recognise new satellites bec oming operational | | 0 | 1 | 0 | 0 |
| 4654 | 62 | Which one of the following sensors/systems is self-contained and obtains no external information? | VOR/DME radial/distanc e | Inertial Navigation System (INS) positio n | Pressure altitude | Magnetic heading | | 0 | 1 | 0 | 0 |

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| 4655 | 62 | 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? | The flight may be continued as planned if at least 4 satellites are available and the pilot monitors the GPS-System manually | The flight may be continued using other certificated navigation systems | The flight has to be continued under VFR conditions | A constant heading and speed must be flown until the required number of satellites are again available | | 0 | 1 | 0 | 0 |
| 4656 | 62 | 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: | Radial 315°, relative bearing unknown | Radial 135°, relative bearing unknown | Radial unknown, relative bearing 225° | Radial unknown, relative bearing 045° | | 0 | 1 | 0 | 0 |
| 4657 | 62 | In general the operation of airborne weather radar equipment on the ground is: | unrestrictedly permitted in aerodrome maintenance areas | only permitted with certain precautions, to safeguard health of personnel and to protect equipment | permitted anywhere | totally prohibited | | 0 | 1 | 0 | 0 |
| 4658 | 62 | Which one of the following inputs to an Area Navigation System (R-NAV) comes from an external, not on-board, system? | Magnetic heading | Inertial Navigation System (INS) position | Pressure altitude | VOR/DME radial/distance | | 0 | 0 | 0 | 1 |
| 4659 | 62 | The amplitude modulation and the colour of an outer marker (OM) is: | 1300 Hz, blue | 400 Hz, amber | 400 Hz, blue | 3000 Hz, blue | | 0 | 0 | 1 | 0 |
| 4660 | 62 | 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: | NDB: aircraft position<br>VOR: beacon position | NDB: beacon position<br>VOR: beacon position | NDB: beacon position<br>VOR: aircraft position | NDB: aircraft position<br>VOR: aircraft position | | 1 | 0 | 0 | 0 |
| 4661 | 62 | 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.<br>The aircraft is on VOR radial: | 262° | 285° | 255° | 278° | | 0 | 0 | 1 | 0 |
| 4662 | 62 | Given:<br>Magnetic heading 280°<br>VOR radial 090°<br>What bearing should be selected on the omni-bearing | 100° | 090° | 270° | 280° | | 0 | 0 | 1 | 0 |
| 4663 | 62 | A VOR is sited at position 58°00'N 073°00'W where the magnetic variation equals 32°W.<br>An aircraft is located at position 56°00'N 073°00'W where the magnetic variation equals 28°W. | 208 | 360 | 180 | 212 | | 0 | 0 | 0 | 1 |
| 4664 | 62 | In order to plot a bearing from a VOR station, a pilot needs to know the magnetic variation: | at the half-way point between the aircraft and the station | at both the VOR and aircraft | at the VOR | at the aircraft location | | 0 | 0 | 1 | 0 |

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| 4665 | 62 | In relation to the NAVSTAR/GPS satellite navigation system, what is involved in the differential technique (D-GPS)? | The difference between signals transmitted on the L1 and L2 frequencies are processed by the receiver to determine an error correction | Receivers from various manufacturers are operated in parallel to reduce the characteristical receiver noise error | 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 | Fixed ground stations compute position errors and transmit correction data to a suitable receiver on the aircraft | | 0 | 0 | 0 | 1 |
| 4666 | 62 | A frequency of airborne weather radar is : | 9375 GHz | 9375 kHz | 93.75 MHz | 9375 MHz | | 0 | 0 | 0 | 1 |
| 4667 | 62 | 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 ? | It degrades accuracy by reducing the number of available satellites | It degrades position accuracy by manipulating satellite signals | It increases because only signals from satellites in the most suitable geometric constellation are selected by the receiver | It has no influence because, by selecting of the most suitable signals, the computing process in the receiver is quicker | | 0 | 1 | 0 | 0 |
| 4668 | 62 | Given:<br><br>VOR station position N61° E025°, variation 13°E;<br><br>Estimated position of an aircraft N59° E025°, variation 20°E. | 160° | 193° | 167° | 347° | | 0 | 0 | 1 | 0 |
| 4669 | 62 | DME channels utilise frequencies of approximately: | 600 MHz | 1000 MHz | 300 MHz | 110 MHz | | 0 | 1 | 0 | 0 |
| 4670 | 62 | An NDB transmits a signal pattern in the horizontal plane which is : | a cardioid balanced at 30 Hz | a beam rotating at 30 Hz | omnidirectional | bi-lobal circular | | 0 | 0 | 1 | 0 |
| 4671 | 62 | The BFO selector on an ADF receiver is used to: | hear the IDENT and must always be switched ON | find the loop 'null' position | hear the IDENT of some NDB stations radiating a continuous wave signal | stop loop rotation | | 0 | 0 | 1 | 0 |
| 4672 | 62 | The captain of an aircraft flying at FL100 wishes to obtain weather information at the destination airfield from the airfield's VOR. At what maximum theoretical range will it be possible to obtain this information? | 1230 km | 123 NM | 123 km | 12.3 NM | | 0 | 1 | 0 | 0 |
| 4673 | 62 | 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? | The average of GPS altitude and barometric altitude | GPS altitude | GPS altitude if 4 or more satellites are received otherwise barometric altitude | Barometric altitude | | 0 | 0 | 0 | 1 |

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| 4674 | 62 | What datum is used for the Minimum Descent Altitude (MDA) on a non-precision approach when using the NAVSTAR/GPS satellite navigation system? | If using Differential-GPS (D-GPS) the altitude obtained from the D-GPS, otherwise barometric altitude | Radar altitude | GPS altitude | Barometric altitude | | 0 | 0 | 0 | 1 |
| 4675 | 62 | 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? | The pilot must determine the reason for the deviation and correct the error or switch off the faulty system | It may be continued using conventional navigation systems | It may be continued using NAVSTAR/GPS; prior to the next flight all systems must be checked | It must be continued under VFR conditions | | 0 | 1 | 0 | 0 |
| 4676 | 62 | 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? | Multi-sensor systems are not certificated for flights under IFR conditions | The prescribed IFR-equipment must be installed and operational | The prescribed IFR-equipment must be in working correctly and the navigation information continuously displayed | The RAIM-function of the GPS receiver must be able to monitor all prescribed navigation systems | | 0 | 1 | 0 | 0 |
| 4677 | 62 | The selection of code 2000 on an aircraft SSR transponder indicates: | unlawful interference with the planned operation of the flight | an emergency | transponder malfunction | entry into airspace from an area where SSR operation has not been required | | 0 | 0 | 0 | 1 |
| 4678 | 62 | In which frequency band do VOR transmitters operate? | VHF | UHF | SHF | EHF | | 1 | 0 | 0 | 0 |
| 4679 | 62 | In order to indicate an emergency situation, the aircraft Secondary Surveillance Radar (SSR) transponder should be set to: | 7600 | 7500 | 7000 | 7700 | | 0 | 0 | 0 | 1 |
| 4680 | 62 | The ATC transponder system,excluding Mode S, contains : | four modes, each 4096 codes | two modes, each 1024 codes | two modes, each of 4096 codes | four modes, each 1024 codes | | 0 | 0 | 1 | 0 |
| 4681 | 62 | Which of the following lists are all errors that affect the accuracy and reliability of the Satellite-Assisted Navigation system (GNSS/GPS)? | Satellite mutual interference; frequency drift; satellite to ground time lag | Satellite clock; satellite ephemeris; atmospheric propagation | Satellite mutual interference; satellite ephemeris; atmospheric propagation | Satellite to ground time lag; atmospheric propagation; satellite clock | | 0 | 1 | 0 | 0 |
| 4682 | 62 | The maximum range of primary radar depends on : | pulse length | pulse recurrence frequency | wave length | frequency | | 0 | 1 | 0 | 0 |
| 4683 | 62 | Which of the following is an ILS localiser frequency? | 112.10 MHz | 109.15 MHz | 108.25 MHz | 110.20 MHz | | 0 | 1 | 0 | 0 |
| 4684 | 62 | If the reference phase differs 30° with the variable phase the radial from the VOR station will be : | 030° | 330° | 210° | 150° | | 1 | 0 | 0 | 0 |

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| 4685 | 62 | A DME that has difficulty obtaining a "lock-on":<br><br>(NOTE: PRF = pulse recurrence frequency,<br><br>PPS = pulses per second) | stays in search mode but reduces PRF to max. 60 PPS after 15000 pulse pairs have been transmitted | stays in search mode without a reduction in PRF | stays in search mode but reduces PRF to max. 60 PPS after 100 seconds | alternates search mode with periods of memory mode lasting 10 seconds | | 1 | 0 | 0 | 0 |
| 4686 | 62 | Of what use, if any, is a military TACAN station to civil aviation ? | It is of no use to civil aviation | It can provide a DME distance and magnetic bearing | It can provide a magnetic bearing | It can provide DME distance | | 0 | 0 | 0 | 1 |
| 4687 | 62 | Given: Course Deviation Indicator (CDI) for a VOR is selected to 090°.<br><br>From/To indicator indicates "TO".<br><br>CDI needle is deflected halfway to the right | 265 | 095 | 275 | 085 | | 0 | 0 | 1 | 0 |
| 4688 | 62 | Which one of the following disturbances is most likely to cause the greatest inaccuracy in ADF bearings? | Quadrantal error | Precipitation interference | Local thunderstorm activity | Coastal effect | | 0 | 0 | 1 | 0 |
| 4689 | 62 | In the NAVSTAR/GPS satellite navigation system, receiver clock error: | can be minimised by synchronisation of the receiver clock with the satellite clocks | is negligible small because of the great accuracy the atomic clocks installed in the satellites | is corrected by using signals from four satellites | is the biggest part of the total error; it cannot be corrected | | 0 | 0 | 1 | 0 |
| 4690 | 62 | The influence of the ionosphere on the accuracy of the satellite navigation system NAVSTAR/GPS is: | negligible | minimised by the receiver using a model of the atmosphere and comparing signals transmitted by the satellites | minimised by computing the average of all signals | only significant if the satellites are located at a small elevation angle above the horizon | | 0 | 1 | 0 | 0 |
| 4691 | 62 | Which one of the following is an advantages of a multi-sensor system using inputs from a global navigation satellite system (GNSS) and an inertial navigational system (INS)? | The GNSS can be used to update a drifting INS | The activation of 'Selective Availability' can be recognised by the INS | The average position calculated from data provided by both systems increases overall accuracy | The only advantage of coupling both systems is double redundancy | | 1 | 0 | 0 | 0 |

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| 4692 | 62 | What are the effects, if any, of shadowing by parts of the aircraft (e.g. wing) on the reception of signals from NAVSTAR/GPS satellites? | The signals will be distorted, however the error can be corrected for using an algorithm and information from unaffected signals | It has no influence because high frequency signals are unaffected | It may prevent the reception of signals | It causes multipath propagation | | 0 | 0 | 1 | 0 |
| 4693 | 62 | A DME in tracking mode subsequently experiences a reduction in signal strength will switch the equipment in the first instance to: | search mode | standby mode | signal controlled search | memory mode | | 0 | 0 | 0 | 1 |
| 4694 | 62 | Which one of the following switch positions should be used when selecting a code on the Transponder? | NORMAL | OFF | STBY (Standby) | IDENT (Identification) | | 0 | 0 | 1 | 0 |
| 4695 | 62 | 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: | heavy precipitation may disturb guidance signals | to increase distance from the runway during offset approach operations | to increase aircraft separation in very reduced visibility conditions | aircraft manoeuvring near the runway may disturb guidance signals | | 0 | 0 | 0 | 1 |
| 4696 | 62 | 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? | 284° with the TO flag showing | 284° with the FROM flag showing | 104° with the TO flag showing | 104° with the FROM flag showing | | 1 | 0 | 0 | 0 |
| 4697 | 62 | An aircraft on a heading of 280°(M) is on a bearing of 090°(M) from a VOR.<br><br>The bearing you should select on the OMNI bearing selector to centralise the VOR/ILS left/right deviation needle with a | 280° | 270° | 090° | 100° | | 0 | 1 | 0 | 0 |
| 4698 | 62 | 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: | 244° with the FROM flag showing | 244° with the TO flag showing | 064° with the TO flag showing | 064° with the FROM flag showing | | 0 | 0 | 1 | 0 |
| 4699 | 62 | What is the maximum theoretical range that an aircraft at FL150 can receive signals from a VOR situated 609 feet above MSL? | 147 NM | 156 NM | 184 NM | 220 NM | | 0 | 0 | 1 | 0 |
| 4700 | 62 | A typical frequency employed in Distance Measuring Equipment (DME) is: | 100 MHz | 100 GHz | 1000 MHz | 10 MHz | | 0 | 0 | 1 | 0 |
| 4701 | 62 | Distance Measuring Equipment (DME) operates in the: | UHF band and is a secondary radar system | VHF band and uses the principle of phase comparison | UHF band and is a primary radar system | SHF band and uses frequency modulation techniques | | 1 | 0 | 0 | 0 |
| 4702 | 62 | For a conventional DME facility 'Beacon Saturation' will occur whenever the number of simultaneous interrogations exceeds: | 80 | 100 | 200 | 60 | | 0 | 1 | 0 | 0 |
| 4703 | 62 | On a DME, display counters rotating throughout their range indicates: | the airborne receiver is conducting a range search | airborne equipment failure | ground equipment failure | the airborne equipment is conducting a frequency search | | 1 | 0 | 0 | 0 |

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| 4704 | 62 | The aircraft DME receiver is able to accept replies to its own transmissions and reject replies to other aircraft interrogations because: | pulse pairs are amplitude modulated with the aircraft registration | aircraft interrogation signals and transponder responses are 63 MHz removed from each other | transmission frequencies are 63 MHz different for each aircraft | pulse pairs are discreet to a particular aircraft | | 0 | 0 | 0 | 1 |
| 4705 | 62 | The aircraft DME receiver cannot lock on to interrogation signals reflected from the ground because: | DME pulse recurrence rates are varied | aircraft transmitter and DME ground station are transmitting on different frequencies | reflections are subject to doppler frequency shift | DME transmits twin pulses | | 0 | 1 | 0 | 0 |
| 4706 | 62 | The design requirements for DME stipulate that, at a range of 100 NM, the maximum systematic error should not exceed: | + or - 1.5 NM | + or - 3 NM | + or - 0.25 NM | + or - 1.25 NM | | 1 | 0 | 0 | 0 |
| 4707 | 62 | In which situation will speed indications on an airborne Distance Measuring Equipment (DME) most closely represent the groundspeed of an aircraft flying at FL400? | When tracking directly towards the station at a range of 100 NM or more | When passing abeam the station and within 5 NM of it | When overhead the station, with no change of heading at transit | When tracking directly away from the station at a range of 10 NM | | 1 | 0 | 0 | 0 |
| 4708 | 62 | Which one of the following lists information given by a basic VOR/DME-based Area Navigation System? | Aircraft position in latitude and longitude | Wind velocity | True airspeed; drift angle | Crosstrack distance; alongtrack distance; angular course deviation | | 0 | 0 | 0 | 1 |
| 4709 | 62 | A Category 1 Instrument Landing System (ILS) ground installation provides accurate guidance from coverage limit down to: | runway surface | 200 feet above the inner marker | 200 feet above the runway threshold | 50 feet above ILS reference point | | 0 | 0 | 1 | 0 |
| 4710 | 62 | If VOR bearing information is used beyond the published protection range, errors could be caused by: | sky wave interference from distant transmitters on the same frequency | interference from other transmitters | noise from precipitation static exceeding the signal strength of the transmitter | sky wave interference from the same transmitter | | 0 | 1 | 0 | 0 |
| 4711 | 62 | An aircraft tracking to intercept the Instrument Landing System (ILS) localiser inbound on the approach side, outside the published ILS coverage angle: | may receive false course indications | will not normally receive signals | will receive signals without identification coding | can expect signals to give correct indications | | 1 | 0 | 0 | 0 |
| 4712 | 62 | The MIDDLE MARKER of an Instrument Landing System (ILS) facility is identified audibly and visually by a series of: | two dashes per second and a blue light flashing | dots and a white light flashing | dashes and an amber light flashing | alternate dots and dashes and an amber light flashing | | 0 | 0 | 0 | 1 |
| 4713 | 62 | The OUTER MARKER of an Instrument Landing System (ILS) facility transmits on a frequency of: | 75 MHz and is modulated by morse at two dashes per second | 200 MHz and is modulated by alternate dot/dash in morse | 75 MHz and is modulated by alternate dot/dash in morse | 300 MHz and is modulated by morse at two dashes per second | | 1 | 0 | 0 | 0 |
| 4714 | 62 | What approximate rate of descent is required in order to maintain a 3° glide path at a groundspeed of 120 kt? | 950 FT/MIN | 600 FT/MIN | 550 FT/MIN | 800 FT/MIN | | 0 | 1 | 0 | 0 |

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| 4715 | 62 | The outer marker of an ILS with a 3° glide slope is located 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: | 1400 FT | 1350 FT | 1300 FT | 1450 FT | | 0 | 0 | 0 | 1 |
| 4716 | 62 | Airborne weather radar systems use a wavelength of approximately 3 cm in order to: | transmit at a higher pulse repetition frequency for extended range | obtain optimum use of the Cosecant squared beam | detect the smaller cloud formati ons as well as large | detect the larger water droplets | | 0 | 0 | 0 | 1 |
| 4717 | 62 | The ISO-ECHO facility of an airborne weather radar is provided in order to: | give an indication of cloud tops | inhibit unwanted ground returns | extend the mapping range | detect areas of possible severe turbulence in cloud | | 0 | 0 | 0 | 1 |
| 4718 | 62 | In the MAPPING MODE the airborne weather radar utilises a: | fan shaped beam effective up to a range of 150 NM | pencil beam to a maximum range of 60 NM | pencil beam effective from zero to 150 NM | fan shaped beam effective up to a maximum of 50 NM to 60 NM range | | 0 | 0 | 0 | 1 |
| 4719 | 62 | Which of the following cloud types is most readily detected by airborne weather radar when using the 'weather beam'? | altostratus | cumulus | cirrocumulus | stratus | | 0 | 1 | 0 | 0 |
| 4720 | 62 | Why is a secondary radar display screen free of storm clutter? | A moving target indicator facility suppresses the display of static or near static returns | The frequencies employed are too low to give returns from moisture sources | The principle of 'echo' return is not used in secondary radar | The frequencies employed are too high to give returns from moisture sources | | 0 | 0 | 1 | 0 |
| 4721 | 62 | In order to indicate radio failure the aircraft SSR transponder should be selected to code: | 7600 | 7700 | 7000 | 7500 | | 1 | 0 | 0 | 0 |
| 4722 | 62 | In order to indicate unlawful interference with the planned operation of the flight, the aircraft Secondary Surveillance Radar (SSR) transponder should be selected to: | 7700 | 7000 | 7500 | 7600 | | 0 | 0 | 1 | 0 |
| 4723 | 62 | At what approximate height above the WGS-84 ellipsoid are NAVSTAR/GPS satellites circling the earth? | 36000 km | 19500 km | 20200 km | 10900 km | | 0 | 0 | 1 | 0 |
| 4724 | 62 | 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.<br><br>The slant range from the ground transponder was: | 186 NM | 296 NM | 330 NM | 165 NM | | 0 | 0 | 0 | 1 |
| 4725 | 62 | An Omni-bearing selector (OBS) shows full deflection to the left when within range of a serviceable VOR.<br><br>What angular deviation are you from the selected radial? | 10° or more | less than 10° | 1.5° or more | 2.5 or more | | 1 | 0 | 0 | 0 |
| 4726 | 62 | Every 10 kt decrease in groundspeed, on a 3° ILS glidepath, will require an approximate: | decrease in the aircraft's rate of descent of 100 FT/MIN | increase in the aircraft's rate of descent of 100 FT/MIN | decrease in the aircraft's rate of descent of 50 FT/MIN | increase in the aircraft's rate of descent of 50 FT/MIN | | 0 | 0 | 1 | 0 |
| 4727 | 62 | In which frequency bands are the L1 and L2 frequencies used by the satellite navigation system NAVSTAR/GPS for transmission of the navigation message? | UHF | VHF | EHF | SHF | | 1 | 0 | 0 | 0 |

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| 4728 | 62 | In relation to the satellite navigation system NAVSTAR/GPS, which of the following statements correctly describes the term 'Pseudo Random Noise (PRN)' signal? | 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 | PRN is the atmospheric jamming that affects the signals transmitted by the satellites | PRN describes the continuous electro-magnetical background noise that exists in space | PRN occurs in the receiver. It is caused by the signal from one satellite being received from different directions (multipath effect) | | 1 | 0 | 0 | 0 |
| 4729 | 62 | Which of the following NAVSTAR/GPS satellite navigation system codes can be processed by 'unauthorised' civil aviation receivers? | C/A- and P | P and Y | C/A | P | | 0 | 0 | 1 | 0 |
| 4730 | 62 | Almanac data stored in the receiver of the satellite navigation system NAVSTAR/GPS is used for the: | assignment of received PRN-codes (Pseudo Random Noise) to the appropriate satellite | correction of receiver clock error | fast identification of received signals coming from visible satellites | recognition wether Selective Availability (SA) is operative | | 0 | 0 | 1 | 0 |
| 4731 | 62 | How does a NAVSTAR/GPS satellite navigation system receiver recognise which of the received signals belongs to which satellite? | The receiver detects the direction from which the signals are received and compares this information with the calculated positions of the satellites | Each satellite transmits its signal on a separate frequency | Each satellite transmits its signal, on common frequencies, with an individual Pseudo Random Noise code | The Doppler shift is unique to each satellite | | 0 | 0 | 1 | 0 |
| 4732 | 62 | 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? | data to correct receiver clock error; almanac data | time; positions of the satellites | almanac data; satellite status information | time; data to impair the accuracy of the position fix | | 0 | 0 | 1 | 0 |
| 4733 | 62 | In the NAVSTAR/GPS satellite navigation system, what is the maximum time taken to receive the complete set of almanac data from all satellites? | 12 hours (= period of the satellites orbit) | 25 seconds (= 1 second per data frame) | 24 seconds (= 1 second per data frame) | 12.5 minutes (= 30 seconds per data frame) | | 0 | 0 | 0 | 1 |
| 4734 | 62 | Which of the following statements concerning the L1 and L2 NAVSTAR/GPS transmission frequencies and codes is correct? | C/A and P codes are transmitted at different times on both frequencies | The higher frequency is only used to transmit the P code | The lower frequency is used to transmit both the C/A and P codes | The higher frequency is used to transmit both the C/A and P codes | | 0 | 0 | 0 | 1 |
| 4735 | 62 | In an Electronic Flight Instrument System (EFIS) data relating primarily to navigation is provided by: | Inertial Reference Systems<br>Navigation radios<br>True airspeed and drift inputs | Navigation radios<br>Flight Management Computer<br>Inertial Reference Systems | Inertial Reference Systems<br>Aircraft Mapping Radar<br>Navigation radios | Flight Management Computer<br>Aircraft Mapping Radar<br>Navigation radios | | 0 | 1 | 0 | 0 |

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| 4736 | 62 | How does the Electronic Flight Instrument System display of a B737-400 respond to the failure of a VHF navigation (VOR) receiver? | The pointer rotates around the display and a VOR 1 or 2 failure warning bar appears | The deviation bar and/or pointer change colour to red and flash intermittently | The pointer flashes and a VOR 1 or 2 failure warning bar appears | It removes the associated magenta deviation bar and/or pointer from the display | | 0 | 0 | 0 | 1 |
| 4737 | 62 | Which component of the B737-400 Electronic Flight Instrument System generates the visual displays on the EADI and EHSI? | Flight Control Computer | Navigation database | Symbol Generator | Flight Management Computer | | 0 | 0 | 1 | 0 |
| 4738 | 62 | In which navigation system does the master station transmit a continuous string of pulses on a frequency close to 100 kHz? | Doppler | Loran C | GPS | Decca | | 0 | 1 | 0 | 0 |
| 4739 | 62 | An airway 10 NM wide is to be defined by two VORs each having a resultant bearing accuracy of plus or minus 5.5°.<br><br>In order to ensure accurate track guidance within the airway limits the maximum distance apart for the transmitter is approximately: | 165 NM | 210 NM | 105 NM | 50 NM | | 0 | 0 | 1 | 0 |
| 4740 | 62 | 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? | Six | Eight | Two | Four | | 0 | 0 | 0 | 1 |
| 4741 | 62 | Which of the following lists information required to input a waypoint or 'Phantom Station' into a basic VOR/DME-based Area Navigation System? | Magnetic track and distance from the aircraft to the waypoint or 'Phantom Station' | Magnetic track and distance to a VOR/DME from the waypoint or 'Phantom Station' | Radials from a minimum of two VORs to the waypoint or 'Phantom Station' | Radial and distance from a VOR/DME to the waypoint or 'Phantom Station' | | 0 | 0 | 0 | 1 |
| 4742 | 62 | Transmissions from VOR facilities may be adversely affected by: | quadrantal error | uneven propagation over irregular ground surfaces | static interference | night effect | | 0 | 1 | 0 | 0 |
| 4743 | 62 | Which frequency band is used by VOR transmissions? | VHF | UHF | SHF | HF | | 1 | 0 | 0 | 0 |
| 4744 | 62 | The principle used in VOR bearing measurement is: | envelope matching | beat frequency discriminatio n | difference in depth of modulation | phase comparison | | 0 | 0 | 0 | 1 |
| 4745 | 62 | Errors caused by the effect of coastal refraction on bearings at lower altitudes are maximum when the NDB is: | inland and the bearing crosses the coast at right angles | near the coast and the bearing crosses the coast at an acute angle | inland and the bearing crosses the coast at an acute angle | near the coast and the bearing crosses the coast at right angles | | 0 | 0 | 1 | 0 |
| 4746 | 62 | What is the minimum number of satellites required by a GPS in order to obtain a three dimensional fix? | 6 | 4 | 3 | 5 | | 0 | 1 | 0 | 0 |
| 4747 | 62 | 'Night Effect' which causes loss of signal and fading, resulting in bearing errors from NDB transmissions, is due to: | static activity increasing at night particularly in the lower frequency band | the effect of the Aurora Borealis | skywave distortion of the null position and is maximum at dawn and dusk | interference from other transmission s and is maximum at dusk when east of the NDB | | 0 | 0 | 1 | 0 |
| 4748 | 62 | ADF bearings by an aeroplane by day within the published protection range should be accurate to within a maximum error of: | +/-10° | +/-2.5° | +/-2° | +/-5° | | 0 | 0 | 0 | 1 |
| 4749 | 62 | The maximum theoretical range at which an aircraft at FL80 can obtain bearings from a ground VDF facility sited 325 FT above MSL is: | 107 NM | 114 NM | 134 NM | 158 NM | | 0 | 0 | 1 | 0 |

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| 4750 | 62 | What is the approximate maximum theoretical range at which an aircraft at FL130 could receive information from a VDF facility which is sited 1024 FT above MSL? | 150 NM | 180 NM | 220 NM | 120 NM | | 0 | 1 | 0 | 0 |
| 4751 | 62 | Which of the following types of radar systems are most suited for short range operation? | primary continuous wave | centimetric pulse | millimetric pulse | secondary continuous wave | | 1 | 0 | 0 | 0 |
| 4752 | 62 | The prime factor in determining the maximum unambiguous range of a primary radar is the: | pulse recurrence rate | power output | size of parabolic receiver aerial | height of the transmitter above the ground | | 1 | 0 | 0 | 0 |
| 4753 | 62 | 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: | 16 | 2 | 4 | 8 | | 1 | 0 | 0 | 0 |
| 4754 | 62 | 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) | 1.5 | 3.0 | 4.5 | 6.0 | | 1 | 0 | 0 | 0 |
| 4755 | 62 | Quadrantal errors associated with aircraft Automatic Direction Finding (ADF) equipment are caused by: | misalignment of the loop aerial | skywave/groundwave contamination | signal bending by the aircraft metallic surfaces | signal bending caused by electrical interference from aircraft wiring | | 0 | 0 | 1 | 0 |
| 4756 | 62 | The selection of code 7600 on an aircraft SSR transponder indicates: | an emergency | unlawful interference with the planned operation of the flight | transponder malfunction | radio communication failure | | 0 | 0 | 0 | 1 |
| 4757 | 62 | Instrument Landing Systems (ILS) Glide Paths provide azimuth coverage (i) .....° each side of the localiser centre-line to a distance of (ii) ..... NM from the threshold. | (i) 8 (ii) 10 | (i) 25 (ii) 17 | (i) 35 (ii) 25 | (i) 5 (ii) 8 | | 1 | 0 | 0 | 0 |
| 4758 | 62 | The rate of descent required to maintain a 3.25° glide slope at a groundspeed of 140 kt is approximately: | 670 FT/MIN | 700 FT/MIN | 800 FT/MIN | 850 FT/MIN | | 0 | 0 | 1 | 0 |
| 4759 | 62 | The pencil shaped beam of an airborne weather radar is used in preference to the mapping mode for the determination of ground features: | beyond 100 NM because insufficient antenna tilt angle is available with the mapping mode | beyond 150 NM because the wider beam gives better definition | when approaching coast-lines in polar regions | beyond 50 to 60 NM because more power can be concentrated in the narrower beam | | 0 | 0 | 0 | 1 |
| 4760 | 62 | Factors liable to affect most NDB/ADF system performance and reliability include: | static interference - station interference - latitude error | height error - station interference - mountain effect | coastal refraction - lane slip - mountain effect | static interference - night effect - absence of failure warning system | | 0 | 0 | 0 | 1 |
| 4761 | 62 | An aircraft is flying on a heading of 270°(M). The VOR OBS is also set to 270° with the full left deflection and FROM flag displayed.<br><br>In which sector is the aircraft from the VOR ground station? | NE | NW | SW | SE | | 0 | 1 | 0 | 0 |
| 4762 | 62 | In order to enter a waypoint that is designated by a VOR into an RNAV, the VOR: | does not have to be in range when entered or used | must be in range | has to be positively identified by one of the pilots | does not have to be in range when entered but must be when used | | 0 | 0 | 0 | 1 |

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| 4763 | 62 | The two signals transmitted by a conventional VOR ground station are 90° out of phase on magnetic: | south | west | north | east | | 0 | 0 | 0 | 1 |
| 4764 | 62 | Outer marker transmits on 75 MHz and has an aural frequency of: | 400 Hz | 1300 Hz | 2000 Hz | 3000 Hz | | 1 | 0 | 0 | 0 |
| 4765 | 62 | Assuming a five dot display, what does each of the dots on either side of the ILS localizer cockpit display represent : | 2.0 degrees | 0.5 degrees | 1.5 degrees | 2.5 degrees | | 0 | 1 | 0 | 0 |
| 4766 | 62 | Which of the following is likely to have the greatest effect on ADF accuracy? | Interference from other NDBs, particularly at night | Frequency drift at the ground station | Interference from other NDBs, particularly during the day | Mutual interference between aircraft aerials | | 1 | 0 | 0 | 0 |
| 4767 | 62 | In which frequency band does an ILS glide slope transmit? | SHF | EHF | UHF | VHF | | 0 | 0 | 1 | 0 |
| 4768 | 62 | What is the wavelength of an NDB transmitting on 375 kHZ? | 80 m | 800 m | 8000 m | 8 m | | 0 | 1 | 0 | 0 |
| 4769 | 62 | An apparent increase in the transmitted frequency which is proportional to the transmitter velocity will occur when: | both transmitter and receiver move towards each other | the transmitter moves towards the receiver | the transmitter moves away from the receiver | the receiver moves towards the transmitter | | 0 | 1 | 0 | 0 |
| 4770 | 62 | The selection of code 7500 on an aircraft SSR transponder indicates: | unlawful interference with the planned operation of the flight | an emergency | transponder malfunction | radio communication failure | | 1 | 0 | 0 | 0 |
| 4771 | 62 | Which of the following will give the most accurate calculation of aircraft ground speed? | A VOR station sited on the flight route | A DME station sited across the flight route | A DME station sited on the flight route | An ADF sited on the flight route | | 0 | 0 | 1 | 0 |
| 4772 | 62 | The selection of code 7700 on an aircraft SSR transponder indicates: | an emergency | radio communication failure | transponder malfunction | unlawful interference with the planned operation of the flight | | 1 | 0 | 0 | 0 |
| 4773 | 62 | In a primary radar using pulse technique, pulse length determines: | target discrimination | maximum measurable range | beam width | minimum measurable range | | 0 | 0 | 0 | 1 |
| 4774 | 62 | In a primary radar using pulse technique, pulse recurrence frequency (PRF)/pulse recurrence rate (PRR) determines: | minimum range | beam width | maximum theoretical range | target discrimination | | 0 | 0 | 1 | 0 |
| 4775 | 62 | In a primary radar using pulse technique, the ability to discriminate between targets in azimuth is a factor of: | pulse length | beam width | aerial rotation rate | Pulse Recurrence Rate (PRR) | | 0 | 1 | 0 | 0 |
| 4776 | 62 | 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) | 713 pps | 1620 pps | 3240 pps | 610 pps | | 0 | 1 | 0 | 0 |
| 4777 | 62 | A VOR is sited at position A (45°00'N, 010°00'E). An aircraft is located at position B (44°00'N, 010°00'E). Assuming that the magnetic variation at A is 10°W and at B is 15°W, the aircraft is on VOR radial: | 185° | 180° | 190° | 195° | | 0 | 0 | 1 | 0 |
| 4778 | 62 | A DME station is located 1000 feet above MSL. An aircraft flying at FL 370, 15 NM away from the DME | 17 NM | 16 NM | 14 NM | 15 NM | | 0 | 1 | 0 | 0 |
| 4779 | 62 | What is the maximum distance between VOR and DME/TACAN ground installations if they are to have the same morse code identifier? | 600 m | 2000 m | 60 m | 300 m | | 1 | 0 | 0 | 0 |
| 4780 | 62 | 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: | 330 | 3000 | 6000 | 167 | | 0 | 1 | 0 | 0 |

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| 4781 | 62 | Which combination of characteristics gives best screen picture in a primary search radar? | long pulse length and narrow beam | short pulse length and wide beam | short pulse length and narrow beam | long pulse length and wide beam | | 0 | 0 | 1 | 0 |
| 4782 | 62 | An aircraft carrying out an ILS approach is receiving more 90 Hz than 150 Hz modulation notes from both the localiser and glidepath transmitters. The ILS indication will show: | Fly left and fly up | Fly right and fly down | Fly left and fly down | Fly right and fly up | | 0 | 1 | 0 | 0 |
| 4783 | 62 | The maximum theoretical range at which an aircraft at FL210 may receive signals from a VOR facility sited 340 feet above mean sea level is approximately: | 204 NM | 245 NM | 163 NM | 183 NM | | 1 | 0 | 0 | 0 |
| 4784 | 62 | Which of the following radar equipments operate by means of the pulse technique?<br><br>1. Aerodrome Surface Movement Radar<br><br>2. Airborne Weather Radar | 1, 2, 3 and 4 | 1, 2 and 4 only | 2, 3 and 4 only | 2 and 4 only | | 1 | 0 | 0 | 0 |
| 4785 | 62 | A Primary radar operates on the principle of: | continuous wave transmission | pulse technique | transponder interrogation | phase comparison | | 0 | 1 | 0 | 0 |
| 4786 | 62 | The geometric shape of the reference system for the satellite navigation system NAVSTAR/GPS, defined as WGS 84, is: | a geoid | an ellipsoid | a mathematical model that describes the exact shape of the earth | a sphere | | 0 | 1 | 0 | 0 |
| 4787 | 62 | (For this question use annex 062-12409A)<br><br>Which of the distances indicated will be shown on a basic VOR/DME-based Area Navigation Equipment when using a | 11 NM | 12 NM | 21 NM | 10 NM | | 0 | 1 | 0 | 0 |
| 4788 | 62 | (For this question use annex 062-12410A)<br><br>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'? | 11 NM | 14 NM | 8 NM | 9 NM | | 0 | 0 | 0 | 1 |
| 4789 | 62 | Erratic indications may be experienced when flying towards a basic VOR/DME-based Area Navigation System 'Phantom Station': | because, under adverse conditions (relative bearing to the Phantom Station other than 180°/360°) it takes the computer more time to calculate the necessary information | when in the cone of silence overhead the Phantom Station | when the Phantom Station is out of range | when operating at low altitudes close to the limit of reception range from the reference sta tion | | 0 | 0 | 0 | 1 |
| 4790 | 62 | What is the deviation per dot on the HSI when using a 2-dot basic RNAV system in the en-route mode? | 5 NM | 1 NM | 2 NM | 10 NM | | 1 | 0 | 0 | 0 |
| 4791 | 62 | What is the deviation per dot on the HSI when using an 2-dot RNAV system in the approach mode? | 10 NM | 0.5° | 10° | 0.5 NM | | 0 | 1 | 0 | 0 |

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| 4792 | 62 | Which of the following is one of the functions of the Course-Line-Computer in a basic Area Navigation (RNAV) system? | It checks the ground station accuracy using a built-in test programme | It automatically selects the two strongest transmitters for the Area-Nav-Mode and continues working by memory in case one of the two necessary station goes off the air | It calculates cross track information for NDB approaches | It transfers the information given by a VOR/DME station into tracking and distance indications to any chosen Phantom Station/waypoint | | 0 | 0 | 0 | 1 |
| 4793 | 62 | Which of the following combinations of satellite navigation systems provide the most accurate position fixes in air navigation? | NAVSTAR/GPS and GLONASS | NAVSTAR/GPS and NNSS-Transit | NNSS-Transit and GLONASS | GLONASS and COSPAS-SARSAT | | 1 | 0 | 0 | 0 |
| 4794 | 62 | The required 24 NAVSTAR/GPS operational satellites are located on: | 4 orbital planes with 6 satellites in each plane | 6 orbital planes with 3 satellites in each plane plus 6 reserve satellites positioned in a geostationary orbital plane | 6 orbital planes with 4 satellites in each plane | 3 orbital planes with 8 satellites in each plane | | 0 | 0 | 1 | 0 |
| 4795 | 62 | Which of the following statements about the 'visibility' of NAVSTAR/GPS satellites is correct? | It is greatest at the equator | It is greatest at the poles | It varies, depending on the time and observer's location | It is the same throughout the globe | | 0 | 0 | 1 | 0 |
| 4796 | 62 | How many operational satellites are required for Full Operational Capability (FOC) of the satellite navigation system NAVSTAR/GPS? | 18 | 12 | 30 | 24 | | 0 | 0 | 0 | 1 |
| 4797 | 62 | Which of the following satellite navigation systems has Full Operational Capability (FOC) and is approved for specified flights under IFR conditions in Europe? | NAVSTAR/GPS | NNSS-Transit | COSPAS-SARSAT | GLONASS | | 1 | 0 | 0 | 0 |
| 4798 | 62 | The basic elements of the satellite navigation system NAVSTAR/GPS are the: | control, space and user segments | main control station, the monitoring station and the ground antennas | antenna, the receiver and the central control unit (CDU) | atomic clock, power supply and transponder | | 1 | 0 | 0 | 0 |
| 4799 | 62 | One of the tasks of the control segment of the satellite navigation system NAVSTAR/GPS is to: | manipulate the signals of selected satellites to reduce the precision of the position fix | grant and monitor user authorisations | monitor the status of the satellites | manufacture and launch the satellites | | 0 | 0 | 1 | 0 |
| 4800 | 62 | An aircraft carrying out a 3° glidepath ILS approach experiences a reduction in groundspeed from 150 kt at the outer marker to 120 kt over the threshold. The effect of this change in groundspeed on the aircraft's rate of descent will be a decrease of approximately: | 250 FT/MIN | 50 FT/MIN | 100 FT/MIN | 150 FT/MIN | | 0 | 0 | 0 | 1 |

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| 4801 | 62 | Where, in relation to the runway, is the ILS localiser transmitting aerial normally situated? | At the non-approac h end about 150 m to one side of the runway and 300 m along the extended centreline | At the approach end about 150 m to one side of the runway and 300 m from touchdown | On the non-approac h end of the runway about 300 m from the runway on the extended cen treline | At the approach end of the runway about 300 m from touchdown on the centreline | | 0 | 0 | 1 | 0 |
| 4802 | 62 | The database of an FMS (Flight Management System) is organised in such a way that the pilot can: | only read the database | can modify the database eve ry 28 days | read and write at any time in database | insert navigation data between two updates | | 0 | 0 | 0 | 1 |
| 4803 | 62 | Which one of the following statements is correct concerning the use in primary radar of continuous wave transmissions as compared with pulse transmissions? | It is less effective in short range radars but more effective in long range radars | The equipment required is more complex in continuous wave radar but this is offset by greater reliability and accuracy | It eliminates the minimum target reception range | A smaller common transmitter and receiver aerial can be used | | 0 | 0 | 1 | 0 |
| 4804 | 62 | Due to 'Doppler' effect an apparent decrease in the transmitted frequency, which is proportional to the transmitter's velocity, will occur when: | both transmitter and receiver move away from each other | the transmitter moves away from the reciever | the transmitter and receiver move towards each other | the transmitter moves toward the reciever | | 0 | 1 | 0 | 0 |
| 4805 | 62 | 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 solution. The number of satellites is: | 4 | 5 | 6 | 7 | | 0 | 0 | 1 | 0 |
| 4806 | 62 | A ground radar transmitting at a PRF of 1200 pulses/second will have a maximum unambiguous range of approximately: | 27 NM | 67 NM | 135 NM | 270 NM | | 0 | 1 | 0 | 0 |
| 4807 | 62 | The main task of the user segment (receiver) of the satellite navigation system NAVSTAR/GPS is to: | monitor the orbital planes of the satellites | select appropriate satellites automatically , to track the signals and to measure the time taken by signals from the satellites to reach the receiver | transmit signals which, from the time taken, are used to determine the distance to the satellite | to monitor the status of the satellites, det ermine their positions and to measure the time | | 0 | 1 | 0 | 0 |
| 4808 | 62 | 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: | 3 | 4 | 5 | 6 | | 0 | 1 | 0 | 0 |

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| 4809 | 62 | One of the tasks of the space segment of the satellite navigation system NAVSTAR/GPS is to: | transmit signals which can be used, by suitable receivers, to determine time, position and velocity | transmit signals to suitable receivers and to monitor the orbital planes auton omously | compute the user position from the received user messag es and to transmit the computed position back to the user segment | monitor the satellites' orbits and status | | 1 | 0 | 0 | 0 |
| 4810 | 62 | In which mode of operation does the aircraft weather radar use a cosecant radiation pattern. | MAPPING | CONTOUR | WEATHER | MANUAL | | 1 | 0 | 0 | 0 |
| 4811 | 62 | There are two NDBs, one 20 NM inland, and the other 50 NM inland from the coast.<br><br>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 will be: | the same from both beacons when the aircraft is on a relative bearing of 180° and 360° | greater from the beacon that is 20 NM inland | the same from both beacons when the aircraft is on a relative bearing of 090° and 270° | greater from the beacon that is 50 NM inland | | 0 | 0 | 0 | 1 |
| 4812 | 62 | How long does it take a NAVSTAR/GPS satellite to orbit the earth? | 365 days because the satellites are located in a geostationary orbit | Approximatel y 12 hours (1/2 of a sidereal day) | Approximatel y 24 hours (one sidereal day) | 12 days | | 0 | 1 | 0 | 0 |
| 4813 | 62 | In relation to the satellite navigation system NAVSTAR/GPS,<br><br>the term 'inclination' denotes the angle between the: | horizontal plane at the location of the receiver and the direct line to a satellite | orbital plane and the earth's axis | horizontal plane at the location of the receiver and the orbital plane of a satellite | orbital plane and the equatorial plane | | 0 | 0 | 0 | 1 |
| 4814 | 62 | In civil aviation, the height value computed by the receiver of the satellite navigation system NAVSTAR/GPS is the: | geometric height above ground | height above Mean Sea Level (MSL) | flight level | height above the WGS-84 ellipsoid | | 0 | 0 | 0 | 1 |
| 4815 | 62 | The minimum range of a primary radar, using the pulse technique, is determined by the (i)..... ; the maximum unambiguous range by the (ii)..... | (i) pulse length (ii) length of the timebase | (i) transmission frequency (ii) pulse recurrence frequency | (i) pulse length (ii) pulse recurrence frequency | (i) transmission frequency (ii) transmitter power output | | 0 | 0 | 1 | 0 |
| 4816 | 62 | 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)..... | (i) the same (ii) modulation frequencies | (i) the same (ii) phases | (i) different (ii) modulation frequencies | (i) different (ii) phases | | 1 | 0 | 0 | 0 |
| 4817 | 62 | Under JAR-25 colour code rules, features displayed in amber/yellow on an Electronic Flight Instrument System (EFIS), indicate: | engaged modes | cautions, abnormal sources | flight envelope and system limits | warnings | | 0 | 1 | 0 | 0 |
| 4818 | 62 | ILS is subject to false glide paths resulting from: | spurious signals reflected by nearby obstacles | back-scatterin g of antennas | ground returns ahead of the antennas | multiple lobes of radiation patterns in the vertical plane | | 0 | 0 | 0 | 1 |

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| 4819 | 62 | What approximate rate of descent is required in order to maintain a 3° glidepath at a groundspeed of 90 kt? | 450 FT/MIN | 400 FT/MIN | 600 FT/MIN | 700 FT/MIN | | 1 | 0 | 0 | 0 |
| 4820 | 62 | 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? | 5000 | 7000 | 0000 | 2000 | | 0 | 0 | 0 | 1 |
| 4821 | 62 | ICAO Annex 11 defines Area Navigation (RNAV) as a method of navigation which permits aircraft operation on any desired flight path: | within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these | outside the coverage of station-referenced navigation aids provided that it is equipped with a minimum of one serviceable self-contained navigation aid | within the coverage of station-referenced navigation aids provided that it is equipped with a minimum of one serviceable self-contained navigation aid | outside the coverage of station-referenced navigation aids provided that it is equipped with a minimum of two serviceable self-contained navigation aids | | 1 | 0 | 0 | 0 |
| 4822 | 62 | Precision RNAV (P-RNAV) requires a track-keeping accuracy of: | 1.0 NM standard deviation or better | 1.5 NM standard deviation or better | 0.5 NM standard deviation or better | 0.25 NM standard deviation or better | | 0 | 0 | 1 | 0 |
| 4823 | 62 | Basic RNAV requires a track-keeping accuracy of: | +/- 5NM or better throughout the flight | +/- 5NM or better for 95% of the flight time | +/- 3NM or better for 90% of the flight time | +/- 2NM or better for 75% of the flight time | | 0 | 1 | 0 | 0 |
| 4824 | 62 | The Flight Management Computer (FMC) position is: | the same as that given on the No. 1 IRS | another source of aircaft position; it is independent of other position sources (IRS, Radio, ILS etc) | the computed position based on a number of sources (IRS, Radio, ILS, GPS etc) | the actual position of the aircraft at any point in time | | 0 | 0 | 1 | 0 |
| 4825 | 62 | The track-line on the Electronic Horizontal Situation Indicator (EHSI) or Navigation Display of an Electronic Flight Instrument System: | indicates that the pilot has made a manual track selection | indicates to the pilot that a manually selected heading is being flown | represents the track of the aircraft over the ground. When it co-incides with the desired track, wind influence is compensated for | corresponds to the calculated IRS TH and is correct during turns | | 0 | 0 | 1 | 0 |
| 4826 | 62 | In which of the following cases would ETOs and ETA at destination calculated by the Flight Management Computer (FMC) be correct? | When the FMC positions and GS are accurate | When the ETOs and ETA are based on the forecast winds calculated from the actual take-off time | When the actual winds match the forecast winds, and the actual cruising Mach number is equal to the FMC calculated Mach number | When the FMC computes each ETO and ETA using the correct GS | | 0 | 0 | 1 | 0 |
| 4827 | 62 | Which of the following coordinate systems is used by the GPS receiver to determine position (Latitude, longitude and altitude)? | EUREF 92 | WGS 84 | ED 87 | ED 50 | | 0 | 1 | 0 | 0 |

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| 4828 | 62 | The orbital planes of the satellite navigation system NAVSTAR/GPS are: | inclined 55° to the equatorial plane | inclined 55° to the earth axis | inclined 90° to the equatorial plane | parallel to the equatorial plane | | 1 | 0 | 0 | 0 |
| 4829 | 62 | GPS satellites transmit on two L-band frequencies with different types of signals.<br><br>Which of these are generally available for use by civil aviation? | L1-precise (P) | L2-for communications purpose | L1-coarse acquisition (C/A) with selected availability (S/A) | L2-coarse acquisition (C/A) | | 0 | 0 | 1 | 0 |
| 4830 | 62 | Under JAR-25 colour code rules, features displayed in green on an Electronic Flight Instrument System (EFIS), indicate: | cautions, abnormal sources | the earth | the ILS deviation pointer | engaged modes | | 0 | 0 | 0 | 1 |
| 4831 | 62 | Under JAR-25 colour code rules features displayed in cyan/blue, on an Electronic Flight Instrument Systems (EFIS), indicate: | the sky | engaged modes | the flight director bar(s) | flight envelope and system limits | | 1 | 0 | 0 | 0 |
| 4832 | 62 | Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), current data and values are coloured: | white | cyan | red | magenta | | 1 | 0 | 0 | 0 |
| 4833 | 62 | Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), armed modes are coloured: | green | magenta | amber/yellow | white | | 0 | 0 | 0 | 1 |
| 4834 | 62 | Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), a selected heading is coloured: | white | yellow | magenta | green | | 0 | 0 | 1 | 0 |
| 4835 | 62 | Loran C coverage is: | unrestricted between latitudes 70°N and 70°S | unrestricted over the oceans and adjacent coastlines but limited over the major continental land masses | confined to certain limited areas of the world | global | | 0 | 0 | 1 | 0 |
| 4836 | 62 | 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) | 666 km | 1333 km | 150 km | 333 km | | 0 | 0 | 0 | 1 |
| 4837 | 62 | The ground Secondary Surveillance Radar (SSR) equipment incorporates a transmitter and receiver respectively operating in the following frequencies:<br><br>Transmitter Receiver | 1090 MHz<br>1030 MHz | 1090 MHz<br>1090 MHz | 1030 MHz<br>1030 MHz | 1030 MHz<br>1090 MHz | | 0 | 0 | 0 | 1 |
| 4838 | 62 | When Mode C is selected on the aircraft SSR transponder the additional information transmitted is: | flight level based on 1013.25 hPa | altitude based on regional QNH | aircraft height based on sub-scale setting | height based on QFE | | 1 | 0 | 0 | 0 |
| 4839 | 62 | Under JAR-25 colour code rules, features displayed in red on an Electronic Flight Instrument System (EFIS), indicate: | warnings; cautions and abnormal sources | cautions and abnormal sources; engaged modes | warnings; flight envelope and system limits | flight envelope and system limits; engaged modes | | 0 | 0 | 1 | 0 |
| 4840 | 62 | In order to obtain an ADF bearing the: | sense aerial must be tuned separately | mode selector should be switched to 'loop' | BFO switch must be selected to 'ON' | signal must be received by both the sense and loop aerials | | 0 | 0 | 0 | 1 |
| 4841 | 62 | What type of satellite navigation system NAVSTAR/GPS receiver is most suitable for use on board an aircraft? | Sequential | Multiplex | Any hand held type | Multichannel | | 0 | 0 | 0 | 1 |

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| 4842 | 62 | 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: | calculated range is based on an idealised Keplerian orbit | calculated range includes receiver clock error | measured distance is based on the Pseudo Random Noise code | movement of satellite and receiver during the distance calculation is not taken into account | | 0 | 1 | 0 | 0 |
| 4843 | 62 | In relation to the satellite navigation system NAVSTAR/GPS, 'All in View' is a term used when a receiver: | is receiving the signals of all visible satellites but tracking only those of the 4 with the best geometric coverage | is receiving and tracking the signals of all 24 operational satellites simultaneous ly | requires the signals of all visible satellites for navigation purposes | is tracking more than the required 4 satellites and can instantly replace any lost signal with another already being monitored | | 0 | 0 | 0 | 1 |
| 4844 | 62 | The distance between a NAVSTAR/GPS satellite and receiver is: | calculated, using the WGS-84 reference system, from the known positions of the satellite and the receiver | determined by the phase shift of the Pseudo Random Noise code multiplied by the speed of light | determined by the time taken for the signal to arrive from the satellite multiplied by the speed of light | calculated from the Doppler shift of the known frequencies | | 0 | 0 | 1 | 0 |
| 4845 | 62 | Concerning the NAVSTAR/GPS satellite navigation system, what is the meaning of the term 'Receiver Autonomous Integrity Monitoring' (RAIM)? | It is a method whereby a receiver ensures the integrity of the Pseudo Random Noise (PRN) code transmitted by the satellites | It is a technique whereby the receivers of the world-wide distributed monitor stations (ground segment) automatically determines the integrity of the navigation message | It is a technique by which a receiver ensures the integrity of the navigation information | It is the ability of the GPS satellites to check the integrity of the data transmitted by the monitoring stations of the ground segment | | 0 | 0 | 1 | 0 |
| 4846 | 62 | 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 signals on two frequencies (L1 and L2)? | The effect of receiver noise can be reduced due to the interference of both frequencies | The effect of signal reflections (multipath effect) can be reduced due to the interference of both frequencies | The influence of shadowing on the GPS signals is proportional to the inverse of the carrier frequency squared | The path delay of the signals in the earth atmosphere is proportional to the inverse of the carrier frequency squared | | 0 | 0 | 0 | 1 |
| 4847 | 62 | Which one of the following errors can be compensated for by a NAVSTAR/GPS receiver comparing L1 and L2 frequencies? | Multipath | Tropospheric | Receiver noise | Ionospheric | | 0 | 0 | 0 | 1 |
| 4848 | 62 | The main factor which determines the minimum range that can be measured by a pulsed radar is pulse: | repetition rate | frequency | length | amplitude | | 0 | 0 | 1 | 0 |

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| 4849 | 62 | 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: | 405 pps | 782 pps | 308 pps | 375 pps | | 1 | 0 | 0 | 0 |
| 4850 | 62 | Which of the following lists all the parameters that can be determined by a GPS receiver tracking signals from 4 different satellites? | Latitude, longitude and time | Latitude, longitude and altitude | Latitude, longitude, altitude and time | Latitude and longitude | | 0 | 0 | 1 | 0 |
| 4851 | 62 | ICAO specifications are that range errors indicated by Distance Measuring Equipment (DME) should not exceed: | + or - 0.5 NM or 3% of the distance measured whichever is the greater | + or - 1.25 NM plus 0.25% of the distance measured | + or - 0.25 NM plus 3% of the distance measured up to a maximum of 5 NM | + or - 0.25 NM plus 1.25% of the distance measured | | 0 | 0 | 0 | 1 |
| 4852 | 62 | Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), the active route/flight plan is coloured: | cyan | magenta | green | yellow | | 0 | 1 | 0 | 0 |
| 4853 | 62 | The advantage of the use of slotted antennas in modern radar technology is to: | simultaneously transmit weather and mapping beams | have a wide beam and as a consequence better target detection | eliminate the need for azimuth slaving | virtually eliminate lateral lobes and as a consequence concentrate more energy in the main beam | | 0 | 0 | 0 | 1 |
| 4854 | 62 | MLS installations notified for operation, unless otherwise stated, provide azimuth coverage of: | + or - 40° about the nominal courseline out to a range of 20 NM | + or - 20° about the nominal courseline out to a range of 20 NM | + or - 40° about the nominal courseline out to a range of 30 NM | + or - 20° about the nominal courseline out to a range of 10 NM | | 1 | 0 | 0 | 0 |
| 4855 | 62 | 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. | (i) SHF (ii) 60 (iii) sometimes | (i) EHF (ii) 30 (iii) never | (i) SHF (ii) 10 (iii) always | (i) EHF (ii) 100 (iii) never | | 1 | 0 | 0 | 0 |
| 4856 | 62 | The maximum range obtainable from an ATC Long Range Surveillance Radar is approximately: | 200 NM | 100 NM | 400 NM | 300 NM | | 0 | 0 | 0 | 1 |
| 4857 | 62 | In Airborne Weather Radar (AWR), the main factors which determine whether a cloud will be detected are: | rotational speed of radar scanner; range from | size of the water drops; wavelength/frequency used | range from cloud; wavelength/frequency used | size of the water drops; diameter of radar scanner | | 0 | 1 | 0 | 0 |
| 4858 | 62 | In order to ascertain whether a cloud return on an Aircraft Weather Radar (AWR) is at or above the height of the aircaft, the tilt control should be set to: (Assume a beam width of 5°) | 2.5° up | 0° | 2.5° down | 5° up | | 1 | 0 | 0 | 0 |
| 4859 | 62 | Which of the following Secondary Surveillance Radar (SSR) codes is used to indicate transponder malfunction? | 7600 | 4096 | 9999 | 0000 | | 0 | 0 | 0 | 1 |

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| 4860 | 62 | In a Satellite-Assisted Navigation System (GNSS/GPS), a fix is obtained by: | the aircraft's receiver measuring the phase angle of signals received from a number of satellites in known positions | 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 | measuring the pulse lengths of signals received from a minimum number of satellites received in a specific sequential order | measuring the time taken for a minimum number of satellites' transmissions, in known positions, to reach the aircraft's receiver | | 0 | 0 | 0 | 1 |
| 4861 | 62 | Which of the following frequency-bands is used by the Loran C navigation system? | 90 - 110 kHz | 1750 - 1950 kHz | 10.2 - 13.6 kHz | 978 - 1213 MHz | | 1 | 0 | 0 | 0 |
| 4862 | 62 | Which of the following is the ICAO allocated frequency band for ADF receivers? | 200 - 2000 kHz | 200 - 1750 kHz | 255 - 455 kHz | 300 - 3000 kHz | | 0 | 1 | 0 | 0 |
| 4863 | 62 | Which of the following is an advantage of Ground/DF (VDF) let-down? | It does not require any special equipment, apart from a VHF radio, to be installed in the aircraft or on the ground | It only requires a VHF radio to be fitted to the aircraft | It is pilot interpreted and does not require the assistance of ATC | It does not require any special equipment to be fitted to the aircraft | | 0 | 1 | 0 | 0 |
| 4864 | 62 | (For this question use annex 062-9915A) | 20° Right | 20° Left | 12° Right | 8° Left | | 0 | 0 | 0 | 1 |
| 4865 | 62 | What is the approximate angular coverage of reliable navigation information for a 3° ILS glide path out to a distance of 10 NM? | 3° above and below the glide path and 10° each side of the localiser centreline | 1.35° above the horizontal to 5.25° above the horizontal and 8° each side of the localiser centreline | 0.45° above the horizontal to 1.75° above the glide path and 8° each side of the localiser centreline | 0.7° above and below the glide path and 2.5° each side of the localiser centreline | | 0 | 1 | 0 | 0 |
| 4866 | 62 | (For this question use annex 062-9917A) | 030°(M)/20KT | 255°(M)/20KT | 285°(M)/20KT | 105°(M)/20KT | | 0 | 0 | 0 | 1 |
| 4867 | 62 | Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), selected data and values are coloured: | green | white | magenta | yellow | | 1 | 0 | 0 | 0 |
| 4868 | 62 | (For this question use annex 062-9919A) | 280°(M) | 272°(M) | 300°(M) | 260°(M) | | 0 | 1 | 0 | 0 |
| 4869 | 62 | (For this question use annex 062-9920A) | VOR/DME | TACAN | VOR | Airport | | 1 | 0 | 0 | 0 |
| 4870 | 62 | (For this question use annex 062-9921A)<br>The 'O' followed by the letters 'KABC' indicate: | the destination airport | an off-route airport | a designated alternate airport | an off-route VOR/DME | | 0 | 1 | 0 | 0 |
| 4871 | 62 | (For this question use annex 062-9922A) | 272°(M) | 280°(M) | 300°(M) | 260°(M) | | 0 | 0 | 0 | 1 |
| 4872 | 62 | (For this question use annex 062-9923A)<br>The diagram indicates that the aircraft is to the: | right of the localizer and above the glidepath | left of the localizer and below the glidepath | left of the localizer and above the glidepath | right of the localizer and below the glidepath | | 0 | 0 | 0 | 1 |
| 4873 | 62 | (For this question use annex 062-9914A)<br>Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in FULL VOR/ILS mode with an ILS | Figure 2 | Figure 3 | Figure 5 | Figure 6 | | 0 | 0 | 0 | 1 |
| 4874 | 62 | What airborne equipment, if any, is required to be fitted in order that a VDF let-down may be flown? | VHF radio | VOR | none | VOR/DME | | 1 | 0 | 0 | 0 |
| 4875 | 62 | (For this question use annex 062-9916A) | 097°(T) | 170°(M) | 140°(M) | 280°(T) | | 1 | 0 | 0 | 0 |

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| 4876 | 62 | In which one of the following circumstances is ground direction finding (VDF) likely to be used to fix an aircraft's position? | When contacting ATC to join controlled airapace from the open FIR | When declaring an emergency on any frequency | When using the emergency VHF frequency 121.5 MHz | On first contact with ATC on crossing an international FIR boundary | | 0 | 0 | 1 | 0 |
| 4877 | 62 | In which frequency band does the Microwave Landing System (MLS) operate? | VHF | UHF | SHF | EHF | | 0 | 0 | 1 | 0 |
| 4878 | 62 | GPS system satellites transmit their signals on two carrier waves 1575 MHz and 1227 MHz and supply two possible codes accessible acording to user (civil or military).<br><br>Commercial aviation uses: | only the 1 575 MHz carrier wave and two codes | only the 1 227 MHz carrier wave and one code | the two carrier waves and one public code | only the 1 575 MHz carrier wave and one code | | 0 | 0 | 0 | 1 |
| 4879 | 62 | 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: | decrease in area and move to the top of the screen | increase in area and move to the top of the screen | increase in area and appear nearer to the bottom of the screen | decrease in area but not change in position on the screen | | 0 | 1 | 0 | 0 |
| 4880 | 62 | A secondary radar can provide up to 4096 different codes.<br><br>These 4096 codes can be used in: | mode S | all modes | mode A only | mode C only | | 0 | 1 | 0 | 0 |
| 4881 | 62 | In weather radar the use of a cosecant beam in 'Mapping' mode enables: | higher definition echoes to be produced giving a clearer picture | scanning of a large ground zone producing echos whose signal s are practically independent of distance | better reception of echos on contrasting terrain such as ground to sea | a greater radar range to be achieved | | 0 | 1 | 0 | 0 |
| 4882 | 62 | The code transmitted by a SSR transponder consists of: | phase differences | frequency differences | amplitude differences | pulses | | 0 | 0 | 0 | 1 |
| 4883 | 62 | The VOR system is limited to about 1° of accuracy. One degree at 200 NM represents a width of: | 3.0 NM | 3.5 NM | 2.0 NM | 2.5 NM | | 0 | 1 | 0 | 0 |
| 4884 | 62 | An aircraft is "homing" to a radio beacon whilst maintaining a relative bearing of zero.<br><br>If the magnetic heading decreases, the aircraft is | left drift | zero drift | a wind from the west | right drift | | 0 | 0 | 0 | 1 |
| 4885 | 62 | Given :<br><br>Compass heading 270°<br><br>Deviation 2°W<br><br>Variation 30°E | 226° | 046° | 224° | 044° | | 0 | 0 | 0 | 1 |
| 4886 | 62 | 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: | FULL VOR/ILS, EXP VOR/ILS and PLAN | FULL NAV, FULL VOR/ILS and PLAN | EXP VOR/ ILS, PLAN and MAP | FULL NAV, PLAN and MAP | | 0 | 1 | 0 | 0 |
| 4887 | 62 | (For this question use annex 062-9906A)<br><br>Which of the figures depicts an Electronic Flight Instrument | Figure 3 | Figure 4 | Figure 1 | Figure 2 | | 0 | 0 | 0 | 1 |
| 4888 | 62 | During a flight at FL 210, a pilot does not receive any DME distance indication from a DME station located approximately 220 NM away.<br><br>The reason for this is that the: | altitude is too high | range of a DME system is always less than 200 NM | aeroplane is below the 'line of sight' altitude | aeroplane is circling around the station | | 0 | 0 | 1 | 0 |
| 4889 | 62 | A DME is located at MSL.<br><br>An aircraft passing vertically above the station at flight level FL 360 will obtain a DME range of approximately: | 8 NM | 6 NM | 7 NM | 11 NM | | 0 | 1 | 0 | 0 |
| 4890 | 62 | The DME (Distance Measuring Equipment) operates within the following frequencies: | 329 to 335 MHz | 962 to 1213 kHz. | 962 to 1213 MHz | 108 to 118 MHz | | 0 | 0 | 1 | 0 |

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| 4891 | 62 | An aircraft DME receiver does not lock on to its own transmissions reflected from the ground because: | the pulse recurrence rates are varied | DME uses the UHF band | they are not on the receiver frequency | DME transmits twin pulses | | 0 | 0 | 1 | 0 |
| 4892 | 62 | Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), increasing intensity of precipititation are coloured in the order: | green, amber/yellow, red, magenta | green, red, magenta, black | black, amber/yellow, magenta, red | amber/yellow, magenta, black | | 1 | 0 | 0 | 0 |
| 4893 | 62 | Under JAR-25 colour code rules for Electronic Flight Instrument Systems (EFIS), turbulence is coloured: | black | cyan | white or magenta | red | | 0 | 0 | 1 | 0 |
| 4894 | 62 | (For this question use annex 062-9918A) | 280°(M) | 299°(M) | 272°(M) | 260°(M) | | 0 | 1 | 0 | 0 |
| 4895 | 62 | (For this question use annex 062-9905A)<br><br>Which of the figures depicts an Electronic Flight Instrument | Figure 4 | Figure 1 | Figure 2 | Figure 3 | | 0 | 0 | 0 | 1 |
| 4896 | 62 | (For this question use annex 062-9913A)<br><br>Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in Expanded (EXP) VOR/ILS mode with an ILS frequency selected? | Figure 2 | Figure 3 | Figure 5 | Figure 6 | | 0 | 0 | 1 | 0 |
| 4897 | 62 | (For this question use annex 062-9907A)<br><br>Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in Expanded (EXP) VOR/ILS mode with an ILS frequency selected? | Figure 4 | Figure 1 | Figure 2 | Figure 3 | | 0 | 1 | 0 | 0 |
| 4898 | 62 | (For this question use annex 062-9910A)<br><br>Which of the figures depicts an Electronic Flight Instrument | Figure 2 | Figure 3 | Figure 4 | Figure 6 | | 1 | 0 | 0 | 0 |
| 4899 | 62 | (For this question use annex 062-9912A)<br><br>Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in Expanded (EXP) VOR/ILS mode with an VOR frequency selected? | Figure 4 | Figure 5 | Figure 6 | Figure 1 | | 1 | 0 | 0 | 0 |
| 4900 | 62 | (For this question use annex 062-9911A)<br><br>Which of the figures depicts an Electronic Flight Instrument | Figure 2 | Figure 3 | Figure 4 | Figure 5 | | 0 | 1 | 0 | 0 |
| 4901 | 62 | (For this question use annex 062-9909A)<br><br>Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in FULL VOR/ILS mode with an | Figure 4 | Figure 5 | Figure 6 | Figure 1 | | 0 | 0 | 0 | 1 |
| 4902 | 62 | (For this question use annex 062-9908A)<br><br>Which of the figures depicts an Electronic Flight Instrument System (EFIS) display in Expanded (EXP) VOR/ILS mode with a VOR frequency selected? | Figure 1 | Figure 2 | Figure 3 | Figure 4 | | 0 | 0 | 0 | 1 |