NAVIGATION (2)
RADIO NAVIGATION

1 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

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

A 8 m
B 80 m
C 800 m
D 8000 m

3 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 'FROM' showing
C right with 'TO' showing
D left with 'TO' showing

4 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

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

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

6 Distance Measuring Equipment (DME) operates in the:

A UHF band and uses two frequencies
B VHF band and uses the principle of phase comparison
C UHF band and uses one frequency
D SHF band and uses frequency modulation techniques

7 The aircraft DME receiver is able to accept replies to its own transmissions and reject replies to other aircraft interrogations because:

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

8 The rate of descent required to maintain a 3.25° glide slope at a groundspeed of 140 kt is approximately:

A 760 FT/MIN
B 850 FT/MIN
C 670 FT/MIN
D 700 FT/MIN

9 Which of the following is an ILS localiser frequency?

A 108.25 MHz
B 109.15 MHz
C 112.10 MHz
D 110.20 MHz

10 A Primary radar operates on the principle of:

A transponder interrogation
B pulse technique
C continuous wave transmission
D phase comparison

11 In which frequency band do most airborne weather radars operate?

A SHF
B UHF
C EHF
D VHF

12 The maximum range obtainable from an ATC Long Range Surveillance Radar is approximately:

A 200-300 NM
B 100-200 NM
C 50-100 NM
D 300-400 NM

13 The ISO-ECHO facility of an airborne weather radar is provided in order to:

A inhibit unwanted ground returns
B extend the mapping range
C detect areas of possible severe turbulence in cloud
D give an indication of cloud tops

14 In Airborne Weather Radar (AWR), the main factors which determine whether a cloud will be detected are:

A range from cloud;
wavelength/frequency used

B size of the water drops;
wavelength/frequency used

C rotational speed of radar scanner;
range from cloud

D size of the water drops;
diameter of radar scanner

15 The ATC transponder system, excluding Mode S, contains:

A two modes, each of 4096 codes
B four modes, each 1024 codes
C four modes, each 4096 codes
D two modes, each 1024 codes

16 Under JAR-25 colour code rules specified display features colour set 1 for Electronic Flight Instrument Systems (EFIS), selected data and values are coloured:

A yellow
B magenta
C white
D green

17 Under which of the following circumstances does a VOR/DME Area Navigation system switch to Dead Reckoning mode?

A The system is receiving information from one VOR and one DME
B The system is receiving information from only one VOR
C The system is not receiving TAS information from the Air Data Computer.
D The system is receiving information from one VOR and two DMEs

18 Radar returns, on a B737-400, can be displayed on all Electronic Horizontal Situation Indicator (EHSI) screen modes of an Electronic Flight Instrument System (EFIS) WITH THE EXCEPTION OF:

A EXP VOR/ ILS, PLAN and MAP
B FULL NAV, FULL VOR/ILS and PLAN
C FULL VOR/ILS, EXP VOR/ILS and PLAN
D FULL NAV, PLAN and MAP

19 The Flight Management System (FMS) is organised in such a way that the pilot can:

A read and write at any time in the database
B modify the database every 14 days
C modify the data in the database between two updates
D insert navigation data between two database updates

20 Which of the following gives the best information about the progress of a flight between 2 en-route waypoints from a RNAV equipment?

A ETO
B ETD
C ATA
D Elapsed time on route.

21 In the Flight Management Computer (FMC) of the Flight Management System (FMS), data relating to cruising speeds is stored in the:

A navigation database
B auto flight computers
C performance database
D air data computer

22 (For this question use annex A)
What is the value of the track from TBX to YTB?

A 140°(M)
B 280°(T)
C 097°(T)
D 170°(M)

23 In relation to Area Navigation Systems (RNAV), which of the following is an Air Data input?

A Doppler drift
B VOR/DME radial/distance
C Inertial Navigation System (INS) position
D True airspeed

24 Which one of the following lists information given by a basic VOR/DME-based Area Navigation System?

A Wind velocity
B True airspeed; drift angle
C Crosstrack distance; alongtrack distance; angular course deviation
D Aircraft position in latitude and longitude

25 Which of the following correctly gives the principle of operation of the Loran C navigation system?

A Phase comparison between synchronised transmissions
B Differential range by phase comparison
C Frequency shift between synchronised transmissions
D Differential range by pulse technique

26 What is the inclination to the equatorial plane of the satellite's orbit in the NAVSTAR GPS constellation?

A 55°
B 45°
C 35°
D 65°

27 What is the minimum number of NAVSTAR/GPS satellites required to produce an accurate independent 3-D position fix?

A 3
B 24
C 5
D 4

28 The influence of the ionosphere on the accuracy of the satellite navigation system NAVSTAR/GPS is:

A minimised by computing the average of all signals
B minimised by the receiver using a model of the atmosphere and comparing signals transmitted by the satellites
C negligible
D only significant if the satellites are located at a small elevation angle above the horizon

29 Which of the following statements about the accuracy that can be obtained with the differential technique (D-GPS) of the satellite navigation system NAVSTAR/GPS is correct?

A The nearer a receiver is situated to a D-GPS ground station, the more accurate the position fix
B The increase in accuracy of position fixes is independent of the receiver position in relation to a D-GPS ground station
C A D-GPS receiver can detect and correct for SA providing a more accurate position fix
D Only D-GPS allows position fixes accurate enough for 'Non Precision Approaches'

Annex A

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