

ATPL NAVIGATION

1. A flight is made from VOR A (51° N, 01° W), local variation 8° W to VOR B (51° N, 06° W), local variations 9° W. same radial is maintained throughout the flight. If drift is 7 starboard and aircraft flying great circle path, what is the heading (M) on departure?

- a) 273 (M)
- b) 276 (M)
- c) 271 (M)

Ans: c

2. Two aircraft start from the same position at the equator. Aircraft A flies on track of 000° (T) for distance of 5400 nm whilst Aircraft 'B' flies on a track of 090° (T) a distance of 2500 nm. On reaching their destinations, the bearing of A from B will be –

- a) 000° (T)
- b) 180° (T)
- c) 045° (T)

Ans: a

3. On a Mercator chart, radio bearing are plotted –

- a) After correcting G/C radio brg into R/L brg by applying CA
- b) Directly as G/C bearing
- c) As rhumb line bearing after applying convergence angle

Ans: a

4. A ground feature appears 30° to the left of the centre line of the CRT of an airborne weather radar. If the heading of the aircraft is 355° (M) and the magnetic variation is 15° East, the true bearing of the aircraft from the feature is?

- a) 310°
- b) 130°
- c) 160°

Ans: c

5. An aircraft is over position HO (55° 33' N, 060° 15' W), where YYR VOR (53° 30' N, 060° 15' W) can be received. The magnetic variation is 31° W at HO and 28° W at YYR. What is the radial from YYR?

- a) 031°
- b) 332°
- c) 028°

Ans: c

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6. An aircraft flies the following rhumb line tracks and distance from position $04^{\circ}00'N$, $030^{\circ}00'W$: 700 nm South, then 700 nm East, then 700 nm North, then 700 nm West. The final position of the aircraft is?

- a) $04^{\circ}00'N$, $030^{\circ}03'W$
- b) $03^{\circ}58'N$, $030^{\circ}02'W$
- c) $04^{\circ}00'N$, $029^{\circ}55'W$

Ans: c

7. The most important property of projection required for Navigation is that:

- a) Rhumb line and great circle should be represented as straight lines and scale variation does not matter
- b) Scale should be corrected to measure long distance accurately
- c) Bearing measurement should be correct

Ans: c

8. Given: TAS = 197kt, True course = 240° , W/V = 180/30kt. Descent is initiated at FL 220 and completed at FL 40. Distance to be covered during descent is 39 NM. What is the approximate rate of descent?

- a) 800 FT/MIN
- b) 1500 FT/MIN
- c) 1400 FT/MIN

Ans: c

9. Given: Distance 'Q' to 'R' 1970 NM, Groundspeed 'out' 495 kt, groundspeed 'back' 465 kt, safe endurance 9 HR. the distance from 'Q' to the point of safe return (PSR) between 'Q' and 'R' is?

- a) 2267 NM
- b) 2242 NM
- c) 2157 NM

Ans: c

10. The effect on the position of the CP of reducing the TAS in a head wind component, will be to:

- a) Leave the distance unchanged
- b) Decrease the distance
- c) Increase the distance

Ans: c

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11. The nautical twilight begin and the evening civil twilight ends when the centre of the sun is:

- a) 18 deg below the visible horizon
- b) 6 deg below the sensible horizon
- c) 12 deg below the horizon (visible)

Ans: c

12. An FMS is fed from a GNSS and a standard VOR/DME output. If the GNSS fails:

- a) The FMS still may be used to provide B-R NAV guidance
- b) The FMS must be switched off in order to prevent spurious signals being fed to the AFCS
- c) The FMS must not be used for navigational functions

Ans: a

13. When the local mean time in position (54 deg 40'S, 00 deg 00'E) is 15:25 hrs on 28th November, 1995, what is the GMT and date in position (15 deg 00'S, 180 deg 00'E):

- a) 15 hrs 25 min. 00 sec 28th November, 1995
- b) 03 hrs 25 min. 00 sec 27th November, 1995
- c) 15 hrs 25 min. 00 sec 29th November, 1995

Ans: c

14. If track of an aircraft is 305, Hdg (T) 300, variation 6^oW and deviation 3^oE, what are drift, magnetic Hdg and compass course?

- a) 5^o S 306 (M), 303 (c)
- b) 5^o P 295 (M), 297 (c)
- c) 5^o S 294 (M), 297 (c)

Ans: a

15. In which of the following projections will a plane surface touch the reduced earth at one of the poles?

- a) Lambert's
- b) Direct Mercator
- c) Stereographic

Ans: c

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16. Which of the following statement is correct concerning the effect of turning errors on a direct reading compass?

- a) Turning errors are greatest on east/west headings and are greatest at high latitudes
- b) Turning errors are greatest on north/south headings and are greatest at high latitudes
- c) Turning errors are greatest on east/west headings and are least at high latitudes

Ans: b

17. An aeroplane is flying at TAS 180 kt on a track of 090° . The W/V is $045^{\circ} / 50$ kt. How far can the aeroplane fly out from its base and return in one hour?

- a) 85 nm
- b) 90 nm
- c) 75 nm

Ans: a

18. Maximum authorized take off wt	34,500 kg
Weight less fuel and payload	17,500 kg
Maximum authorized zero fuel weight	28,000 kg
Maximum authorized landing weight	31,000 kg
Means TAS	350 kt
Maximum fuel capacity	10,500 kg
Means fuel flow	1450 kg/hr
Reserve fuel required (assume unused fuel)	1200 kg

Assuming still air conditions for the above data.

The maximum payload which this aircraft can carry is:

- a) 15,800 kg
- b) 12,300 kg
- c) 10,500 kg

Ans: c

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19. An aircraft has to fly from A to D and C, details are as follows:

Leg	Distance	W/C
A to B	345 nm	+35
B to C	320 nm	+15
C to D	440 nm	- 30
TAS 4 engines	350 kt	
TAS 3 engines	300 kt	

Fuel flow 4 engines	5,200 kg/hr
Fuel flow 3 engines	4,300 kg/hr
fuel on board at take off	30,000 kg
fuel required in the event of return to 'A'	4,000 kg

The time taken to reach PNR in above question is"

- a) 172 minutes
- b) 160 minutes
- c) 147 minutes

Ans: c

20. An aircraft has to fly from A to D and C, details are as follows:

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B to C	320 nm	+15
C to D	440 nm	- 30
TAS 4 engines	350 kt	
TAS 3 engines	300 kt	

Fuel flow 4 engines	5,200 kg/hr
Fuel flow 3 engines	4,300 kg/hr
fuel on board at take off	30,000 kg
fuel required in the event of return to 'A'	4,000 kg

Find out the distance from 'A' to the critical point between A to D, assuming that an engine fails at the critical point:

- a) 390 nm
- b) 561 nm
- c) 546 nm

Ans: c