PRERNA AVIATION

DGCA CPL Practice Paper 01

Air Navigation — Set A

ANSWER KEY & EXPLAINED SOLUTIONS

Original educational practice set. Not an official DGCA paper or a full-length examination simulation.

01 B	02 B	03 C	04 A	05 A
06 C	07 C	08 D	09 A	10 A
11 D	12 B	13 D	14 B	15 C
16 B	17 D	18 D	19 C	20 B
21 A	22 C	23 A	24 D	25 B

01. An aircraft covers 156 NM in 1 hour 12 minutes. What is its average ground speed?

Answer: B. 130 kt

Time = 72/60 = 1.2 h. Ground speed = distance/time = 156/1.2 = 130 kt. Convert minutes to hours before dividing.

Topic: Speed and time | Study reference: NAV

02. At a constant ground speed of 144 kt, how far is an aircraft expected to travel in 25 minutes?

Answer: B. 60 NM

Distance = 144 x 25/60 = 60 NM. Knots are nautical miles per hour, not per minute.

Topic: Distance | Study reference: NAV

03. A leg is 210 NM long. Ground speed is 140 kt. What is the flight time?

Answer: C. 1 h 30 min

Time = 210/140 = 1.5 h = 1 h 30 min. The decimal 0.5 hour equals 30 minutes.

Topic: Time | Study reference: NAV

04. True airspeed is 125 kt with a direct headwind of 20 kt. Ignoring other effects, what is ground speed?

Answer: A. 105 kt

For wind directly along the track, a headwind subtracts from TAS: 125 - 20 = 105 kt. This is not the general crosswind formula.

Topic: Wind component | Study reference: NAV

05. An aircraft needs a ground speed of 150 kt and has a direct tailwind of 18 kt. Required TAS is:

Answer: A. 132 kt

Ground speed = TAS + direct tailwind. Rearranging gives TAS = 150 - 18 = 132 kt.

Topic: Wind component | Study reference: NAV

06. Using the 1-in-60 approximation, an aircraft is 3 NM right of track after 45 NM along track. What is the approximate track error?

Answer: C. 4 degrees right

Track error is approximately 60 x cross-track distance/distance flown = 60 x 3/45 = 4 degrees. The aircraft is right of the intended line.

Topic: Track error | Study reference: NAV

07. An aircraft is 4 NM right of track with 40 NM remaining along the planned line. Using 1-in-60, what closing angle is needed toward the destination, excluding any existing track error correction?

Answer: C. 6 degrees left

Closing angle = 60 x 4/40 = 6 degrees toward the line, hence left. A full heading correction must also account for existing track error.

Topic: Closing angle | Study reference: NAV

08. A true heading of 095 degrees is required. Variation is 7 degrees east and compass deviation is 2 degrees west. What compass heading should be used?

Answer: D. 090 degrees

True to magnetic: subtract east variation, giving 088 degrees. Magnetic to compass: add west deviation, giving 090 degrees.

Topic: Heading conversion | Study reference: NAV

09. Compass heading is 250 degrees, deviation 3 degrees east and variation 6 degrees west. What is true heading?

Answer: A. 247 degrees

Compass to magnetic: add east deviation, 250 + 3 = 253 degrees. Magnetic to true: subtract west variation, 253 - 6 = 247 degrees.

Topic: Heading conversion | Study reference: NAV

10. What is the reciprocal of a bearing of 028 degrees?

Answer: A. 208 degrees

Add 180 degrees because the original bearing is below 180: 028 + 180 = 208 degrees.

Topic: Reciprocal bearing | Study reference: NAV

11. A position is 1 degree 24 minutes north of another position on the same meridian. What is their approximate separation?

Answer: D. 84 NM

One minute of latitude is approximately one nautical mile. 1 degree 24 minutes = 60 + 24 = 84 minutes, so the distance is about 84 NM.

Topic: Latitude distance | Study reference: NAV

12. At latitude 60 degrees N, two positions differ by 4 degrees of longitude. Using distance along the parallel = difference in longitude x 60 x cos(latitude), find the distance.

Answer: B. 120 NM

Distance = 4 x 60 x cos 60 degrees = 240 x 0.5 = 120 NM. This is distance along the parallel, not an unrestricted great-circle calculation.

Topic: Longitude distance | Study reference: NAV

13. Local mean time at 045 degrees E is 1500. What is UTC?

Answer: D. 1200

Earth rotates 15 degrees per hour. 45 degrees east is 3 hours ahead of UTC, so UTC = 1500 - 0300 = 1200.

Topic: Time conversion | Study reference: NAV

14. At 1800 UTC, what is local mean time at 075 degrees W?

Answer: B. 1300

75 degrees corresponds to 5 hours. West longitude has local mean time behind UTC: 1800 - 0500 = 1300.

Topic: Time conversion | Study reference: NAV

15. A flight leaves at 2245 UTC and lasts 2 hours 35 minutes. What is its arrival time in UTC?

Answer: C. 0120 next day

2245 + 0200 = 0045 next day; add 35 minutes to obtain 0120. Times should be expressed within the 24-hour clock.

Topic: Elapsed time | Study reference: NAV

16. A fuel flow of 32 litres per hour is maintained for 1 hour 45 minutes. How much fuel is used?

Answer: B. 56 litres

1 h 45 min = 1.75 h. Fuel = 32 x 1.75 = 56 litres. The calculation excludes taxi and any separately specified allowances.

Topic: Fuel calculation | Study reference: NAV

17. Usable fuel is 150 litres. A specified planning reserve of 30 litres must remain untouched. At 40 litres per hour, what time is available before entering that reserve?

Answer: D. 3 hours

Fuel available above reserve = 150 - 30 = 120 litres. Time = 120/40 = 3 h. This is a stated exercise reserve, not a regulatory minimum.

Topic: Endurance | Study reference: NAV

18. For an exercise, trip fuel is 84 litres, taxi fuel 6 litres and a specified reserve 28 litres. What is the total planned fuel?

Answer: D. 118 litres

Add the separate components once: 84 + 6 + 28 = 118 litres. No additional contingency has been specified in this exercise.

Topic: Fuel planning | Study reference: NAV

19. On a 1:500,000 chart, a distance measures 7.4 cm. Using 1 NM = 1.852 km, what is the approximate distance?

Answer: C. 20 NM

7.4 cm x 500,000 = 3,700,000 cm = 37 km. Divide by 1.852 to obtain approximately 20 NM.

Topic: Chart scale | Study reference: NAV

20. Which line crosses all meridians at a constant angle?

Answer: B. Rhumb line

A rhumb line maintains a constant true direction. A general great-circle track changes direction as it crosses successive meridians.

Topic: Chart geometry | Study reference: NAV

21. Ignoring terrain and airspace restrictions, the shortest surface route between two non-antipodal points on a sphere follows:

Answer: A. The shorter great-circle arc

A great circle lies in a plane through the sphere's centre. Its shorter arc gives the minimum surface distance between the two points.

Topic: Great circle | Study reference: NAV

22. The usual practical advantage of a Mercator chart for plotting a constant true course is that:

Answer: C. Rhumb lines are straight

Mercator projection makes rhumb lines straight. Scale increases toward the poles, so distances cannot be measured with one unchanged scale everywhere.

Topic: Mercator projection | Study reference: NAV

23. True track is 090 degrees and a wind blows from the north. To maintain that track, the aircraft must generally point:

Answer: A. North of east

A northerly wind pushes the aircraft south. Pointing partly into the wind, north of east, counters that sideways displacement.

Topic: Wind correction | Study reference: NAV

24. A planned leg is 90 NM. After 20 minutes, 40 NM has been covered. If this ground speed continues, how much time remains?

Answer: D. 25 minutes

Ground speed = 40/(20/60) = 120 kt. Remaining distance = 50 NM. Remaining time = 50/120 x 60 = 25 min.

Topic: Revised estimate | Study reference: NAV

25. Two aircraft depart the same point on opposite straight tracks at 110 kt and 130 kt ground speed. How far apart are they after 15 minutes?

Answer: B. 60 NM

Their separation rate is 110 + 130 = 240 kt. In 15/60 = 0.25 h, separation is 240 x 0.25 = 60 NM.

Topic: Relative motion | Study reference: NAV

Study references & review notes

Use these sources to revise the concepts behind your answers. Questions and explanations are newly written; they are not reproduced from an official question bank.

NAV — FAA Pilot’s Handbook of Aeronautical Knowledge, Chapter 16: Navigation

https://www.faa.gov/sites/faa.gov/files/18_phak_ch16.pdf

Scope: foundation-to-intermediate CPL ground-subject practice. This set does not claim complete coverage of the latest DGCA syllabus. Consult the current DGCA CAR Section 7, Series B and Pariksha notices for the applicable syllabus and examination requirements. Aircraft-type-specific Technical Specific and a complete RTR(A) course are not included.

FAA references support general theory only, not Indian regulatory requirements. CAP 413 is used for standard phrase meanings, not UK-specific operating rules. Weather reports, fuel reserves and flight scenarios in questions are illustrative. For operational use, consult current approved publications and aircraft manuals.

Source review: 29 October 2026. Edition prepared: 30 October 2026.