



SUBJECT : CASA CPL NAVIGATION

EXAM TYPE : Practice Paper No 4

PASS MARK : 80% FTA (70% CASA)

TIME ALLOWED : 1 Hour 45 Minutes

Instructions to Candidates:

1. This practice exam has been constructed to reflect the scope and complexity of questions candidates can expect in the CASA CPL Navigation examination.
2. All required material to answer the questions is provided with the paper.
3. Some questions refer to WAC charts and where applicable extracts of these charts have been provided. It is recommended that the candidate obtain paper copies of these charts in order to resolve the questions graphically, if so required.
4. PERMITTED MATERIAL
 - A. Material Supplied with Examination:
 - Answer Sheet
 - WAC Extract 1: Melbourne
 - WAC Extract 2: Townsville
 - B. Material Supplied by Candidate:
 - Jeppesen Manual Complete
 - Navigation Equipment
 - Basic Electronic Calculator
5. ITEMS PROHIBITED
 - Programmable and/or Scientific Calculators
 - Electronic Aviation Calculators (Electronic Whizz-Wheels)
 - Any other Reference Material

- 1 You are planning a VFR flight on the 17th February from MILDURA (34°14'S 142°05'E) to MELBOURNE/Moorabbin (37°59'S 145°06'E). Moorabbin requires an alternate and for this you nominate MANGALORE (36°53'S 145°11'E). Mangalore requires 30 mins holding.

Flight times are as follows:

| | |
|------------------------|----------------|
| Mildura to Moorabbin | 1 hour 55 mins |
| Moorabbin to Mangalore | 35 mins |

Calculate the latest UTC time of departure from Mildura in accordance with Visual Flight Rules.

- a) 171611.
 - b) 170630.
 - c) 171621.
 - d) 170700.
- (2 Marks)

- 2 The Jeppesen chart AS (H/L) 6 is based on the Lambert Conformal Conic projection with standard parallels at 21°20'S and 40°10'S. The scale of the chart is shown as 1 inch = 50 nm. Which of the following would be true at 30°S?

- a) 50 nm is represented by more than 1 inch.
 - b) 1 inch represents less than 50 nm.
 - c) 150 nm is represented by 3 inches.
 - d) 1 inch represents more than 50 nm.
- (1 Mark)

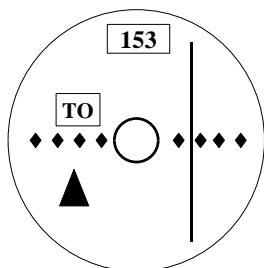
- 3 The Transverse Mercator is particularly suitable for mapping:

- a) countries close to the equator.
 - b) regions with large East-West extent, such as Indonesia and Alaska.
 - c) the polar regions for meteorological purposes.
 - d) areas of the earth which have large North-South extent, but little East-West extent.
- (1 Mark)

- 4 You are approaching MUDGEE cruising at A080. You are instructed to arrive overhead at 1,000 feet AGL. Your descent will be at 700 feet per minute with a ground speed of 110 knots. At what distance from Mudgee should you commence descent?

- a) 11 nm.
 - b) 14 nm.
 - c) 18 nm.
 - d) 21 nm.
- (2 Marks)

- 5 The OBS/L-R display below is showing VOR information:



On which radial is the aircraft located?

- a) R148.
- b) R158.
- c) R328.
- d) R338.

(2 Marks)

- 6 You are on a flight from ST GEORGE (YSGE) (28° 03'S 148° 36'E) to WALGETT (YWLG) (30° 02'S 148° 07'E). You departed SGE at 0308UTC. At 0324UTC you crossed the railway line (approximately 35nm SE YSGE) and fixed your position between Bonathorne railway station and Noondoo township. Using track error lines you estimate that the track error from YSGE to the 0324UTC position is 8° right. You now alter HDG 16° left to intercept the planned TRK.

On intercepting the planned track according to your calculation, how should you then maintain track to WLG?

- a) alter HDG 8° right.
- b) alter HDG 8° left.
- c) alter HDG 16° left.
- d) alter HDG 16° right.

(3 Marks)

- 7 On a large scale map:

- a) a larger area of the earth can be shown.
- b) small ground features cannot be displayed.
- c) a given area of the earth will appear large.
- d) whole countries can be shown on a single sheet.

(1 Mark)

- 8 Which one of the following is a property of all orthomorphic charts?

- a) Meridians and parallels of latitude cross each other at 90°.
- b) Great circles will appear exactly as straight lines.
- c) Scale is constant.
- d) Rhumb lines will appear exactly as straight lines.

(1 Mark)

9 Refer (MELBOURNE) WAC 3470:

At 0035Z you depart WANGARATTA (36° 25'S 146° 18'E) to track direct to KHANCOBAN AD (36° 10'S 148° 07'E). At 0045Z you fix your position over Stanley and alter heading to 070°M, maintaining this HDG until 0110Z when you obtain a fix over Cudgewa. The HDG (°M) required to track direct to Khancoban from this position is closest to:

- a) 076° M.
- b) 087° M.
- c) 053° M.
- d) 081° M.

(3 Marks)

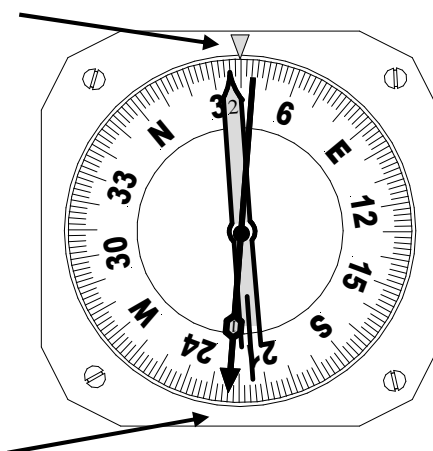
10 What information can DME display?

- a) Slant range and time-to-station.
- b) Plan range and ground-speed.
- c) Bearing and time-to-station.
- d) Range and bearing.

(1 Mark)

11 The following RMI display was obtained by an aircraft en-route between VOR D and NDB E. The direct track between VOR D and NDB E measures 042°M. The aircraft has maintained a constant heading of 040°M since passing over VOR D. Variation is 8°E.

NDB E 036°M



VOR D 224°M

What is the heading required to track direct to NDB E, from the present position of the aircraft?

- a) 032°.
- b) 036°.
- c) 048°.
- d) 034°.

(2 Marks)

12 Given the following:

| EAST SALE | | |
|-----------|-----|-------------|
| TACAN | ESL | 82x / 113.5 |
| NDB | ESL | 350 |
| DME | IES | 32x / 109.5 |
| ILS / LLZ | IES | 109.5 |

Which one of the following statements is correct?

- a) Selection of 113.5 MHz will allow range to be measured by DME and bearing from the associated VOR.
- b) The TACAN transmits on 113.5 MHz which corresponds to channel 82X.
- c) Selection of the ILS which transmits on 109.5 MHz will automatically select the paired DME facility.
- d) Range can be obtained from either the TACAN or the DME when 113.5 MHz is selected.

(1 Mark)

13 What is the rated coverage of VOR for an aircraft flying at 8,000 feet?

- a) 110 nm.
- b) 100 nm.
- c) 90 nm.
- d) 60 nm.

(2 Marks)

14 A VFR charter flight is planned from GOODOOGA (29° 04'S 147° 22'E) to DUBBO (32° 13'S 148° 33'E) on July 10th 2015. Total flight time is 3hr 20 mins. The latest ETD YGDA in UTC is:

- a) 1507100411.
- b) 1507100421.
- c) 1507100621.
- d) 1507100631.

(2 Marks)

15 Given:

| | |
|--------------------------|-------|
| Your planned TRK | 140°M |
| Your planned HDG | 135°M |
| Your departure aerodrome | NDB |
| Current HDG | 135°M |

Which fixed card ADF indication would confirm that you are on TRK?

- a) 180°.
- b) 135°.
- c) 175°.
- d) 185°.

(2 Marks)

16 You depart DUBBO at 0055 UTC:

Tracking DUBBO to BATHURST

Direct Track 131°M

At 0106 UTC overhead WELLINGTON township

Alter HDG RIGHT to 140°M

At 0123 UTC crossing over WARRA CREEK station (17NM NW BATHURST)

Constant TAS of 150 kts has been maintained since 0106 UTC

HDG 140°M has been maintained since 0106 UTC

The wind experienced between 0106 and 0118 UTC is closest to:

- a) 350° / 20 kts.
- b) 270° / 15 kts.
- c) 340° / 15 kts.
- d) 280° / 20 kts. (3 Marks)

17 Which of the following is a property of a Lambert Conformal Conic Projection?

- a) All parallels of latitude are rhumb lines.
- b) All rhumb lines are straight lines.
- c) All parallels of latitude are concave to the equator.
- d) All great circles are concave to the nearer pole. (1 Mark)

18 Determine the beginning of daylight at KARRATHA (20° 43'S 116° 46'E) in UTC on 20th July.

- a) 202225.
- b) 202012.
- c) 192012.
- d) 192225. (2 Marks)

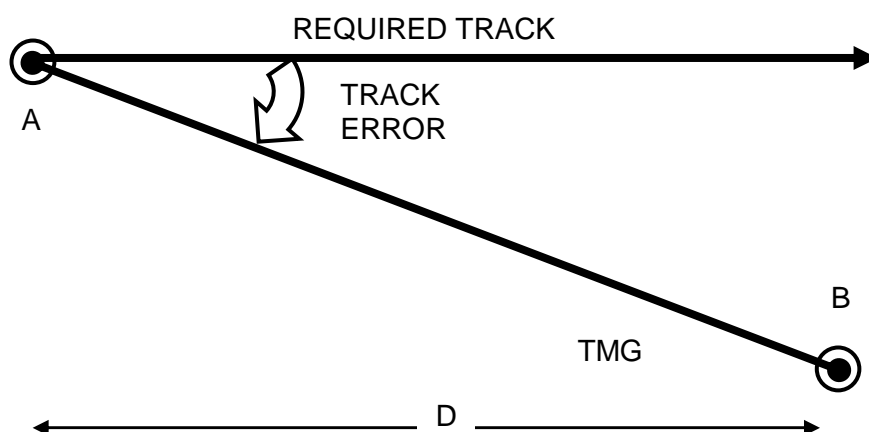
19 When overflying a VOR station one cockpit indication you should expect is that:

- a) the "TO" flag will remain on until you set the reciprocal track.
- b) the flag will change from "TO" to "FROM".
- c) a reciprocal track will be displayed in the course window.
- d) the station ident will change to a continuous audio signal. (1 Mark)

20 Which of the following aerodrome forecast conditions for a destination will warrant the provision of an alternate for a VFR Day flight in an aeroplane?

- a) Visibility 9999.
- b) Cloud exceeding 4 oktas at 1500 ft AMSL.
- c) Crosswind component exceeds the maximum allowed by the aeroplane's flight manual.
- d) TAF is endorsed with a 20% probability of dust which restricts visibility to 9 km. (1 Mark)

- 21 With reference to the following diagram:



D 30nm
Track Error 6°

A constant HDG has been maintained since 0300UTC (at A)
The pilot alters HDG 9° left at 0318 UTC (at B)

At what time should the required track be intercepted?

- a) 0327.
- b) 0336.
- c) 0354.
- d) 0412.

(2 Marks)

- 22 Given:

| | |
|-------------------|--------------|
| Area Forecast W/V | 115/45 |
| TRK ($^\circ$ T) | 150° |
| Variation | 10° E |
| TAS | 150 kts |

Determine HDG and GS.

- a) 138° M and 115 kts.
- b) 140° M and 110 kts.
- c) 130° M and 120 kts.
- d) 130° M and 110 kts.

(2 Marks)

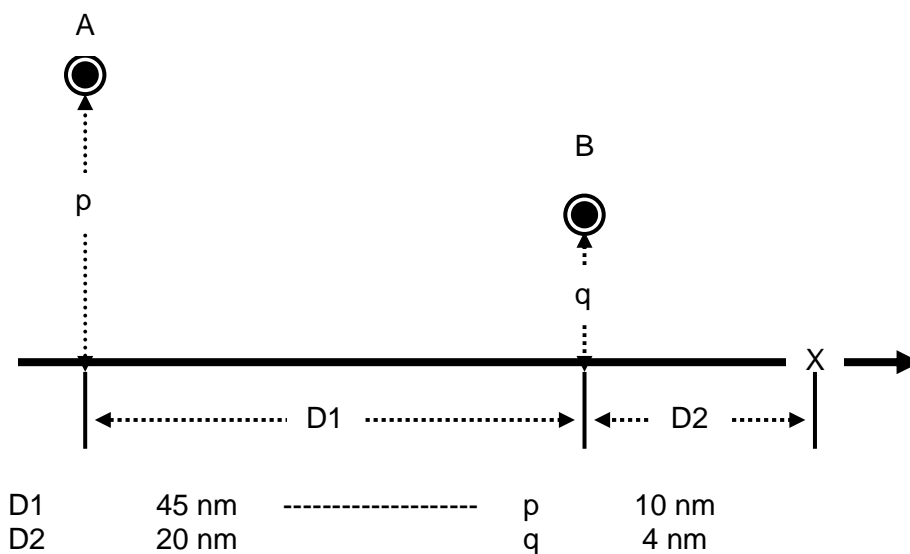
- 23 Refer (TOWNSVILLE) WAC 3219:

What is the position of ROLLINGSTONE (approximately 25 nm NW Townsville)?

- a) $19^\circ 03'S$ $146^\circ 23'E$.
- b) $18^\circ 58'S$ $146^\circ 23'E$.
- c) $19^\circ 30'S$ $146^\circ 52'E$.
- d) $18^\circ 58'S$ $146^\circ 52'E$.

(1 Mark)

24 In the diagram below:



A constant HDG of 080°M has been maintained since 0530Z (at A)

The HDG required at time 0545Z (at B) to intercept track at X is closest to:

- a) 092°M.
 - b) 088°M.
 - c) 084°M.
 - d) 100°M.
- (2 Marks)

25 Given:

| | |
|-------------------|---------|
| Pressure altitude | 8000 ft |
| Ambient temp | +10°C |
| CAS | 190 kts |

Determine the TAS.

- a) 220 kts.
 - b) 190 kts.
 - c) 172 kts.
 - d) 210 kts.
- (2 Marks)

26 Refer (MELBOURNE) WAC 3470:

At 2342Z you set course over SHEPPARTON AD to track direct to WANGARATTA AD. HDG 080°M is maintained until you pinpoint your position over Dookie Agricultural College at 2350Z. The HDG (°M) required to track direct to Wangaratta from this position is closest to:

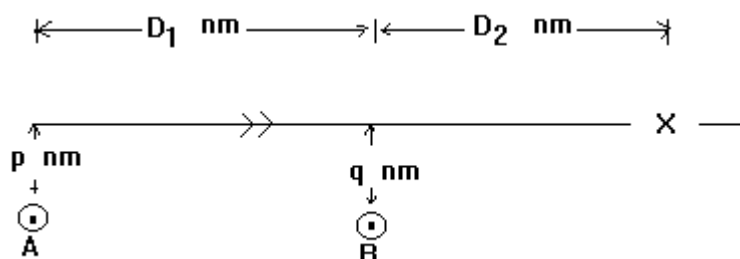
- a) 068° M.
 - b) 088° M.
 - c) 096° M.
 - d) 092° M.
- (3 Marks)

27 A rapid oscillation of the CDI bar tuned to receive a VOR signal within its rated coverage is called:

- a) scalloping.
- b) course bending.
- c) co-channel interference.
- d) coastal refraction.

(1 Mark)

28 In the diagram below:



p 2 nm
 q 4 nm
 D1 60 nm
 D2 30 nm

A constant HDG has been maintained since 0110Z (at A)

The alteration of HDG at time 0140Z (at B) to intercept track at X is closest to:

- a) 2° left.
- b) 12° left.
- c) 10° left.
- d) 8° left.

(2 Marks)

29 If approaching an NDB from the east, what approximate instrument indications on the Fixed Card ADF would confirm that you are overflying the station?

- a) Indications will change from 180° to 000°.
- b) Indications will change from 090° to 270°.
- c) Indications will change from 000° to 180°.
- d) Indications will change from 270° to 090°.

(1 Mark)

Total 50