

# Online Examination Report

Date:	23.07.2014
Attempts:	1
Examinee:	Menya Komyhendo, Ruth
Date of birth:	11/28/1988
Subject:	060-Navigation & Plotting
Result:	38,29 %
Time used:	00:17:39 (HH:MM:SS)

## Attachments

1. List of result by question
2. List of result by topic
3. Detailed question result report

## Attachment 1: List of result by question

CQB Number	Internal Number	Syllabus reference	Chapter	Points	Max. Points
1	341		61. GENERAL NAVIGATION	0,00	1,00
2	340		61. GENERAL NAVIGATION	1,00	1,00
3	356		61. GENERAL NAVIGATION	0,00	1,00
4	359		61. GENERAL NAVIGATION	0,00	1,00
5	350		61. GENERAL NAVIGATION	1,00	1,00
6	361		61. GENERAL NAVIGATION	1,00	1,00
7	353		61. GENERAL NAVIGATION	0,00	1,00
8	78	61.1.2.2	Convergency, conversion angle	0,00	1,00
9	95	61.1.2.3	Latitude, difference of latitude	0,00	1,00
10	197	61.1.2.5	use of lat/long co-ordinates	0,00	2,00
11	67	61.1.3.1	Apparent time	0,00	1,00
12	42	61.1.5.2	Conversion from one unit to another	0,00	1,00
13	45	61.3.1.3	Lambert conformal conic	1,00	1,00
14	76	61.3.3.1	Plotting positions	0,00	2,00
15	141	61.3.3.5	Plotting bearings	3,00	3,00
16	65	61.4.1.6	ETA	2,00	2,00
17	90	61.4.1.6	ETA	0,00	1,00
18	103	61.4.3	The triangle of velocities, methods of solution fo	0,00	2,00
19	108	61.5.2.3	Ground speed/distance covered etc	0,00	1,00
20	151	61.5.3.4	ETA revisions	0,00	2,00
21	381	62.	RADIO NAVIGATION	0,00	1,00
22	471	62.	RADIO NAVIGATION	1,00	1,00
23	337	62.	RADIO NAVIGATION	0,00	1,00
24	386	62.	RADIO NAVIGATION	0,00	1,00
25	455	62.	RADIO NAVIGATION	0,00	1,00
26	495	62.	RADIO NAVIGATION	0,00	1,00
27	21	62.1.3	Wave propagation	1,00	1,00
28	331	62.1.3.4	Propagation with the frequency bands	1,00	1,00

CQB Number	Internal Number	Syllabus reference	Chapter	Points	Max. Points
29	301	62.1.3.4	Propagation with the frequency bands	0,00	1,00
30	199	62.2.1.1	Principles	0,00	1,00
31	75	62.2.2	NDB/ADF	1,00	1,00
32	73	62.2.2	NDB/ADF	1,00	1,00
33	307	62.2.2.1	Principles	1,00	1,00
34	168	62.2.3	VOR and Doppler-VOR	0,00	1,00
35	164	62.2.3.3	Coverage and Range	1,00	1,00
36	257	62.2.4	DME	1,00	1,00
37	145	62.2.4.2	Presentation and interpretation	1,00	1,00
38	135	62.2.5.2	Presentation and interpretation	0,00	1,00
39	238	62.3.1	Pulse techniques and associated terms	0,00	1,00
40	112	62.3.3.5	Factors affecting range and accuracy	0,00	1,00
<b>Total:38%</b>				<b>18,00</b>	<b>47,00</b>

## Attachment 2: List of result by topic

**Licence**

**Date: 23.07.2014**

**Examinee: Menya Komyhendo, Ruth**

**Location: Uganda Civil Aviation Authority**

**Your Result: 18,00 from 47,00 Points (38,30 %)**

Topics	Amount of Questions	Points achieved	Maximum Points	Percent
61. GENERAL NAVIGATION	20	9,00	27,00	33,33
61.1. BASICS OF NAVIGATION	5	0,00	6,00	0,00
61.3. CHARTS	3	4,00	6,00	66,67
61.4. DEAD RECKONING NAVIGATION (DR)	3	2,00	5,00	40,00
61.5. IN-FLIGHT NAVIGATION	2	0,00	3,00	0,00
62. RADIO NAVIGATION	20	9,00	20,00	45,00
62.1. BASIC RADIO PROPAGATION THEORY	3	2,00	3,00	66,67
62.2. RADIO AIDS	9	6,00	9,00	66,67
62.3. RADAR	2	0,00	2,00	0,00
<b>Total</b>	<b>40</b>	<b>18,00</b>	<b>47,00</b>	<b>38,30</b>

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Date of birth: 1988-11-28

Subject: 060-Navigation & Plotting  
Date: 2014-07-23



1

**GIVEN:**

Departure path straight out|Takeoff time 1435Z|Winds during climb 175 degrees at 25 kts, True course during climb 155 degrees Airport elevation 2,000 ft|True airspeed 130 kts|Rate of climb 500 ft/min|What would be the distance and time upon reaching 8,000 feet MSL?

☐ 27 NM and 1455Z.

☐ 21 NM and 1447Z.

☒ 24 NM and 1452Z.

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2

**GIVEN:|Departure path straight out|Takeoff time 1030 Z| Winds during climb 180 degrees at 30 kts, True course during climb 160 degrees, Airport elevation 1,500 ft, True airspeed 125 kts, Rate of climb 500 ft/min, What would be the distance and time upon reaching 8,500 feet MSL?**

☐ 25 NM and 1047Z.

☒ 23 NM and 1044Z

☐ 20 NM and 1047Z.

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Date: 2014-07-23

3

**(Refer to Figure 40.) The line from point A to point B of the wind triangle represents**

**See Attachments:**

1. cfi\_40.jpg

figure 40

(Attachment  
No.1)

- ☐ true heading and airspeed.
- ☒ **groundspeed and true heading.**
- ☐ true course and groundspeed.

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Subject: 060-Navigation & Plotting  
Date: 2014-07-23



4

**(Refer to Figure 40.) The line from point C to point B of the wind triangle represents**

**See Attachments:**

1. cfi\_40.jpg

figure 40

(Attachment  
No.1)

- ☒ **airspeed and heading.**
- ☐ **true heading and groundspeed.**
- ☐ **groundspeed and true course.**



5

If a true heading of 135 degrees results in a ground track of 130 degrees and a true airspeed of 135 knots results in a groundspeed of 140 knots, the wind would be from

☒ 246 degrees and 13 knots.

☐ 200 degrees and 13 knots.

☐ 019 degrees and 12 knots.

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Date: 2014-07-23

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**(Refer to Figure 40.) The line from point C to point A of the wind triangle represents**

**See Attachments:**

1. cfi\_40.jpg

figure 40

(Attachment  
No.1)

- ☒ wind direction and velocity.
- ☐ true heading and groundspeed.
- ☐ true course and groundspeed.

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Date: 2014-07-23

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If a true heading of 230degrees results in a ground track of 250 degrees and a true  
airspeed of 160 knots results in a groundspeed of 175 knots, the wind would be from

☐ 165 degrees and 60 knots.

☒ 343 degrees and 60 knots.

☐ 135 degrees and 59 knots.

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8

**Given:**

**A is N55° 000°**

**B is N54° E010°**

**The average true course of the great circle is 100°.**

**The true course of the rhumbline at point A is:**

☒ 096°

☐ 107°

☐ 104°

☐ 100°

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9

**(Please view Annex 061-600199)**

**Which figure in the Appendix represents the geographic latitude of position P, which is situated above the surface of the ellipsoid?**

☐ figure A

☒ figure C

☐ figure D

☐ figure B

**See Attachments:**

1. 061-600199.gif

Annex

(Attachment  
No.2)

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Date: 2014-07-23



10

**Position A is located on the equator at longitude 130°00E.  
Position B is located 100 NM from A on a bearing of 225°(T).  
The coordinates of position B are:**

☒ 01°11'S 128°49'E

☐ 01°11'S 131°11'E

☒ 01°11'N 128°49'E

☐ 01°11'N 131°11'E

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11

When proceeding, on a given date, along a parallel towards the East, the moment of sunrise will occur one hour earlier every  $15^\circ$  difference in longitude when it is expressed in

☒ UTC

☐ Standard Time

☐ LAT (local apparent time)

☒ LMT

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12

**An aircraft at latitude  $10^{\circ}$  South flies north at a GS of 890 km/h.**

**What will its latitude be after 1.5 hour?**

☒  **$02^{\circ}00'N$**

☐  **$22^{\circ}00'N$**

☒  **$03^{\circ}50'N$**

☐  **$12^{\circ}15'N$**



13

On a Lambert Conformal Conic chart earth convergency is most accurately represented at the:

☐ north and south limits of the chart

☐ Equator

☒ parallel of origin

☐ standard parallels

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14

(Please view annex 061-12549A to 061-12613A)

Given:

SHA VOR N5243.3 W00853.1

CRK VOR N5150.4 W00829.7

Aircraft position N5220 W00910

Which of the following lists two radials that are applicable to the aircraft position?

☒ SHA 205°  
CRK 321°

☐ SHA 025°  
CRK 141°

☐ SHA 214°  
CRK 330°

☐ SHA 033°  
CRK 149°

See Attachments:

1. 061-12549a\_to\_061-  
12613a.gif

Annex

(Attachment  
No.3)

15

**Given:**

**Position NDB (55°10'N, 012°55'E)**

**DR Position (54°53'N, 009°58'E)**

**NDB on the RMI reads 090°**

**Magnetic variation = 10°W**

**The position line has to be plotted on a Lamberts conformal chart with standard parallels at 40°N and 48°N. Calculate the direction (T) of the bearing to be plotted from the NDB.**

☐ 258°

☐ 272°

☒ 262°

☐ 265°

16

**Given:**

**True course A to B =  $250^\circ$**

**Distance A to B = 315 NM**

**TAS = 450 kt.**

**W/V =  $200^\circ/60$ kt.**

**ETD A = 0650 UTC.**

**What is the ETA at B?**

☐ 0730 UTC

☐ 0716 UTC

☒ 0736 UTC

☐ 0810 UTC

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17

Given: GS = 120 kt.  
Distance from A to B = 84 NM.

What is the time from A to B?

☐ 00 HR 43 MIN

☒ 00 HR 45 MIN

☐ 00 HR 42 MIN

☐ 00 HR 44 MIN

18

**Given:**

**TAS = 135 kt,**

**HDG ( $^{\circ}$ T) = 278,**

**W/V = 140/20kt**

**Calculate the Track ( $^{\circ}$ T) and GS?**

☒ **279 - 152 kt**

☐ **275 - 150 kt**

☐ **283 - 150 kt**

☐ **272 - 121 kt**

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19

An aircraft is departing from an airport which has an elevation of 2000 ft and the QNH is 1003 hPa. The TAS is 100 kt, the head wind component is 20 kt and the rate of climb is 1000 ft/min. Top of climb is FL 100. At what distance from the airport will this be achieved?

☐ 15.4 NM

☐ 10.3 NM

☒ 13.3 NM

☐ 11.1 NM

20

An aircraft is planned to fly from position 'A' to position 'B', distance 320 NM, at an average GS of 180 kt. It departs 'A' at 1200 UTC. After flying 70 NM along track from 'A', the aircraft is 3 MIN ahead of planned time.

Using the actual GS experienced, what is the revised ETA at 'B'?

☐ 1347 UTC

☐ 1401 UTC

☐ 1333 UTC

☒ 1340 UTC



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21

**(Refer to Figure 41.) If on a magnetic heading of 310 degrees and receiving ADF indication 3, what would be the magnetic bearing to the station?**

☐ 085 degrees.

☐ 315degrees.

☒ 135degrees.

**See Attachments:**

1. cfi\_41.jpg

figure 41

(Attachment No.4)

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Date: 2014-07-23



22

(Refer to Figures 98 and 99.)

To which aircraft position does HSI presentation 'D' correspond?

☐ 15

☒ 17

☐ 4

See Attachments:

1. instrument_98.jpg	instrument_98.jpg	(Attachment No.5)
2. instrument_99.jpg	instrument_99.jpg	(Attachment No.6)

23

With amplitude modulated transmission the:

- ☒ frequency is constant and the amplitude varies;
- ☐ amplitude is constant and the frequency varies;
- ☒ amplitude and frequency vary.

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24

**(Refer to Figure 139.) What is the lateral displacement of the aircraft in nautical miles from the radial selected on the No. 1 NAV?**

**See Attachments:**

1. atp\_139.jpg

figure 139

(Attachment  
No.7)

☐ 5.0 NM.

☐ 10.0 NM.

☒ 7.5 NM.

25

After passing a VORTAC, the CDI shows 1/2 scale deflection to the right. What is indicated if the deflection remains constant for a period of time?

- ☒ The OBS is erroneously set on the reciprocal heading.
- ☐ The airplane is getting closer to the radial.
- ☐ The airplane is flying away from the radial.

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26

**(Refer to Figure 105.) If the magnetic heading shown for aircraft 4 is maintained, which ADF illustration would indicate the aircraft is on the 135 degrees magnetic bearing TO the station?**

☒ 4

☐ 8

☐ 1

**See Attachments:**

1. atp\_104.jpg

atp\_105.jpg

(Attachment  
No.8)

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27

How many wavelengths of frequency 120 MHz are equivalent to 65 ft?

☐ 14

☐ 26

☒ 8

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Date: 2014-07-23

28

A carrier wave with amplitude of 5V is modulated by an audio frequency with amplitude of 3 V. The depth of modulation is:

- ☐ 40 %;
- ☐ 167 %.
- ☒ 60 %;



29

The reference signal of a VOR has a sub-carrier wave. The purpose of the sub-carrier wave modulation is to:

- ☐ provide for facility identification;
- ☒ modulate the directional signal.
- ☐ provide a datum to determine phase difference;

30

**VDF is the abbreviation for:**

☐ Very High Frequency Deviation Finding Station.

☐ VHF Direction Finder.

☒ vertical directional Finder.

☐ VHF Direction Finder.

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31

At 1105 an NDB bears 078 relative by ADF. At 1112 the same NDB bears 090 relative by ADF. The G/S is 120 kts. The time and distance to the NDB is:

☒ 35 min - 70 nm.

☐ 103 min - 206 nm.

☐ 51 min - 102 nm.

32

**As a radio wave crosses the coast, leaves the land or passes over the sea the speed increases. When this happens:**

- ☐ The frequency changes.
- ☐ No change in either.
- ☒ The wavelength changes.

33

**Radio Magnetic Indicators (RMI) combine and indicate information from separate sources on one dial, namely:**

- ☒ the aircraft heading from a remote-reading compass, bearings from VOR facilities and bearings from NDB facilities;
- ☐ only bearings from VOR and NDB facilities;
- ☐ the true heading from a remote-reading compass, bearings from a VOR facility and a bearing from an NDB facility.

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34

**From where can ATIS information be received?**

- ☒ **From an ILS transmission.**
- ☐ **At certain times from airfield VORs.**
- ☐ **At all times from any VOR.**

35

**When will the VOR monitor warn the control point and possibly switch off the station radiation?**

- ☒ A change in bearing information in excess of 1.
- ☐ A reduction of 15% in bearing information.
- ☐ A change in bearing information in excess of 10.

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36

An aircraft at FL 410 has a DME range of 14 nm. What is the ground range from the DME?

☒ 12.27nm

☐ 11.68nm

☐ 12.85nm



37

An aircraft passes overhead a DME station at 12000 feet above the station. At that time, the DME reading will be:

- ☐ 0 NM.
- ☐ fluctuating and not significant.
- ☒ approximately 2 NM.
- ☐ FLAG/OFF, the aircraft is within the cone of silence.

38

The heading rose of an HSI is frozen on 200°. Lined up on the ILS of runway 25, the localiser needle will be:

- ☐ left of centre
- ☐ centred with the 'fail' flag showing
- ☒ centred
- ☒ right of centre

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39

With reference to the CRT which component achieves focusing control?

☐ The grid.

☒ The X plates.

☐ The anodes.

40

To improve the detection of precipitation area(s) in e.g thunderstorms, in which the top of the cloud lies at or slightly above the level of flight,

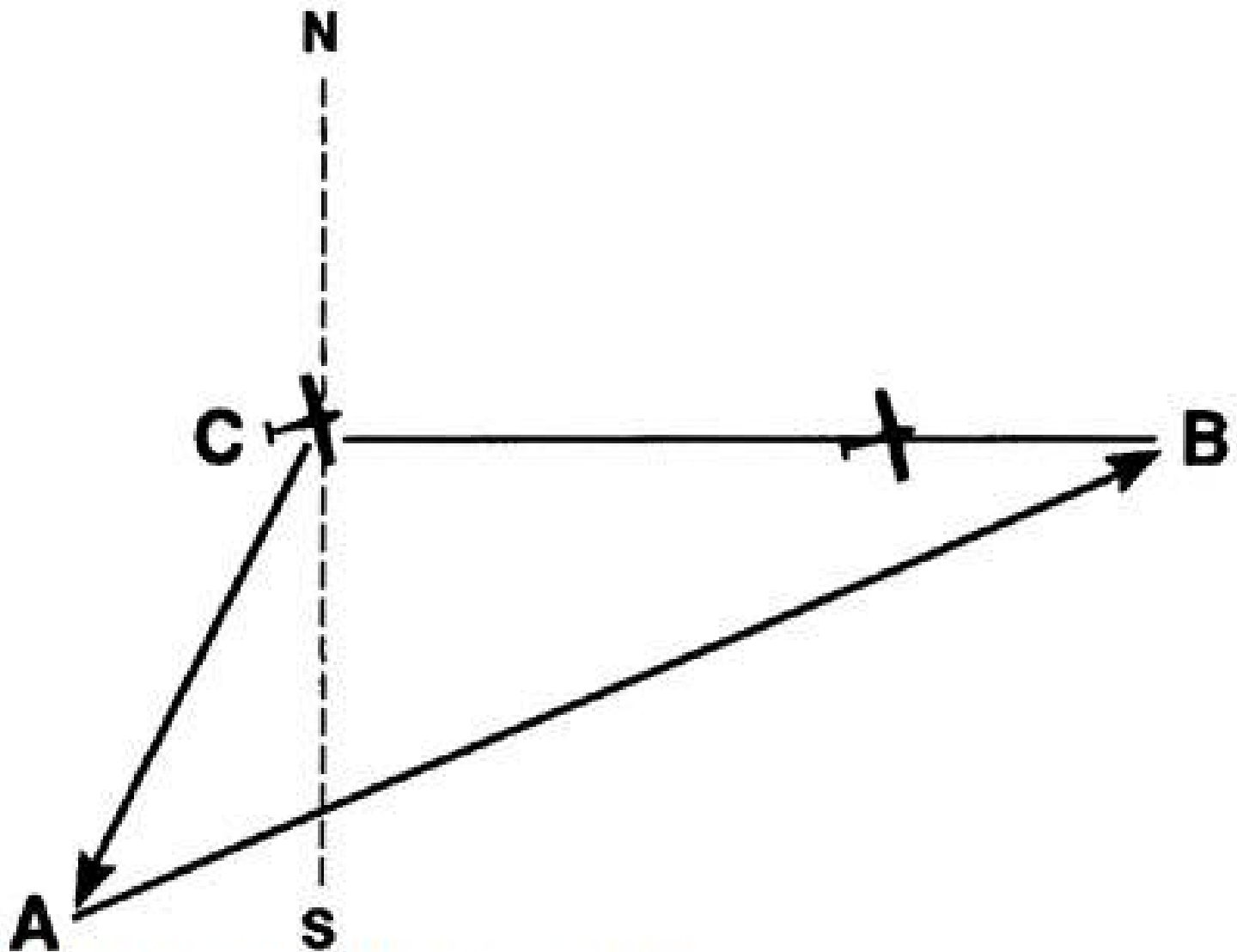
- ☐ the tilt setting should be higher when the aircraft climbs to a higher altitude.
- ☒ the tilt setting should be lower when the selected range increases.
- ☐ the tilt setting should be higher when the selected range decreases.
- ☐ the tilt setting should be lower when the aircraft climbs to a higher altitude.

## Attachment No. 1

Questions 3,4,6

figure 40

cfi\_40.jpg



**Figure 40. Wind Triangle** © ASA

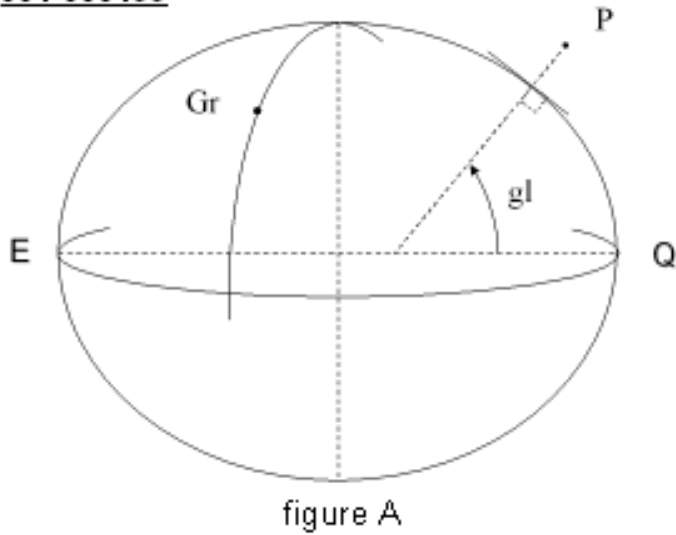
## Attachment No. 2

Questions 9

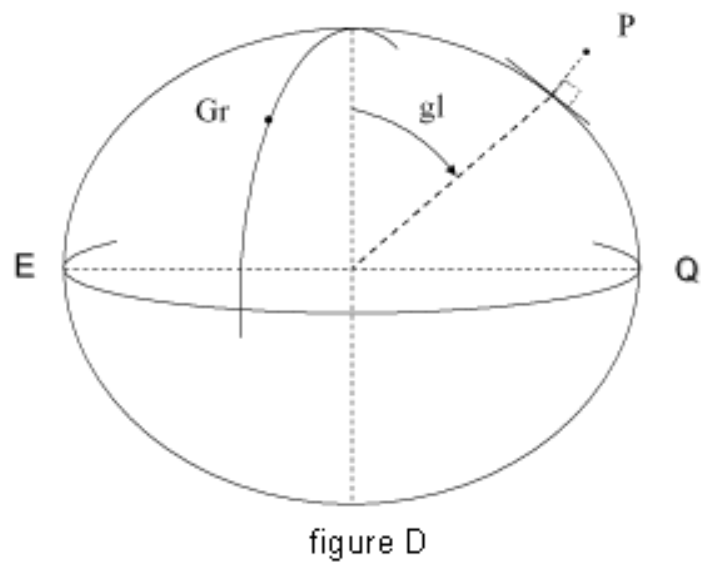
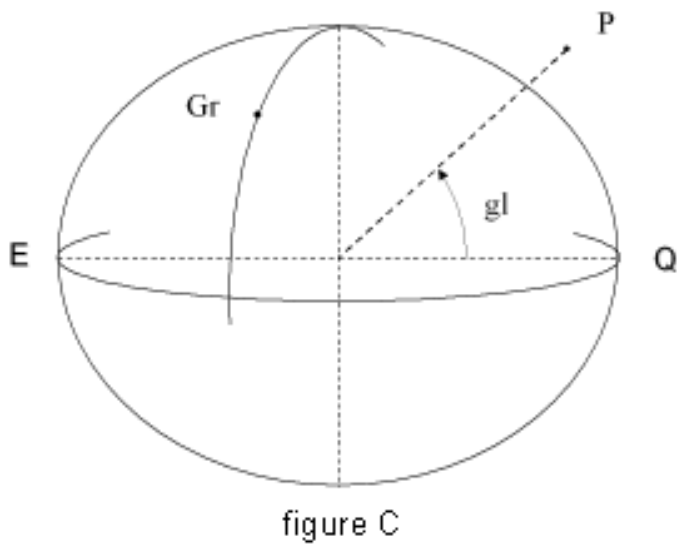
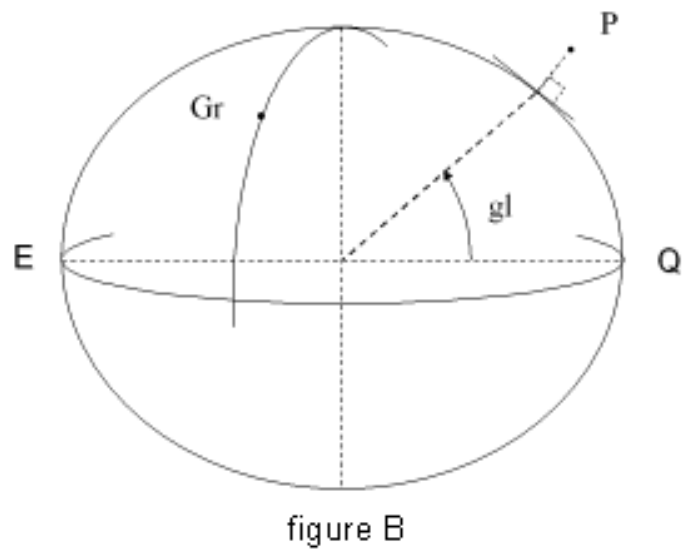
Annex

061-600199.gif

**061-600199**



gl = geodetic latitude





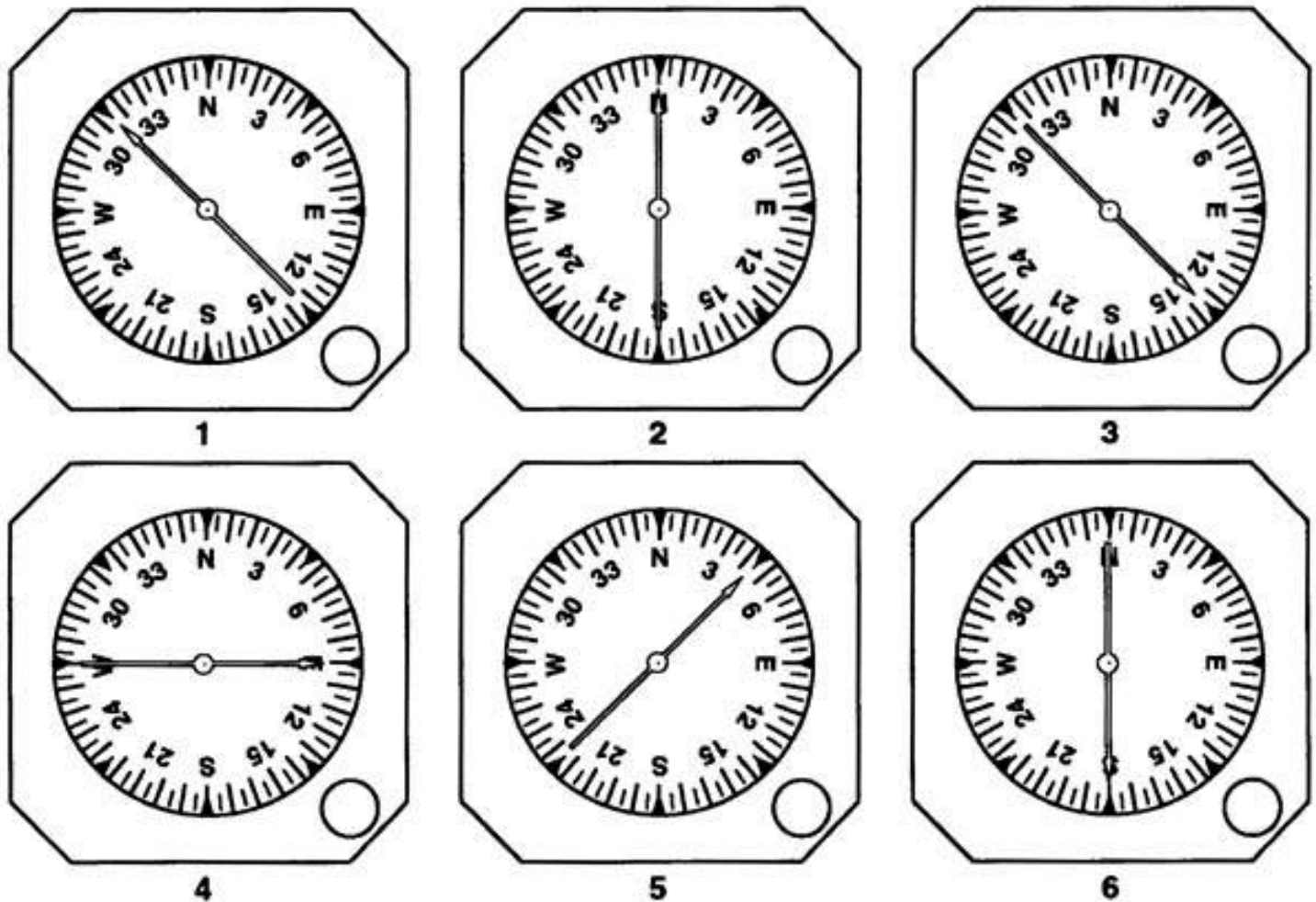


## Attachment No. 4

Questions 21

figure 41

cfi\_41.jpg



**Figure 41. ADF Indicators (Fixed-Dial) © ASA**

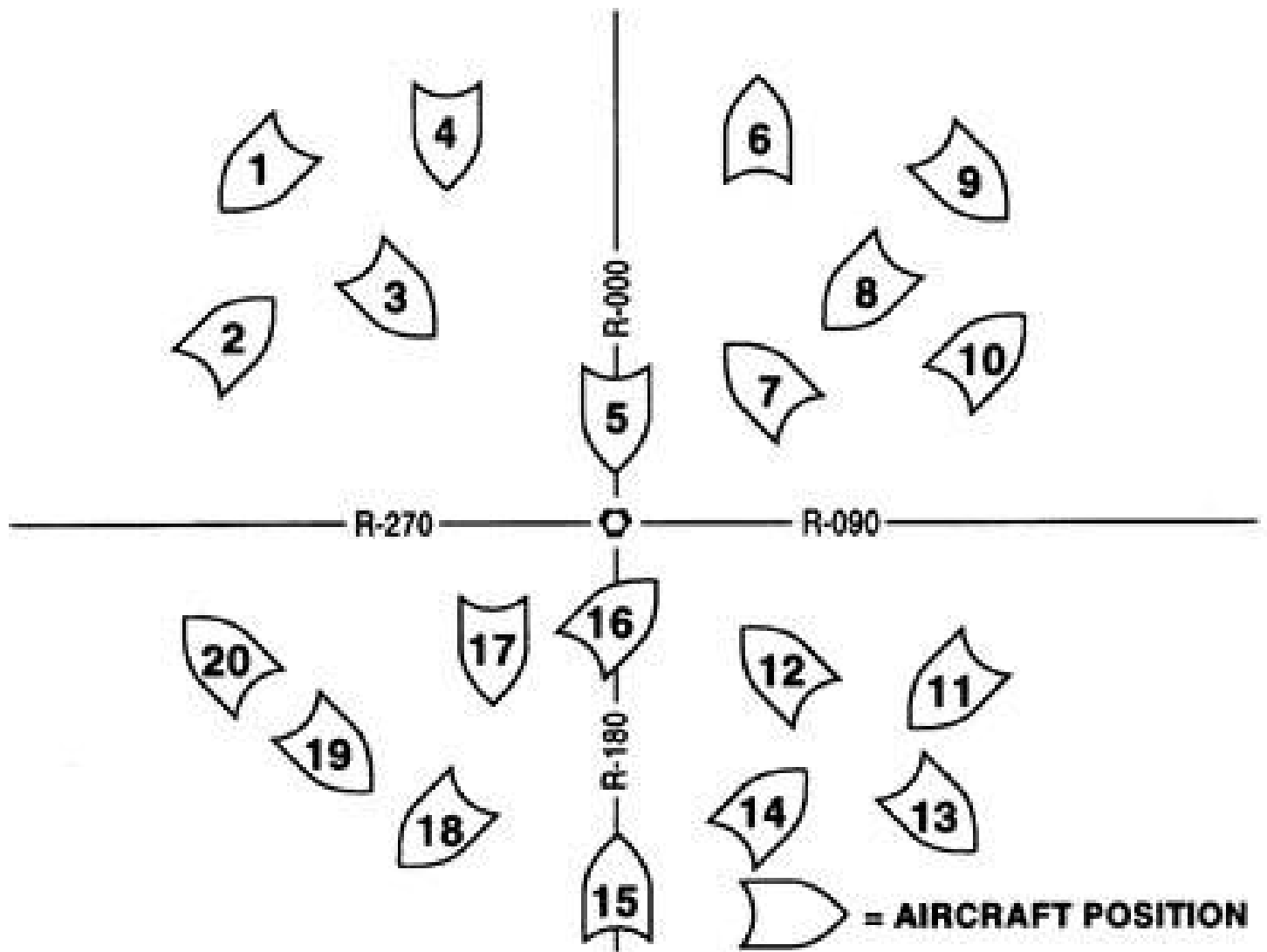


## Attachment No. 5

Questions 22

instrument\_98.jpg

instrument\_98.jpg



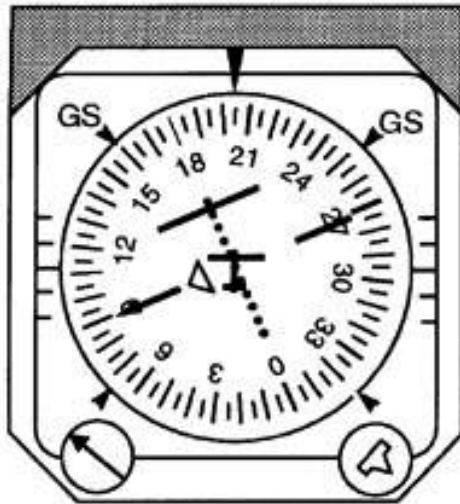
**Figure 98. Aircraft Position** © ASA

## Attachment No. 6

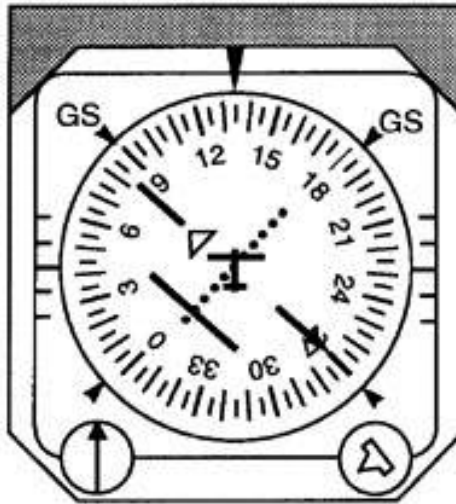
Questions 22

instrument\_99.jpg

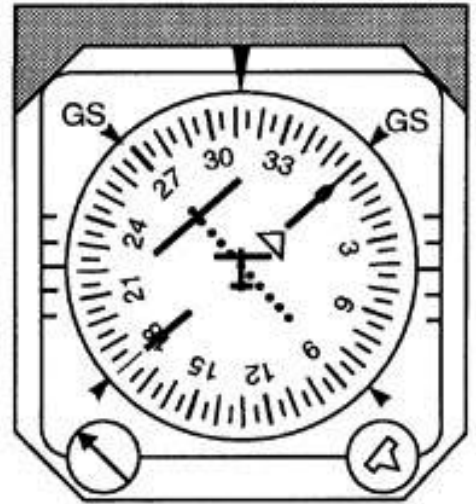
instrument\_99.jpg



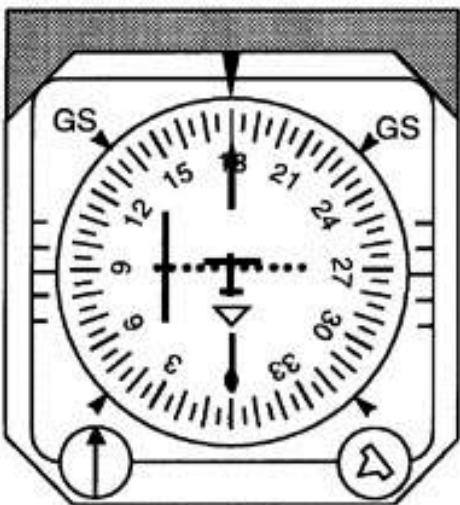
**A**



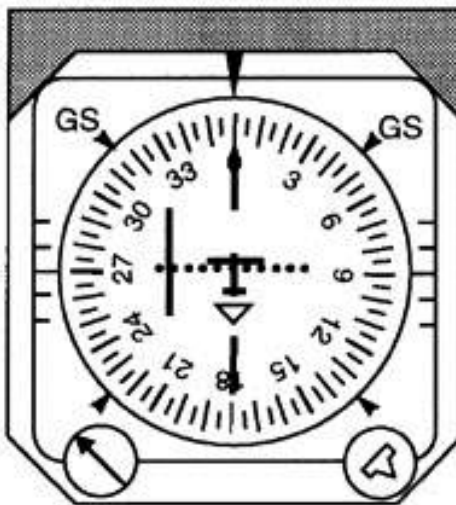
**B**



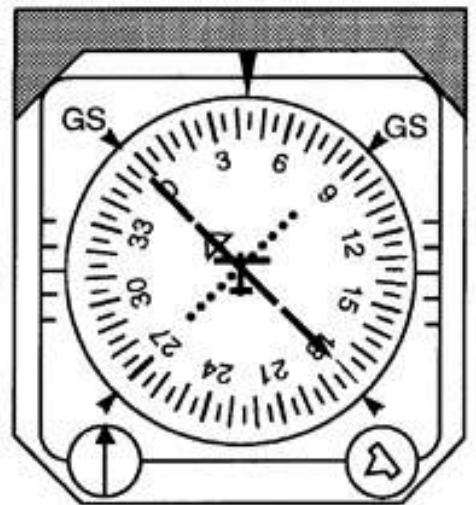
**C**



**D**



**E**



**F**

**Figure 99. HSI Presentation** © ASA

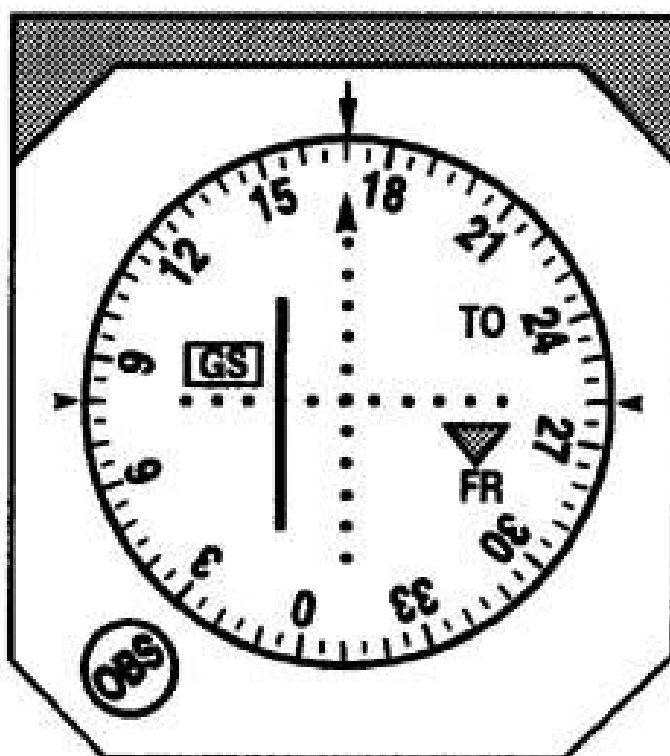
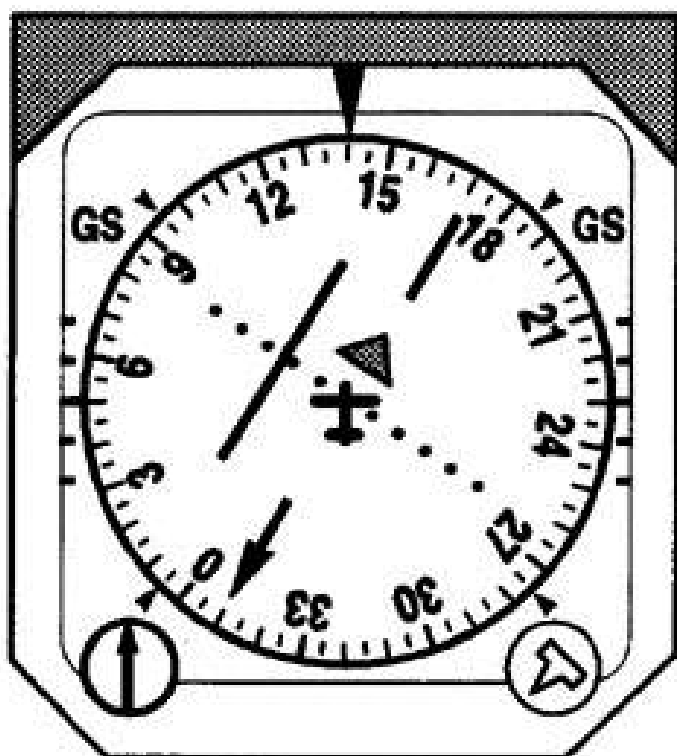
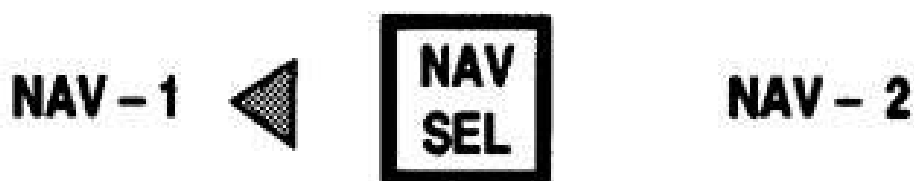
## Attachment No. 7

Questions 24

figure 139

atp\_139.jpg

FREQ	N.M.	KNOTS	MIN
115.0	60.0	180	20.0



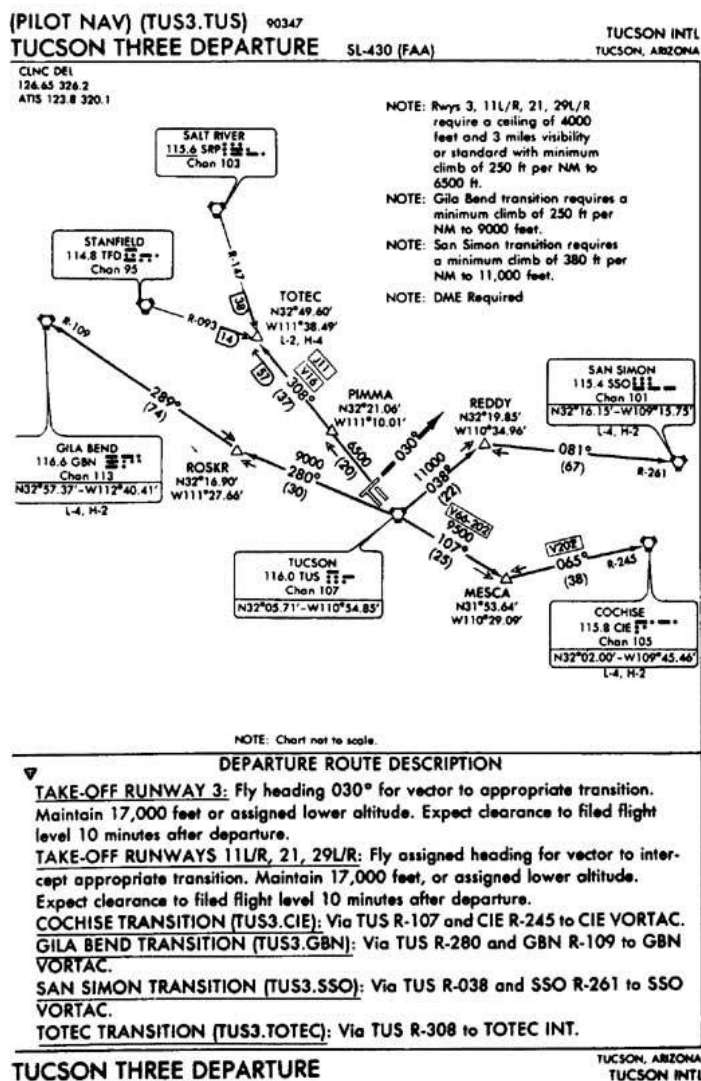
**Figure 139.** No. 1 and No. 2 NAV Presentation © ASA

## Attachment No. 8

Questions 26

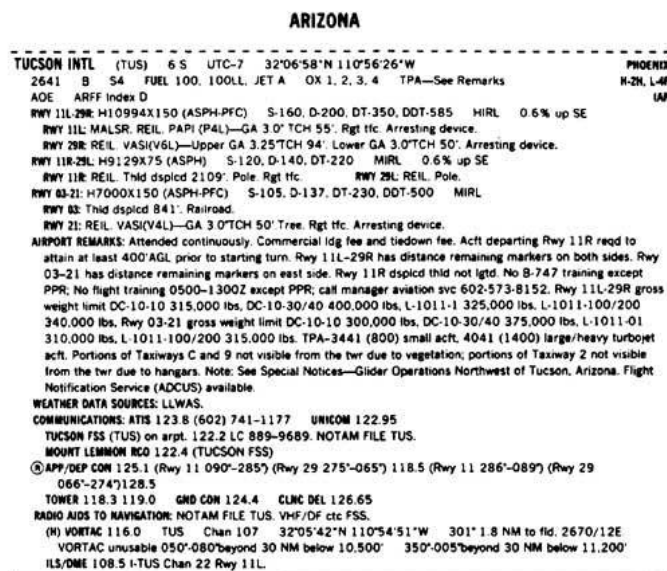
atp\_105.jpg

atp\_104.jpg



**TUCSON THREE DEPARTURE**  
**(PILOT NAV) (TUS3.TUS)**  
TUCSON, ARIZONA  
TUCSON INTL

Figure 104. Tuscon Three Departure (Pilot Nav) (TUS3.TUS) © ASA



### TAKE-OFF MINS

**TUCSON, AZ**  
**RYAN FIELD**  
**DEPARTURE PROCEDURE:** Rwy 8, turn right;  
Rwy 24, turn left direct to Ryan NDB. Continue  
climb in holding pattern (W, right turn 090°  
inbound) to 5000 before proceeding on course.

**TUCSON INTL**  
**TAKE-OFF MINIMUMS:** Rwy 3, 11L/R, 21,  
29L/R, 4000-3 or std. with min. climb of 250'  
per NM to 6500.  
**DEPARTURE PROCEDURE:** Comply with  
SID or radar vectors; or turn left or right as  
assigned by ATC direct TUS VORTAC, climb in  
holding pattern (NW, right turn, 128 inbound)  
to depart TUS VORTAC at or above MCA or  
MEA for assigned airway.