

**CHECK YOUR PROGRESS
RADAR (MASTER 5)**

NAME:
(answers)

THEORY

Question 1 (1 Mark) Validates to TDMMH1107A element 1b

Two same sized vessels appear on the radar display set to 12 miles range. One is at 11 miles. The other is at 1 miles. The target at 11 miles will appear:

- a. Brighter.
- b. Bigger.
- c. Identical.
- d. Smaller.

Question 2 (1 Mark) Validates to TDMMH1107A element 1a

Waveguides:

- a. Funnel the radar signal from the transmitter to the scanner.
- b. Move the radar display from the centre to the side of the screen.
- c. Line up the radar display with sweep width.
- d. Enables the display to be displayed on heel.

Question 3 (1 Mark) Validates to TDMMH1107A element 1a

The maximum range of a radar installation is determined by the:

- a. Transmission power of the radar.
- b. Horizontal beam width.
- c. Size of the scanner.
- d. Wavelength of 3cm or 10cm.

Question 4 (1 Mark) Validates to TDMMH1107A element 1c

You would check if an echo appearing in a shadow sector of your Plan Position Indicator (PPI) was real by:

- a. Increasing brilliance.
- b. Careful plotting.
- c. Altering course.
- d. Changing the range scale.

Question 5 (1 Mark) Validates to TDMMH1107A element 1b

Interference echoes are caused by:

- a. Transmissions your own radar.
- b. Receiver unit "Noise".
- c. Side lobe pulses.
- d. Transmissions from another radar.

Question 6 (1 Mark) Validates to TDMMH1107A element 1c

Multiple echoes are caused by:

- a. Atmospheric ducting
- b. A large contact close to own vessel.
- c. Obstructions on own vessel.
- d. Reflections from the surface of the sea.

Question 7 (1 Mark) Validates to TDMMH1107A element 1d

The gain control is fitted to a radar to:

- a. Reduce sea clutter return.
- b. Amplify the received signals.
- c. Create a speckled background.
- d. Brighten of the radar displays.

Question 8 (1 Mark) Validates to TDMMH1107A element 1d

The symbol shown is:



- a. Short Pulse.
- b. Long Pulse.
- c. Tuning.
- d. Gain.

Question 9 (1 Mark) Validates to TDMMH1107A element 1a

An improperly aligned heading marker will cause:

- a. Weak echoes to be hidden under the heading marker.
- b. Bearings errors to occur.
- c. Range errors to occur.
- d. Poor tuning.

Question 10 (1 Mark) Validates to TDMMH1107A element 2g

The most reliable radar fix is:

- a. Two radar ranges and a radar bearing.
- b. Three radar bearings.
- c. Three radar ranges.
- d. A radar range and a visual bearing.

Question 11 (1 Mark) Validates to TDMMH1107A element 2g

The height of the scanner will affect the:

- a. Detection range of targets.
- b. Vertical beam width.
- c. Frequency of the transmitted beam.
- d. Range discrimination.

Question 12 (1 Mark) Validates to TDMMH1107A element 1b

GRP, sand, mud and ice:

- a. Are all poor reflectors of radar energy.
- b. Are all good electrical conductors.
- c. Are excellent reflectors of radar energy.
- d. Normally show very clear echoes.

Question 13 (1 Mark) Validates to TDMMH1107A element 2h

The advantage of a narrow horizontal beamwidth over a wider one is:

- a. Targets can be detected at larger distances.
- b. More accurate bearings.
- c. More accurate ranges.
- d. Targets are not lost so easily as the vessel rolls and pitches.

Question 14 (1 Mark) Validates to TDMMH1107A element 1b

The effect of super-refraction causes radar waves to:

- a. Bend upward and decrease their range.
- b. Bend downward and decrease their range.
- c. Bend downward and increase their range.
- d. Bend upward and increase their range.

Question 15 (1 Mark) Validates to TDMMH1107A element 2h

On a stabilised radar in north up mode a target has a relative bearing of 040° . If your vessel is heading 090°T , the true bearing of the target is:

- a. 190°T
- b. 050°T
- c. 130°T
- d. 040°T

Question 16 (1 Mark) Validates to TDMMH1107A element 1a

Parallel indexing techniques can be used to:

- a. Maintain the desired track without plotting the vessel's position on the chart.
- b. Reduce the effect of errors in radar ranges.
- c. More effectively display targets not on parallel courses.
- d. Remove bearing errors due to misalignment of the heading marker.

Question 17 (1 Mark) Validates to TDMMH1107A element 2b

If the radar scanner height is 9 metres, and the target height 9 metres, what is the theoretical distance at which the target can be detected:

- a. 9.92 nautical miles.
- b. 13.26 nautical miles.
- c. 6.27 nautical miles.
- d. 12.13 nautical miles.

Question 18 (1 Mark) Validates to TDMMH1107A element 2d

Changes in course or speed of target vessels can be observed by:

- a. Recording range and bearing of targets at regular intervals.
- b. Determining whether the targets are forward of the beam.
- c. A quick glance at the radar display.
- d. Taking the range and bearing of the target.

Question 19 (1 Mark) Validates to TDMMH1107A element 2d

When altering course to avoid collision in restricted visibility, you should:

- a. Turn to starboard.
- b. Make a positive alteration in ample time.
- c. Alter course when the vessel's are at least 3 miles apart.
- d. Pass the other vessel no closer than 2 miles.

Question 20 (1 Mark) Validates to TDMMH1107A element 2d

When taking action to avoid collision in restricted visibility, you should:

- a. Make substantial alterations of course.
- b. Make small alterations of speed.
- c. Increase your speed.
- d. Make small alterations of course.

Question 21 (1 Mark) Validates to TDMMH1107A element 3b

Plotting sheets and navigational data obtained during a passage should be:

- a. Stapled into the ship's logbook.
- b. Available to the next watchkeeper and stored after use.
- c. Filed by the engineer.
- d. Disposed of immediately after use.

PLOTTING

[View a plotting sheet](#)

Question 22 (18 Marks) Validates to TDMMH1107A element 2c, 2d, 2e, 2f, 3a,
Your ship was steering 104°T and its speed is 10 knots. A target on the radar display was observed over a period:

Time	True Bearing	Range
1015	104°T	11 nm
1021	104°T	9 nm
1027	104°T	7 nm

1. Plot the target showing appropriate working.
2. Find the CPA.
3. Find the TCPA.
4. Find target's course.
5. Find target's speed.
6. What action if any would you take to avoid a close quarters situation in reduced visibility?

Question 23 (18 Marks)

Your ship was steering 258°T and its speed is 8 knots. A target on the radar display was observed over a period:

Time	True Bearing	Range
0620	198°T	8.7 miles
0626	202°T	6.7
0632	209.5°T	4.8

1. Plot the target showing appropriate working.
2. Find the CPA.
3. Find the TCPA.
4. Find target's course.
5. Find target's speed.
6. What action if any would you take to avoid a close quarters situation in reduced visibility?

Question 24 (18 Marks)

Your ship is on a course of 030°T and its speed is 12 knots. A target on the radar display was observed over a period:

Time	Relative Bearing	Range
1200	327°Rel	4.3 miles
1206	331°Rel	4.1 miles
1212	335.5°Rel	3.7 miles.

1. Plot the target showing appropriate working.
2. Find the CPA.
3. Find the TCPA.
4. Find target's course.
5. Find target's speed.
6. What action if any would you take to avoid a close quarters situation in reduced visibility?

Answers

Q1	d	Q11	a
Q2	a	Q12	a
Q3	a	Q13	b
Q4	c	Q14	c
Q5	d	Q15	c
Q6	b	Q16	a
Q7	b	Q17	b
Q8	a	Q18	a
Q9	b	Q19	b
Q10	c	Q20	a
		Q21	b

Q22

- The workings should be shown
- 0 nm
- 2240
- 284°T
- 10 knots
- The target is forward of the beam, an alteration of course to port should be avoided. A substantial alteration of course to starboard is required.

Q23

- The workings should be shown
- 2 nm
- 1950
- 341°T
- 20 knots
- The target is forward of the beam, an alteration of course to port should be avoided. A substantial alteration of course to starboard may be required.

Q24

- The workings should be shown
- 3.4 nm
- 2245
- 017°Relative
- 047°T
- 12 knots
- The target is forward of the beam, an alteration of course to port should be avoided. A substantial alteration of course to starboard may be required.

Checked by:

Approved by: