

Duration: 3 Hours

Max Marks: 100

Note: Use of non-Programmable Scientific Calculator, Norie's/Burton's nautical tables, Ship's Weather Code is permitted. Radar Plotting Sheets will be provided. Questions No. 1 is COMPULSORY and carries 20 marks. Attempt any EIGHT questions of the remaining, which carry 10 marks each. If a question is sub-divided into parts, unless otherwise expressly provided against each part, all parts shall carry equal marks

1. Use the following data available from own vessels RADAR and find the targets CPA range and bearing, True course and speed and aspect at the time of last observation. During this time own vessels course was  $210^{\circ}$  T, speed 13.0 kts

Time	Target 1		Target 2	
	Bearing $^{\circ}$	Range NM	Bearing $^{\circ}$	Range NM
0000	$238^{\circ}$ T	9.8	$132^{\circ}$ T	8.6
0012	$233^{\circ}$ T	7.1	$115^{\circ}$ T	8.4
0024	$224^{\circ}$ T	4.6	$098^{\circ}$ T	9.1

2. What are various errors which could crop up during the installation and use of a ship board Doppler Log and how are they dealt with.
3. Define the terms:
  - a) Magnetic strength
  - b) Pole strength
  - c) Relative Permeability
  - d) Magnetic dip
  - e) Isoclinic lines
4. Discuss the various errors which can crop when using the ARPA as an aid to collision avoidance. How would the ships staff ensure that these are taken care off?
5. Explain what are dangerous semicircles and navigable semicircles in a tropical storm. How can a vessel identify it and use this information to avoid the storm.

6. With respect to maneuvering data available on board explain with a suitable sketches wherever applicable the meaning of:
  - a) Advance
  - b) Transfer
  - c) Tactical Diameter
  - d) Drift Angle.
  - e) Crash stop
  
7. What is the difference between stranding and beaching? Explain how and why a vessel is beached.
  
8. "Prevention is better than cure". What would be your actions as a responsible officer on or off watch to ensure that a fire is prevented on your ship?
  
9. What does the term "Situational awareness" mean to you with respect to safety whilst keeping a watch on the bridge? Explain in detail by giving as many examples as you can.
  
10. Write short notes & distinguish between the following:
  - a) Vector chart and Raster Chart
  - b) ENC and SENC
  - c) ECS and ECDIS
  - d) Display base and Standard Display in ECDIS
  - e) Safety Contour and Safety Depth in ECDIS

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