

HONG KONG POLYTECHNIC
CENTRE FOR MARITIME STUDIES

Course : Post experience Diploma in Ship Command
Class : Part A
Session : 1993/94
Subject : Navigation
Date : 13 December 1993
Time allowed : 3 hours

Instructions to Candidates : This paper contains TWO sections, A and B

Section A contains THREE questions.

Attempt ALL three questions.

Questions in Section A have equal marks and are each worth 20%.

Section B contains SIX questions.

Attempt any FOUR questions.

Questions in Section B have equal marks and are each worth 10%.

Minimum pass marks 60.

Section A

- A1. (a) Explain the difference between an analogue display, a digital display and a Rasterscan display.
- (b) What are the advantages of a Rasterscan display as compared to an analogue display.
- (c) What are the disadvantages of the Rasterscan display compared to an analogue display.
- A2. (a) Describe the warning signs which could indicate the approach of a tropical revolving storm.
- (b) Your ship, a 5000 GRT log carrier, speed 12 knots, is due to depart from Hong Kong bound for Kagoshima, Japan ($21^{\circ}30'N$ $130^{\circ}30'E$). At the same time typhoon RITA, with central pressure 964 mb is centred at about $20^{\circ}N$ $130^{\circ}E$. It is forecast to move WNW or NW at a speed of 15 knots.
- (i) On the chartlet provided plot the position of the storm indicating the dangerous semicircle.
- (ii) Indicate the possible path(s) of the storm.
- (iii) Discuss the possible courses of action available to the Master in order to avoid the severe weather conditions associated with the storm and at the same time minimise delay to the voyage.
- A3. Your ship is on a course of $200^{\circ}(T)$ at a speed of 15 knots in a slight sea and swell in mid ocean. The visibility is good. A sailor is reported missing. At 0930 hours after a thorough search of the ship it is assumed he has fallen overboard. It is established that was last seen at 0800 hours.
- (a) State what action you would now take.
- (b) Describe how you would conduct a search for him.
- (c) State the factors you would take into consideration before terminating the search if he is not found.

Section B

B4. Define :

- (a) A warm front
- (b) A cold front

Draw a vertical cross section through a cold front and describe the weather changes expected on its passage.

- B5. (a) Describe the role of correctors fitted to compensate for the effects of permanent magnetism.
- (b) What information is needed to correctly position these correctors?
- (c) State how this information can be obtained.

- B6. (a) What are the different types of display modes and presentation modes required by the IMO ARPA specifications. Briefly describe the advantages and disadvantages of each of these.
- (b) The IMO specifications refer to the minimum accuracies and times of achieving these accuracies in terms of Target CPA, courses and speeds. These are conditional on certain limits of sensor errors. State what sensor errors are referred to in the specifications.

B7. Compare the GPS and NNSS satellite position determination systems in terms of performance for the shipboard observer.

B8. At the end of your present voyage, your ship a 15,000 GRT bulk carrier with a draught of 10 metres, will undertake a long river passage with a pilot on board.

State the factors you would take into account in planning the river passage and list the information you would exchange with the pilot when he boards.

B9. List the items that should be covered in the Master's Standing Orders with respect to navigation and bridge watchkeeping when underway.

