THE HONG KONG POLYTECHNIC UNIVERSITY

DEPARTMENT OF MARITIME STUDIES

Course	:	Post experience Diploma in Ship Command
Class	:	Part A
Session	:	1995/96 (Reassessment)
Subject	:	Navigation
Date	:	16 January 1996
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%.

Section A

A1. Discuss the effect on maximum target detection range of the following radar parameters:-

(a) Pulse length
(b) Pulse repetition frequency
(c) Horizontal beamwidth to -3dB points
(d) Scanner rotational speed.

A2. In January in the South Indian Ocean in latitude 08°S longitude 080°E, while heading 230°, on passage from Penang, Malaysia to Durban, South Africa the following weather observations were noted in the ship's deck log :

1600 hrs	1012.4 mb	Wind N 1/2	calm sea
2000 hrs	1010.8 mb	Wind NW 3	slight SW swell
2400 hrs	1008.2 mb	Wind NW 6/7	moderate SW swell

(a) Based on these observations what would be your assessment of the situation at 2400 hours.

(b) State, giving reasons, the action you would take.

A3. Your vessel is on a course of 090°(T) at a maximum speed of 12 knots. The time at ship is 1000 hours. You have onboard an injured seaman who requires medical evacuation by helicopter.

There are two helicopter bases (Base A and Base B) available to you for this rescue work. The helicopters in both bases have the same safe operating range of 250 miles and also the same speed of 100 knots. They can land on the ship.

Base A bears 140°(T) distant 180 miles.
Base B bears 060°(T) distant 180 miles.

(a) State with reasons which base you would choose for the operation.

(b) The time at which the transfer will take place.

(c) The ship's course to steer.

(d) The time at which the helicopter should leave her base.

Section B

B4. (a) Define the term "Air Mass" and explain how air masses are formed.

(b) Explain how air masses are classified.

B5. Describe the formation of the following types of ocean current giving one example of each :

(a) Gradient currents;
(b) Wind-driven currents.

B6. Make a comparison of the principle advantages and disadvantages of a conventional magnetic compass and a dual axis flux gate compass.

B7. With the help of sketches explain how an automatic Direction Finder of your choice can indicate the direction of an incoming medium frequency radio signal and resolve its ambiguity.

B8. List the items that should be covered in the Master's standing orders with respect to Bridge watchkeeping when at anchor.

B9. You are informed soon after working out the noon sights that the Latitude obtained by the 2/0 and 3/0 differ by 20 miles.

State the actions that should be taken to determine the correct latitude.

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