

used Dec 92

E ~~17~~

HONG KONG POLYTECHNIC  
CENTRE FOR MARITIME STUDIES

---

Course : Post experience Diploma in Ship Command  
Class : Part A  
Session : 1992/93  
Subject : Navigation  
Date : 14 December 1992  
Time allowed : 3 hours

---

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

Section A contains THREE questions. Attempt any Two questions - Questions in Section A have equal marks and are each worth 10%

Section B contains SIX questions. Questions 4 and 5 are compulsory and are worth a total of 50%.

Attempt any THREE questions from the remaining 4 questions which carry equal marks and are each worth 10%

---

Part A

A1. Modern ocean going vessels are normally equipped with weather facsimile equipment.

Describe how the Master will use this equipment and the action he will take to route his vessel on a trans ocean passage.

A2. Surface air masses are described as convergent or divergent.

Explain the meaning of these two descriptions and outline :

- (a) The weather and pressure systems which will prevail.
- (b) The probable visibility and cloud formations.

A3. (a) Forecast the weather in the approaches to the English Channel for the next 24 hours.

Comment on :-

(i) the reason why there are heavy showers in mid Atlantic in  $50^{\circ}\text{N}$ ,  $20^{\circ}\text{W}$ .

(ii) the reason why the wind is calm at Cape Finisterre  $44^{\circ}\text{N}$ ,  $7^{\circ}\text{W}$ .

(b) Draw the probable line of the Polar Front :-

(i) as shown on this weather map

(ii) state the significance to the forecaster of the position and line of the polar front.

## Part B

### B4. Scene

You are in Mid North Atlantic in a 60,000 DWT container vessel in January.

You are informed that an aircraft containing 360 passengers has ditched in the sea approximately 150 miles astern of you.

The exact location of the ditching is not known.

A long range maritime surveillance aircraft (P3 type) is due to take off from Nova Scotia at any moment. Halifax MRCC is I/C of S.A.R. operations. Time is now 17:30 local. Sunset was at 17:12 local time.

Present weather : Partly cloudy. Light rain, Vis. 2 miles, warm front approaching.  
Forecast for next 12 hours :Vigourous cold front expected

### Action

Itemise all your actions throughout this event, using the following assumptions :-

- (a) You will be the first ship at the probable ditching position.
- (b) There were no signs or any indications whatsoever of a ditched aircraft at this position.

Your actions are to include but not be limited to:-

- (c) Signals that you are likely to receive.
- (d) Signals that you are likely or required to transmit.

### B5. The primary function of an ARPA is to provide data about target motion corresponding to the requirements specified in IMO Resolution A422.

- (a) State :-
  - (i) In what form is data required under these requirements.
  - (ii) What data is required.
- (b) The same document in the section on Performance Standards refers to the processes of "Detection", "Acquisition" and "Tracking".
  - (i) Distinguish between these processes
  - (ii) Describe the process implied in automatic acquisition.

- B6. Find the heights and times of HW and LW a.m. on 24th June 1986 at Cape Hotham (6325).

The least depth over the bar leading from Port Hotham is 9.5 metres, which is approximately 5 nautical miles from the berth. Allow a 2 metre UKC on a rising tide on a maximum draft aft of 11.5 M. State the time you order the pilot.

- B7. You are the Master of a vessel proceeding along a buoyed channel with a pilot on board.

You see a dangerous situation developing ahead of you. The pilot realises this situation too, but appears not to be taking any evasive measures.

State your actions as Master of the vessel, paying regard to your standing orders and the composition of your bridge watchkeeping team.

- B8. (a) State the principle of the echo sounder and describe how it is applied in an echo sounder recorder.
- (b) Explain the concept of Phased Range Scales and the precautions to be taken when using them.
- B9. (a) Describe the phenomenon of second trace radar echoes.
- (b) Explain the value of a high PRF rate.
- (c) Explain using diagrams the relationship between PRF rate and second trace echoes.

- End -

