

THE HONG KONG POLYTECHNIC UNIVERSITY

CENTRE FOR MARITIME STUDIES

Course : Post experience Diploma in Ship Command
Subject : Ship Technology
Class : PeDSC Part B
Session : 1994/95
Date : 7 June 1995
Time allowed : 3 hours (1330 - 1630)

Instructions to Candidates : Attempt Questions 1,2 and 3 and any four of the remainder.

This paper has nine questions.
Minimum pass marks 50%.

Available from :
Invigilator

✓ A1. (a) Describe the process of lighting up a boiler from first filling it with water until a pressure sufficient to blow down a gauge glass is available.

(b) Describe, with the aid of sketches, how to blow down a gauge glass.

(c) State any safety device fitted to a gauge glass.

(20 marks)

A2. Describe the function and purpose of Classification Societies, and discuss the tasks performed by a Classification Society such as Lloyd's Register of Shipping.

(20 marks)

A3. (a) List the four basic functions performed by a bridge control system for a marine direct reversing diesel engine.

(4 marks)

(b) Sketch a block diagram of a simple bridge control system for a marine direct reversing diesel engine.

(8 marks)

(c) Describe the sequence of operations of the system in (b) when the engine is ordered to run from AHEAD to ASTERN.

(8 marks)

- B4. A ship travels at 12 knots and consumes 305 tonnes of fuel oil for a voyage of 868 miles. If for an identical voyage, the ship steams the first 434 miles at 10 knots, calculate the maximum speed that could be maintained for the remainder of the voyage if the same total amount of fuel is consumed. (1 nm = 1852 m)
(10 marks)
- B5. Describe, with the aid of sketch, the process of scavenging using a turbocharger and any other associated equipment.
(10 marks)
- B6. (a) List the main functions of transverse bulkheads in ships.
(b) State the main requirements by Classification Societies for transverse bulkheads in ships.
(10 marks)
- B7. (a) With the aid of suitable waveform diagrams explain what is meant by proportional-plus-derivative control actions.
(8 marks)
(b) List the names commonly given to proportional control adjustment, integral control adjustment and derivative control adjustment in a shipborne auto-pilot system.
(2 marks)
- B8. Define the term "Planned Maintenance" and describe its relationships, in principle, with "Failure Maintenance" and "Preventive Maintenance."
(10 marks)
- B9. State the criteria and describe the rationale in brief, in choosing suitable paints for a ship's underwater areas.
(10 marks)

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