

HONG KONG POLYTECHNIC  
DEPARTMENT OF NAUTICAL STUDIES

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Course : Certificate of Proficiency in Ship Command  
Class : Part B  
Session : 1990 - 91  
Subject : Ship Technology  
Date : 24 JUNE 1991 (Re-exam)  
Time allowed : 3 hours

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Instructions to  
candidates : Attempt questions 1, 2 and 3 and any  
FOUR of the remainder.  
This paper has nine questions.

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Available from  
invigilator :

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- ✓ 1. (a) Sketch and describe an explosion relief valve as fitted to the crankcase of a diesel engine.
- (b) State the reason for fitting explosion relief valves.
- (c) Name another device that can be used to give warning of conditions that may lead to a crankcase explosion. What form of warning and indication does it provide?

( 20 marks )

- ✓ 2. (a) List the main sources of longitudinal stresses in a ship's hull during service.
- (b) With the aid of sketches explain how these longitudinal stresses are determined in practice from the weight and buoyancy distributions.

( 20 marks )

3. (a) Draw the block diagram of a basic closed-loop control system and briefly describe the function of each block.
- (b) Describe a simple cascade control system used in the engine cylinder-head cooling system.

( 20 marks )

- ✓ 4. Your container vessel has experienced a minor collision with a vessel crossing from your starboard side in the approaches to Port Said.

In Port Said the Classification Society representative comes on board to carry out a survey which will include an in-water survey.

Describe what you would expect him to do and list the typical temporary repairs he may recommend.

( 10 marks )

- ✓ 5. You have just been appointed to a newly-built passenger ferry. Draw up an inspection and maintenance schedule for the fire equipment on board.

( 10 marks )

- ✓ 6. Sketch the impeller and casing arrangement of a centrifugal pump and hence explain how the pump operates.

( 10 marks )

7. (a) State the purpose of a navigation light sentinel.  
(b) Describe the principle of operation of a navigation light sentinel.

( 10 marks )

8. Sketch and describe a cargo inert gas system for a tanker.

( 10 marks )

9. With reference to structural continuity, describe, with the aid of sketches the construction of a bilge keel.

( 10 marks )

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