

SEP 2025

Q1 (16 marks)

- (a) Sketch a fixed Carbon Dioxide (CO₂) fire fighting system, label its main components. (8)
- (b) Describe the sequence of operations for discharging a fixed CO₂ system in a ship's engine room, assuming a fire has been detected and the alarm has been raised. (8)
- (c) What is the purpose of the time delay mechanism in a fixed CO₂ system, and how does it contribute to crew safety? (4)

Q2 (16 marks)

- (a) State the areas where an emergency fire pump is commonly installed on a ship and explain the reasoning behind these locations. (6)
- (b) What fuel arrangements are required for a diesel-driven emergency fire pump to ensure its independent operation? (4)
- (c) What specific checks should be performed on the emergency fire pump during weekly drills? (6)
- (d) Explain the precautions to be taken to protect the emergency fire pump system from freezing in sub-zero temperatures. (4)

Safety

Q3 (16 marks)

- (a) Outline the potential causes of a crankcase explosion in a ship's machinery space. (8)
- (b) Describe the function of crankcase relief doors. (4)
- (c) Explain the purpose of oil mist detectors in preventing these events on a ship. (8)

Safety

Q4 (16 marks)

- (a) Illustrate with a diagram, how the engine room's hyper mist or high-pressure fog firefighting system works. Describe the sequence of events that occurs during automatic activation of a Hyper Mist system. (12)
- (b) List the machinery spaces and equipment on a ship where a Hyper Mist system is typically installed. (4)
- (c) Explain the manual activation procedure for the Hyper Mist system, both from the local control point and the main control panel. (4)

Q5 (16 marks)

What are the various Annexes to the MARPOL 73/78 convention. Briefly state, what each one of the Annex signifies and the key regulations within each. (20)

MARPOL

Q6 (16 marks)

Petroleum vapours are a dangerous substance and when mixed with air can be ignited. With this in mind, briefly describe,

(a) An explosimeter or combustion gas indicator which can be used to check the atmosphere of a tank or pump room (10)

(b) Describe the explosimeter and its operation. (10)

Q7 (16 marks)

(a) What are the components of a typical Self Content Breathing Apparatus (SCBA)? (4)

(b) State the requirements that govern the SCBA sets and its ready availability during an emergency. (10)

(c) Describe the pre-donning checks for a shipboard SCBA unit before entering a confined or smoke-filled space. (6)

Enclosed space

SCBA & EEBD

Q8 (16 marks)

Write short notes on any four of the following:

(a) marking on a lifeboat

(b) voyage data recorder

(c) embarkation ladder

(d) daylight signalling lamp

(e) emergency escape

Life Saving Appliance