



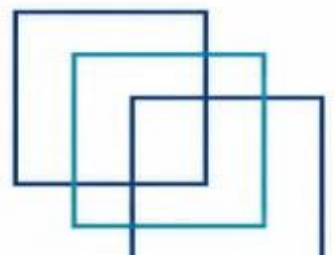
# MEO CLASS 4 WRITTEN: SSEP

(SHIP SAFETY & ENVIRONMENTAL PROTECTION)

FOR INDIAN COMPETENCY EXAM

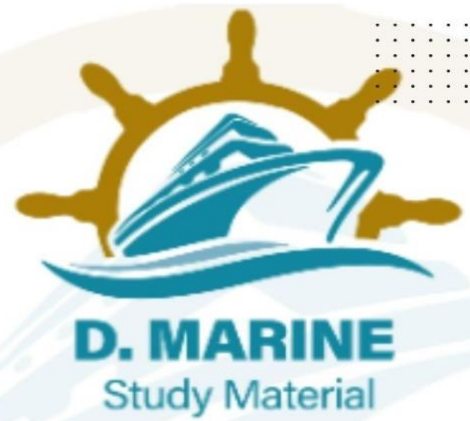


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## JANUARY - 2025(PART-1)

Q1.a) What do you understand by the term 'EEXI'? Provide an overview and its implementation process. (8)

(b) Discuss the improvement methods commonly considered in order to achieve energy efficiency optimization with respect to EEXI? (12)

**2023/DEC/Q1** **2024/JUN/Q3** **2025/JAN1/Q1**

[Click Here to See the Answer](#)

Q2.a) How does the Selective Catalytic Reduction (SCR) system work? (10)

(b) If Selective Catalytic Reduction (SCR) has such an extremely high NOx reduction efficiency why is it so rare in marine applications? (10)

**2023/DEC/Q2** **2024/MAY2/Q2** **2024/JUN/Q4** **2024/AUG/Q2**

**2025/JAN1/Q2**

[Click Here to See the Answer](#)

Q3.a) Explain why bunkering is considered a hazardous operation? What type of casualty can occur during bunkering? Discuss the implications of such incidents, if so happens. (10)

(b) Name the bunkering procedure to be followed:

(i) In preparation of receiving bunkers (4)

(ii) While receiving bunkers (3)

(iii) On completion of bunkering (3)

**2023/DEC/Q4** **2024/MAY2/Q4** **2024/JUN/Q6** **2024/AUG/Q4**

**2024/SEP2/Q4** **2025/JAN1/Q3**

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Q4.a) What are the sulphur limits for fuel in use under MARPOL? (5)

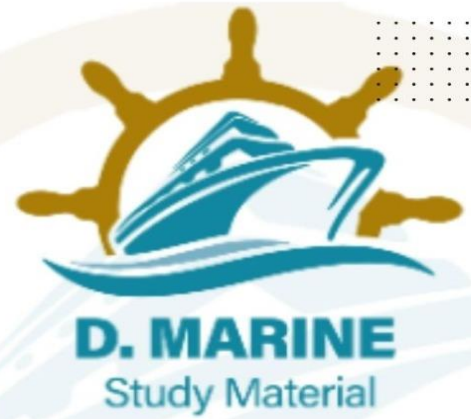
(b) What happens if compliant fuel cannot be obtained in the port of bunkering? (5)

(c) What if the sulphur analysis resulting from a commercial analysis does not match the bunker delivery note? (5)

(d) What are the timelines for installation of "in use" fuel sampling points



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on ships? Does it apply for existing ships? (5)

2023/DEC/Q5 2024/MAY2/Q5 2024/AUG/Q5 2024/SEP2/Q5  
2025/JAN1/Q4

[Click Here to See the Answer](#)

Q5. Write short notes on the following:

- (a) EPIRB and SART (5)
- (b) Hydrostatic Release Unit (HRU) (5)
- (c) Pyrotechnics (5)
- (d) Muster list indicating essential elements (5)

2023/DEC/Q6 2024/MAY2/Q6 2024/JUN/Q7 2024/AUG/Q6  
2025/JAN1/Q5

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Q6. State the causes of scavenge fire in a two-stroke engine and explain how the possibility of such an occurrence can be reduced. If a scavenge fire does occur what action should be taken? Discuss the use of CO2 and dry powder for extinguishing such a fire and describe a fixed installation for applying one of these chemicals (20)

2023/DEC/Q7 2024/MAR/Q7 2024/MAY1/Q9 2024/SEP2/Q7  
2024/OCT/Q9 2025/JAN1/Q6

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Q7.a) What are the requirements of Emergency source of electrical power as per SOLAS Convention as amended, in cargo ships (6)

(b) Name the services that are required to be supplied power from emergency source (6)

(c) What are the starting arrangements for emergency generating sets (8)

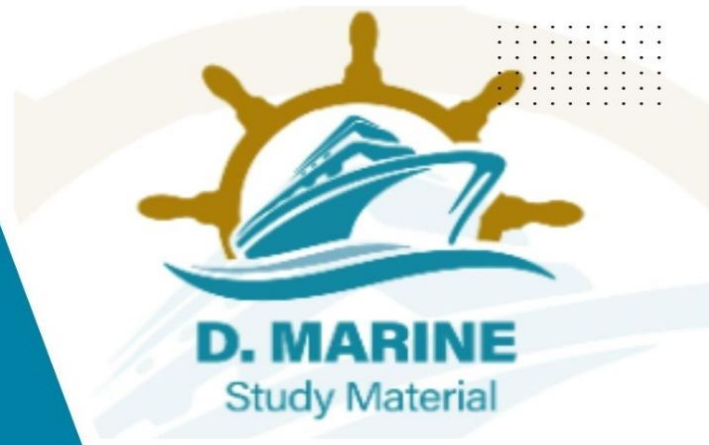
2022/DEC/Q1 2023/DEC/Q8 2024/MAY2/Q8 2024/JUN/Q8  
2024/AUG/Q8 2024/SEP2/Q8 2025/JAN1/Q7

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Q8. How would you test the preparedness of your ship in anticipation of a Port State Control (PSC) inspection, before arrival port in the following



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areas:

- (a) Paint store and galley (4)
- (b) Fire control station and CO2 room (4)
- (c) Steering gear including chemical locker (4)
- (d) Lifeboat deck (8)

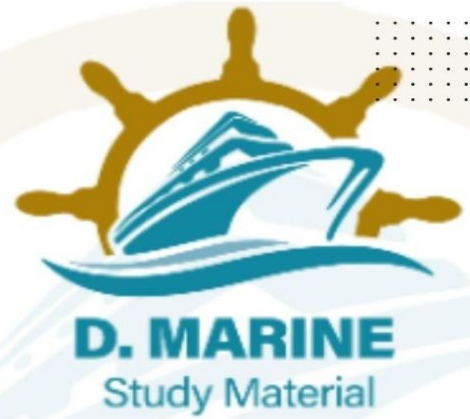
**2023/DEC/Q9** **2024/MAY2/Q9** **2024/AUG/Q9** **2025/JAN1/Q8**

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## JANUARY - 2025 (PART-2)

Q1.a) What are the short-term measures devised by IMO for controlling the emission of Green House gases (5)

(b) State the measures and how they will take effect. What size of ships are these rules applicable to? (5)

(c) What documents will be required to be carried on board under the new regulations? (5)

(d) What is SEEMP Part III? State its contents (5)

**2024/JAN/Q2** **2024/SEP1/Q2** **2025/JAN2/Q1**

[Click Here to See the Answer](#)

Q2.a) Name and describe in detail any three mandatory IMO Codes. Explain their significant features. (10)

(b) What do you understand by the term 'Protocol to a convention'? Give examples. (10)

**2024/JAN/Q5** **2024/SEP1/Q5** **2025/JAN2/Q2**

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Q3.a) With respect ISPS code, define the levels of security and explain what action needs to be taken in each case (8)

(b) What is SSP and state its purpose? Name the essential points that the SSP must address (8)

(c) Explain the term 'Declaration of security'.(4)

**2024/JAN/Q6** **2024/SEP1/Q6** **2025/JAN2/Q3**

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Q4.a) List the items which are contained in the training manual pertaining to life saving appliances (5)

(b) Describe the frequency of abandon ship drills and fire drills and how they should be conducted. (5)

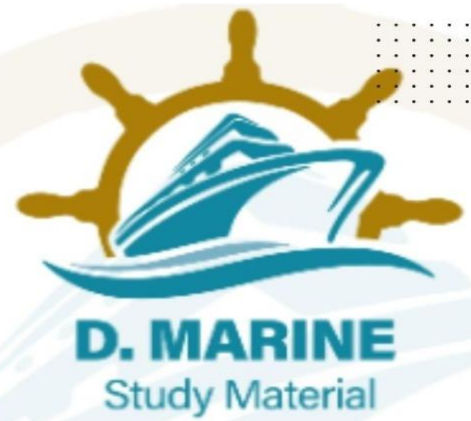
(c) State the regulation regarding the maintenance of lifeboat falls. (5)

(d) List the LSA to be carried by all ships. (5)

**2024/JAN/Q7** **2024/SEP1/Q7** **2025/JAN2/Q4**



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Q5. Write short notes on the following:

- (a) SOPEP (5)
- (b) MARPOL Annex IV discharge criteria (5)
- (c) SEEMP (5)
- (d) NOx Technical File (5)

**2025/JAN2/Q5**

[Click Here to See the Answer](#)

Q6.a) With reference to the cargo tanks of oil tankers: State

- (i) The purpose of the pressure vacuum valve (5)
- (ii) The dangers of venting during loading via open tank hatches (5)
- (b) (i) Sketch a high velocity vent (5)
- (ii) Describe the operation of this vent and state why such a device is used.

**2024/JAN/Q8** **2024/SEP1/Q8** **2025/JAN2/Q6**

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Q7.a) State with reasons the essential requirements for unattended machinery spaces (8)

(b) With reference to a periodically unattended machinery space of a dry cargo vessel discuss the requirements for:

- (i) Protection against flooding (6)
- (ii) Control of propulsion machinery from the navigating bridge (6)

**2024/MAY1/Q3** **2024/SEP1/Q9** **2024/OCT/Q3** **2025/JAN2/Q7**

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Q8.a) Draw and explain a Fixed Foam Fire Fighting system (12)

(b) What is the proportion ratio of both high expansion and low expansion Foam Fire Fighting system? (4)

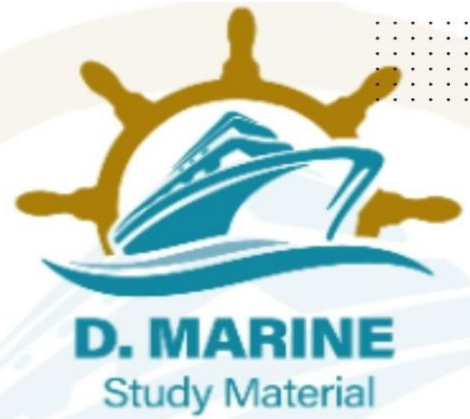
(c) What periodic test are carried out to ensure the readiness of the fixed foam fire fighting system? (4)

**2025/JAN2/Q8**

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## FEBRUARY - 2025

Q1. Considering that the engine room is the most common single space on board ships for fire to break out, discuss the merits and demerits of the following fixed firefighting systems: (20)

- (a) Carbon dioxide
- (b) Pressure water spray
- (c) High expansion foam

**2024/MAY1/Q1** **2024/OCT/Q1** **2025/FEB/Q1**

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Q2. Describe an emergency electrical power generating plant for use in the event of a complete failure of the main electrical power and make reference to:

- (a) Location (4)
- (b) Starting arrangements (4)
- (c) Fuel oil and its supply (4)
- (d) Cooling system (4)
- (e) Periodic attention required (4)

**2023/AUG/Q2** **2024/MAY1/Q2** **2024/OCT/Q2** **2025/FEB/Q2**

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Q3. State the causes of scavenge fire in a two-stroke engine and explain how the possibility of such an occurrence can be reduced. If a scavenge fire does occur what action should be taken? Discuss the use of CO<sub>2</sub> and dry powder for extinguishing such a fire and describe a fixed installation for applying one of these chemicals (20)

**2023/APR/Q1** **2023/DEC/Q7** **2024/MAR/Q7** **2024/MAY1/Q9**

**2024/SEP2/Q7** **2024/OCT/Q9** **2025/JAN/Q6** **2025/FEB/Q3**

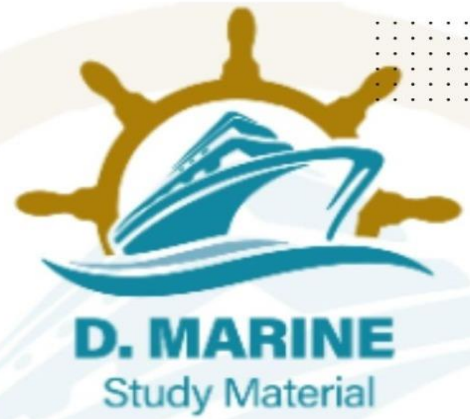
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Q4. During the loading of a petroleum tanker, the incoming cargo forces out from the tank its previous atmospheric contents (air-vapour-inert gas). Explain:

- (a) The dangers of venting during the loading via open tank hatches (10)



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(b) Why the pressure/vacuum valves is not used for venting (10)

**2024/MAY1/Q4** **2024/OCT/Q4** **2025/FEB/Q4**

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Q5.a) Describe the changes which take place within a lead-acid battery during discharge and when charging is taking place (10)

(b) What are the safety features you would find in:

(i) Paint store

(ii) Battery room (10)

**2024/MAY1/Q5** **2024/OCT/Q5** **2025/FEB/Q5**

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Q6. What are the various Annexes to the MARPOL 78 convention. Briefly state what each one of the Annex signifies and the key regulations within each (20)

**2024/MAY1/Q6** **2024/OCT/Q6** **2025/FEB/Q6**

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Q7. 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)

**2024/MAY1/Q7** **2024/OCT/Q7** **2025/FEB/Q7**

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Q8.a) The Centrifugal ballast pump in the engine room also doubles as a fire pump in your ship. What specific precautions would you take to change over the ballast pump from ballast / de-ballast mode to a fire pump mode (10)

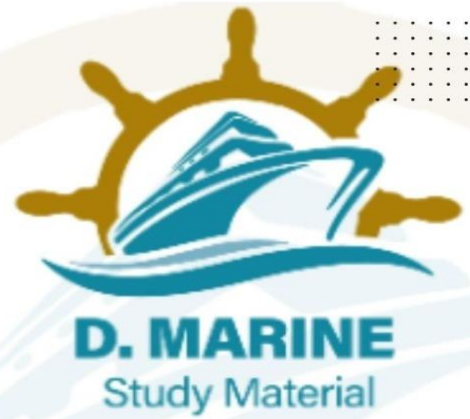
(b) How is the emergency bilge suction tested? (10)

**2024/MAY1/Q8** **2024/OCT/Q8** **2025/FEB/Q8**

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## MARCH - 2025

Q1. In engine rooms that are operated under UMS conditions describe with the aid of sketches how the following are monitored:

- (a) The perforation of a high-pressure fuel pipe (7)
- (b) The imminence or possibility of a scavenge fire (7)
- (c) Engine room bilges (6)

**2022/OCT/Q4** **2024/APR2/Q1** **2024/NOV/Q1** **2025/MAR/Q1**

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Q2. With reference to the ISPS Code state the following:

- (a) Duties of ship's security officer (8)
- (b) Shipping company's responsibilities (6)
- (c) Certificate issued as per the code and its validity (6)

**2022/SEP/Q7** **2023/MAY1/Q8** **2024/APR2/Q2** **2024/NOV/Q2**

**2025/MAR/Q2**

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Q3.a) Sketch and describe a non-portable 136-liter foam fire extinguisher

- (b) Briefly explain how to operate the foam extinguisher (3)
- (c) State the two constituents used, which enable stable foam to be produced (3)
- (d) State for what approximate length of time the engine should generate foam (3)
- (e) Where on board ship would you expect such an extinguisher to be located (3)

**2024/APR2/Q3** **2024/NOV/Q3** **2025/MAR/Q3**

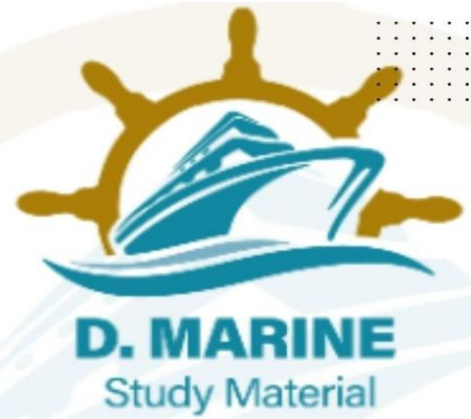
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Q4. With reference to an emergency source of electrical power in cargo ships:

- (a) Describe a typical power source (10)
- (b) Give a typical list of essential services, which must be supplied simultaneously (5)



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(c) Explain how the emergency installation can be periodically tested (5)

**2024/APR2/Q4** **2024/NOV/Q4** **2025/MAR/Q4**

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Q5.a) Describe the routine testing required for self-contained breathing apparatus sets (10)

(b) Describe the procedure that you would adopt to find missing personnel in a smoke-filled accommodation area (10)

**2022/AUG/Q3** **2023/AUG/Q1** **2024/APR2/Q5** **2024/NOV/Q5**

**2025/MAR/Q5**

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Q6. a) Describe, with the aid of a sketch, the braking arrangement for the controlled lowering of lifeboats (10)

(b) State the periodic survey requirements relating to the wire rope fall of lifeboats (10)

**2024/APR2/Q6** **2024/NOV/Q6** **2025/MAR/Q6**

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Q7.a) Sketch a simple line diagram showing a shipboard oily water separator in series with a coalescing second stage (8)

(b) Briefly describe the above arrangement and its operations also state the allowable oil content in ppm of the discharge effluent from such an arrangement (8)

(c) Explain how oil density and temperature relate to separation (4)

**2024/APR2/Q7** **2024/NOV/Q7** **2025/MAR/Q7**

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Q8.a) List the SOLAS requirements for steering gear system of an ocean-going ship (10)

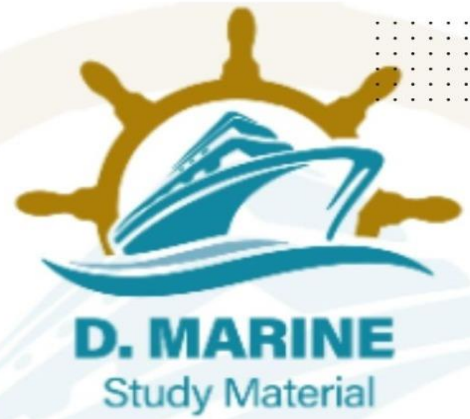
(b) Describe the drills and exercises mandated by the SOLAS convention with regards to the steering gear system with reference to the convention

**2024/APR2/Q8** **2024/NOV/Q8** **2025/MAR/Q8**

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## APRIL - 2025(PART-1)

Q1. With reference to lifeboats, describe:

- A handbrake used for lowering and state how it may be tested. (8)
- The centrifugal brake and state the method of testing. (8)
- Is there a regulation on the lowering speed of the boat? Explain in brief.

**2025/APR1/Q1**

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Q2.a) What are the causes of an uptake fire? (6)

(b) State the conditions under which light soot fire intensifies to a high temperature fire in boiler uptake. What temperatures are produced in each case. (6)

(c) How boiler uptake fire is controlled? Why the use of soot blowers is prohibited? (8)

**2023/FEB/Q5** **2024/JUL/Q2** **2024/DEC1/Q2** **2025/APR1/Q2**

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Q3. With respect to MLC 2006; write short notes on following:

(a) Hours of Rest/Hours of Work (5)

(b) DMLC Part 1 and DMLC Part II (5)

(c) On board complaint redressal (5)

(d) Why is MLC 2006 considered as the 'bill of rights' (5)

**2023/FEB/Q7** **2024/JUL/Q3** **2024/DEC1/Q3** **2025/APR1/Q3**

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Q4.a) Sketch and describe the working of a Sprinkler type, automatic fire detection and firefighting system on ships, labelling its components in the circuit (10)

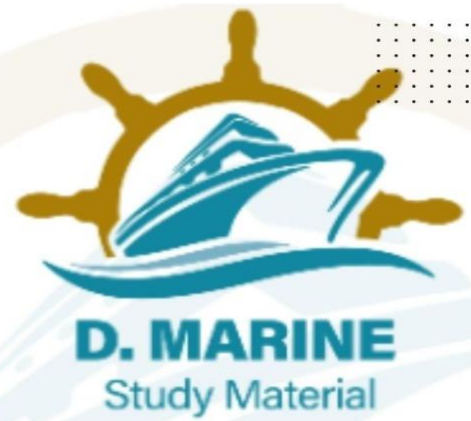
(b) What maintenance is required periodically? State the routine tests required? (10)

**2023/FEB/Q9** **2024/JUL/Q4** **2024/DEC1/Q4** **2025/APR1/Q4**

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Q5. Write short notes on following:

- (a) Flammability diagram and its significance (10)
- (b) Risk assessment: why and how it is carried out on ships with examples (10)

**2024/JUL/Q5** **2024/DEC1/Q5** **2025/APR1/Q5**

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Q6.a) What is ozone depletion and what are its effects? (5)

(b) Name the gases which have ozone depleting potential and how ODP is classified (5)

(c) What actions are now in place to control the usage or accidental release of such gases. What recordkeeping is essential? (10)

**2023/JAN/Q2** **2023/MAR/Q1** **2023/OCT/Q2** **2024/FEB/Q7**

**2024/JUL/Q6** **2024/DEC1/Q6** **2025/APR1/Q6**

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Q7.State why the following equipment's require shut down during a major fire which has necessitated the evacuation of the machinery spaces:

(a) Settling and service tank valves (4)

(b) Fuel transfer and supply pumps (4)

(c) Mechanical and natural ventilation (4)

(d) State how the fire is brought under control using the facilities available outside the machinery spaces (8)

**2022/OCT/Q2** **2023/MAR/Q2** **2024/JUL/Q7** **2024/DEC1/Q7**

**2025/APR1/Q7**

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Q8.a) Sketch a simple line diagram showing a shipboard oily water separator in series with a coalescing second stage (10)

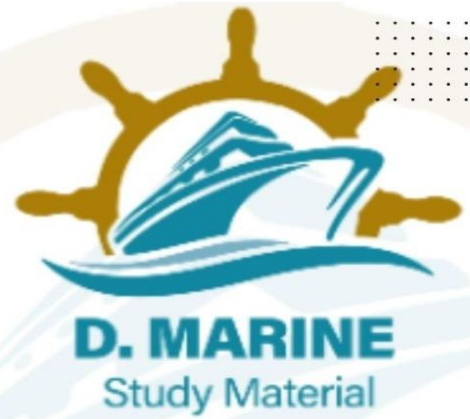
(b) Briefly describe the above arrangement and its operations also state the allowable oil content in ppm of the discharge effluent from such an arrangement (10)

**2022/OCT/Q3** **2023/MAR/Q3** **2024/JUL/Q8** **2025/APR1/Q8**

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## APRIL - 2025(PART-2)

Q1.a) In relation to International Load Line Convention, define Type 'A' and Type 'B' ships (10)

(b) What is freeboard and how is it determined. Draw a line sketch of Load Line marks (10)

**2024/MAY2/Q1** **2024/AUG/Q1** **2025/APR2/Q1**

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Q2.a) How does the Selective Catalytic Reduction (SCR) system work? (10)

(b) If Selective Catalytic Reduction (SCR) has such an extremely high NO<sub>x</sub> reduction efficiency why is it so rare in marine applications? (10)

**2023/DEC/Q2** **2024/APR1/Q2** **2024/MAY2/Q2** **2024/JUN/Q4**

**2024/AUG/Q2** **2025/JAN1/Q2** **2025/APR2/Q2**

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Q3.a) Define enclosed space; Give examples of enclosed spaces on ships (7)

(b) What is the procedure for an enclosed space entry, describe the same

(c) What type of permit is required for entry into enclosed spaces and how is it issued. What is its validity (6)

**2023/JAN/Q5** **2023/OCT/Q5** **2023/DEC/Q3** **2024/APR1/Q3**

**2024/MAY2/Q3** **2024/JUN/Q5** **2024/AUG/Q3** **2024/SEP2/Q3**

**2025/APR2/Q3**

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Q4.a) Explain why bunkering is considered a hazardous operation? What type of casualty can occur during bunkering? Discuss the implications of such incidents, if so happens (10)

(b) Name the bunkering procedure to be followed:

(i) In preparation of receiving bunkers (4)

(ii) While receiving bunkers (3)

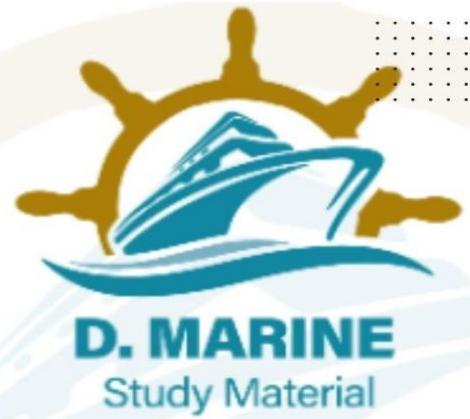
(iii) On completion of bunkering (3)

**2023/DEC/Q4** **2024/APR1/Q4** **2024/MAY2/Q4** **2024/JUN/Q6**

**2024/AUG/Q4** **2024/SEP2/Q4** **2025/JAN1/Q3** **2025/APR2/Q4**



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- Q5.a) What are the sulphur limits for fuel in use under MARPOL (5)  
(b) What happens if compliant fuel cannot be obtained in the port of bunkering (5)  
(c) What if the sulphur analysis resulting from a commercial analysis does not match the bunker delivery note (5)  
(d) What are the timelines for installation of “in use” fuel sampling points on ships? Does it apply for existing ships (5)

**2023/DEC/Q5** **2024/APR1/Q5** **2024/MAY2/Q5** **2024/AUG/Q5**  
**2024/SEP2/Q5** **2025/JAN1/Q4** **2025/APR2/Q5**

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Q6. Write short notes on the following:

- (a) EPIRB and SART (5)  
(b) Hydrostatic Release Unit (HRU) (5)  
(c) Pyrotechnics (5)  
(d) Muster list indicating essential elements (5)

**2023/DEC/Q6** **2024/APR1/Q6** **2024/MAY2/Q6** **2024/JUN/Q7**  
**2024/AUG/Q6** **2025/JAN1/Q5** **2025/APR2/Q6**

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Q7. Enumerate the essential elements of ISM code. To what type of vessels, it is applicable. Describe various documents, certificates issued under this Code. State their validity and periodical audit and the issuing authorities

**2022/AUG/Q8** **2024/MAY2/Q7** **2024/AUG/Q7** **2025/APR2/Q7**

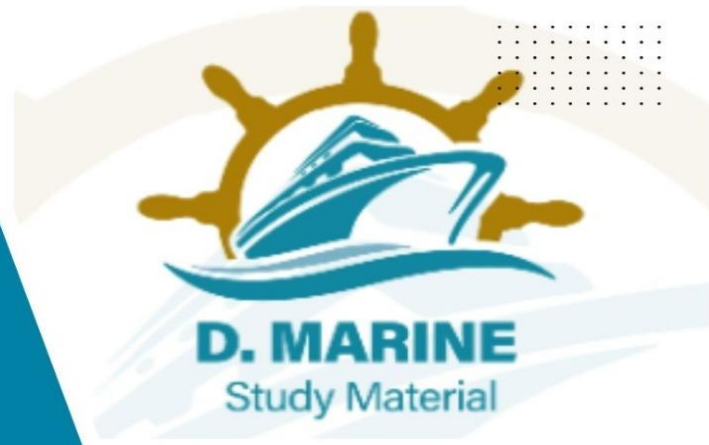
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- Q8.a) What are the requirements of Emergency source of electrical power as per SOLAS Convention as amended in cargo ships (6)  
(b) Name the services that are required to be supplied power from emergency source (6)  
(c) What are the starting arrangements for emergency generating sets (8)

**2022/DEC/Q1** **2023/DEC/Q8** **2024/APR1/Q8** **2024/MAY2/Q8**



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**2024/JUN/Q8** **2024/AUG/Q8** **2024/SEP2/Q8** **2025/JAN1/Q7**  
**2025/APR2/Q8**

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Q9. How would you test the preparedness of your ship in anticipation of a Port State Control (PSC) inspection, before arrival port in the following areas:

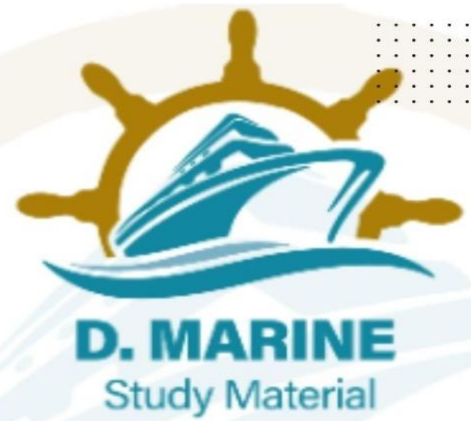
- (a) Paint store and galley (4)
- (b) Fire control station and CO<sub>2</sub> room (4)
- (c) Steering gear including chemical locker (4)
- (d) Lifeboat deck (8)

**2023/DEC/Q9** **2024/APR1/Q9** **2024/MAY2/Q9** **2024/AUG/Q9**  
**2025/JAN1/Q8** **2025/APR2/Q9**

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## JUNE - 2025

- Q1.i) Why is it necessary to treat ballast water, prior to its discharge? (8)  
ii) Explain the difference between ballast water exchange and ballast water treatment. Name the standards used in each case. (12)

**2023/JUN/Q1** **2024/SEP2/Q1** **2025/JUN/Q1**

[Click Here to See the Answer](#)

- Q2.a) What are the different types of garbages that are generated on board as per MARPOL Annex V and what are the provisions for dealing with them? (10)

b) State the requirements for maintaining Garbage management plan and Garbage Record Book. Name the entries to be made in garbage record book

**2024/SEP2/Q2** **2025/JUN/Q2**

[Click Here to See the Answer](#)

- Q3.a) Draw a simple sketch of the Inert Gas (IG) System and explain the basic functional requirements of the IG System (10)

b) What are the regulations defining the fire pump requirement for a cargo vessel as per the SOLAS convention? Write short notes on isolating valve and relief valve in fire main line (10)

**2025/JUN/Q3**

[Click Here to See the Answer](#)

- Q4.a) List out the markings on a Life raft and Lifeboat (6)

b) What is the significance of a Fire Control Plan? Explain at least five key fire safety elements that feature in the Fire Control Plan (8)

c) Write short note on SART. How is it tested during a drill (6)

**2025/JUN/Q4**

[Click Here to See the Answer](#)

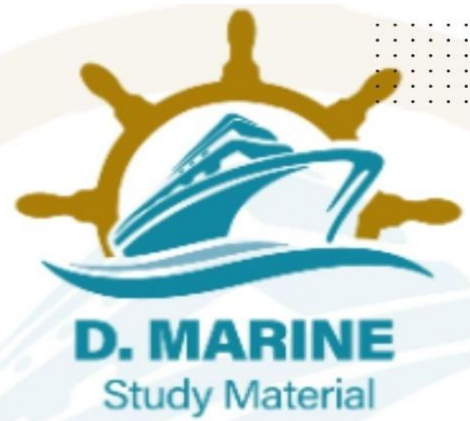
- Q5.i) Name the types of portable fire extinguishers used on board ships (5)

ii) State the use of the named type of extinguishers for extinguishing the concerned type of fire (5)

iii) Sketch and describe a mechanical foam type of extinguisher naming the



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components and material used to generate foam (10)

**2023/JUN/Q6** **2024/SEP2/Q9** **2025/JUN/Q5**

[Click Here to See the Answer](#)

Q6. With respect to gravity lifeboat davits describe and state the purpose of: (20)

- i) Centrifugal brakes
- ii) Deadman's handle
- iii) Limit switches on davits
- iv) Onload release gear

**2023/MAY2/Q7** **2023/JUN/Q9** **2024/SEP2/Q6** **2025/JUN/Q6**

[Click Here to See the Answer](#)

Q7.a) State the causes of scavenge fire in a two-stroke engine and explain how the possibility of such an occurrence can be reduced (10)

b) If a scavenge fire does occur what action should be taken?

Discuss the use of CO<sub>2</sub> and dry powder for extinguishing such a fire and describe a fixed installation for applying one of these chemicals (10)

**2022/AUG/Q2** **2022/SEP/Q3** **2022/DEC/Q2** **2023/APR/Q1**

**2023/DEC/Q7** **2024/APR1/Q7** **2024/MAR/Q7** **2024/MAY1/Q9**

**2024/SEP2/Q7** **2024/OCT/Q9** **2025/JAN1/Q6** **2025/FEB/Q3**

**2025/JUN/Q7**

[Click Here to See the Answer](#)

Q8.a) What are the permit to work system on a ship? Name at least three permit to work system used and their significance (8)

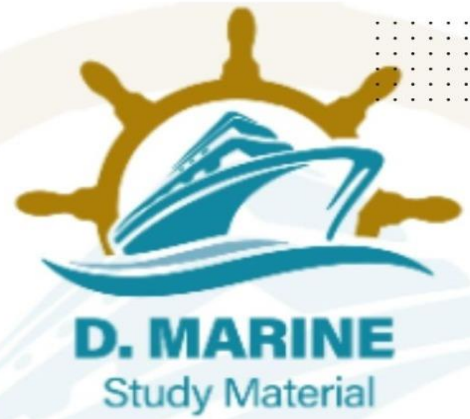
b) Prepare a checklist for making a man-entry into a tank which had previously carried fuel oil (12)

**2025/JUN/Q8**

[Click Here to See the Answer](#)



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## JULY - 2025

- Q1.a) Explain the purpose of a Hot Work permit (6)  
(b) State the different types of work permit used on ships and their utility  
(c) Prepare a checklist for issuance of Hot Work permit (8)

**2023/FEB/Q4** **2024/FEB/Q1** **2024/SEP1/Q1** **2024/DEC2/Q1**  
**2025/JUL/Q1**

[Click Here to See the Answer](#)

Q2. Write short notes on following:

- (a) Immersion suit (5)  
(b) TPA (5)  
(c) Anti-exposure suit (5)  
(d) EEBD (5)

**2023/FEB/Q6** **2024/FEB/Q2** **2024/DEC2/Q2** **2025/JUL/Q2**

[Click Here to See the Answer](#)

- Q3.a) Name the gases usually found inside enclosed spaces (6)  
(b) What instruments are used in detecting / checking the gases which are present (6)  
(c) What is the minimum level of oxygen required for entry into enclosed space (2)  
(d) With a simple diagram explain the working of oxygen content meter (6)

**2023/JUL/Q2** **2024/FEB/Q3** **2024/DEC2/Q3** **2025/JUL/Q3**

[Click Here to See the Answer](#)

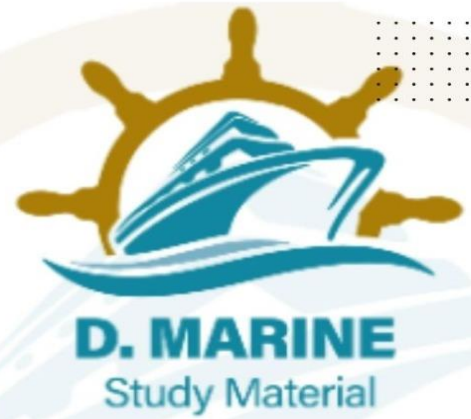
- Q4.a) What is a Fire Control Plan (FCP) and what information does it provide (5)  
(b) State 5 graphic symbols shown in the plan and state the language in which the plan is drafted (5)  
(c) Mention the locations at which the FCP is displayed (5)  
(d) How does the FCP aid the shore firefighting team

**2025/JUL/Q4**

[Click Here to See the Answer](#)



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Q5. Write short notes on following with respect to lifeboats:

- (a) Marking on lifeboat (5)
- (b) Davit limit switches (5)
- (c) Centrifugal brakes (5)
- (d) DMU/HRU (5)

**2025/JUL/Q5**

[Click Here to See the Answer](#)

- Q6.a) Explain the function of IMO as one of UN specialized agencies (6)  
(b) Briefly explain the structure of IMO including the main committees (7)  
(c) Explain the process of adopting a convention at IMO (7)

**2023/JUL/Q7** **2024/FEB/Q6** **2024/DEC2/Q6** **2025/JUL/Q6**

[Click Here to See the Answer](#)

- Q7.a) Sketch and explain the operation of the Quick Closing Valve (10)  
(b) What do you understand by the Emergency Shutdown System Explain the operation in an emergency (10)

**2024/FEB/Q8** **2024/DEC2/Q7** **2025/JUL/Q7**

[Click Here to See the Answer](#)

Q8.Using a simple sketch describe the fire main of a ship with which you are familiar Include in your answer:

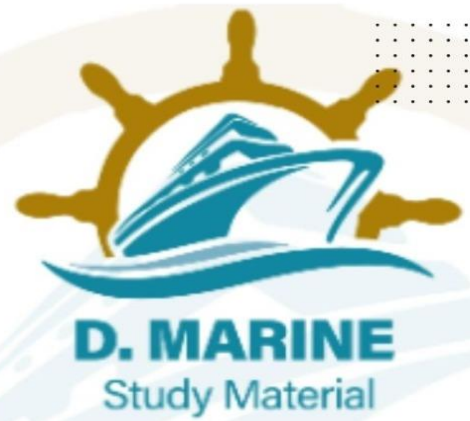
- (a) The number and type of pumps (5)
- (b) Pipe materials (5)
- (c) Reasons for the drain valve (5)
- (d) Location of the international shore coupling (5)

**2022/OCT/Q6** **2023/MAR/Q6** **2024/FEB/Q9** **2024/DEC2/Q8**  
**2025/JUL/Q8**

[Click Here to See the Answer](#)



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## AUGUST - 2025

Q1.a) What are the short-term measures devised by IMO for controlling the emission of Green House gases (5)

(b) State the measures and how they will take effect. What size of ships are these rules applicable to (5)

(c) What documents will be required to be carried on board under the new regulations (5)

(d) What is SEEMP Part III State its contents (5)

**2024/JAN/Q2** **2024/SEP1/Q2** **2025/JAN2/Q1** **2025/AUG/Q1**

[Click Here to See the Answer](#)

Q2.a) Name and describe in detail any three mandatory IMO Codes Explain their significant features (10)

(b) What do you understand by the term Protocol to a convention Give examples (10)

**2024/JAN/Q5** **2024/SEP1/Q5** **2025/JAN2/Q2** **2025/AUG/Q2**

[Click Here to See the Answer](#)

Q3.a) With respect to ISPS code define the levels of security and explain what action needs to be taken in each case (8)

(b) What is SSP and state its purpose Name the essential points that the SSP must address (8)

(c) Explain the term Declaration of security (4)

**2024/JAN/Q6** **2024/SEP1/Q6** **2025/JAN2/Q3** **2025/AUG/Q3**

[Click Here to See the Answer](#)

Q4.a) List the items which are contained in the training manual pertaining to life saving appliances (5)

(b) Describe the frequency of abandon ship drills and fire drills and how they should be conducted (5)

(c) State the regulation regarding the maintenance of lifeboat falls (5)

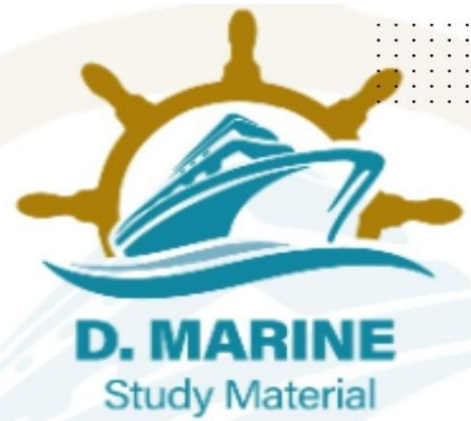
(d) List the LSA to be carried by all ships (5)

**2022/AUG/Q7** **2023/APR/Q9** **2024/JAN/Q7** **2024/SEP1/Q7**

**2025/JAN2/Q4** **2025/AUG/Q4**



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Q5. Write short notes on the following:

- (a) SOPEP (5)
- (b) MARPOL Annex IV discharge criteria (5)
- (c) SEEMP (5)
- (d) NOx Technical File (5)

**2025/JAN2/Q5** **2025/AUG/Q5**

[Click Here to See the Answer](#)

Q6.a) With reference to the cargo tanks of oil tankers state

- (i) The purpose of the pressure vacuum valve (5)
- (ii) The dangers of venting during loading via open tank hatches (5)
- (b) (i) Sketch a high velocity vent (5)
- (ii) Describe the operation of this vent and state why such a device is used

**2024/JAN/Q8** **2024/SEP1/Q8** **2025/JAN2/Q6** **2025/AUG/Q6**

[Click Here to See the Answer](#)

Q7.a) State with reasons the essential requirements for unattended machinery spaces (8)

- (b) With reference to a periodically unattended machinery space of a dry cargo vessel discuss the requirements for
  - (i) Protection against flooding (6)
  - (ii) Control of propulsion machinery from the navigating bridge (6)

**2023/JAN/Q6** **2024/MAY1/Q3** **2024/SEP1/Q9** **2024/OCT/Q3**

**2025/JAN2/Q7** **2025/AUG/Q7**

[Click Here to See the Answer](#)

Q8.a) Draw and explain a Fixed Foam Fire Fighting system (12)

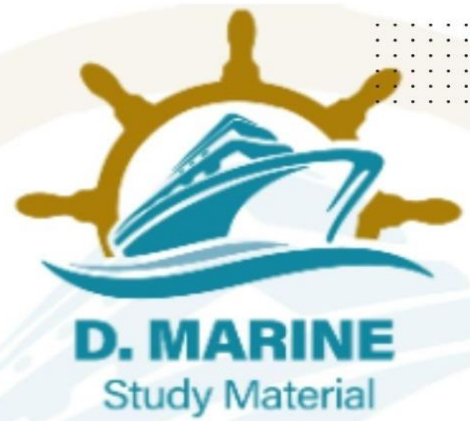
- (b) What is the proportion ratio of both high expansion and low expansion Foam Fire Fighting system (4)
- (c) What periodic tests are carried out to ensure the readiness of the fixed foam fire fighting system (4)

**2025/JAN2/Q8** **2025/AUG/Q8**

[Click Here to See the Answer](#)



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## SEPTEMBER – 2025

- Q1.a) Sketch a fixed Carbon Dioxide ( $\text{CO}_2$ ) fire fighting system label its main components (8)  
b) Describe the sequence of operations for discharging and the alarm has been raised (8)  
c) What is the purpose of the time delay mechanism in a fixed  $\text{CO}_2$  system and how does it contribute to crew safety (4)

**2025/SEP/Q1**

[Click Here to See the Answer](#)

- Q2.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)

**2025/SEP/Q2**

[Click Here to See the Answer](#)

- Q3.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)

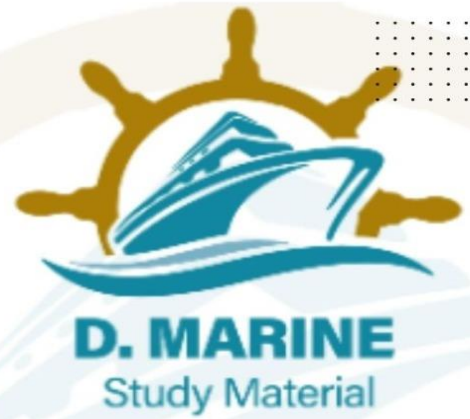
**2025/SEP/Q3**

[Click Here to See the Answer](#)

- Q4.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



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system is typically installed (4)

c) Explain the manual activation procedure for Hyper Mist system both from the local control point and the main control panel (4)

**2025/SEP/Q4**

[Click Here to See the Answer](#)

Q5. 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)

**2025/SEP/Q5**

[Click Here to See the Answer](#)

Q6. 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)

**2024/MAY1/Q7** **2024/OCT/Q7** **2025/FEB/Q7** **2025/SEP/Q6**

[Click Here to See the Answer](#)

Q7.a) What are the components of a typical Self-Contained 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)

**2025/SEP/Q7**

[Click Here to See the Answer](#)

Q8. Write short notes on any four of the following:

a) Marking on a lifeboat

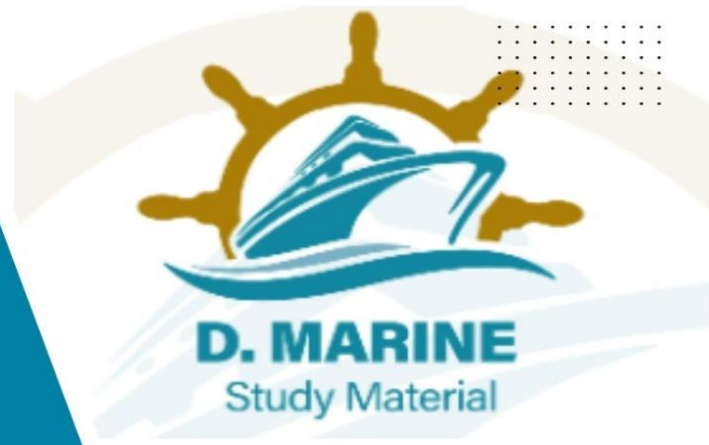
b) Voyage data recorder

c) Embarkation ladder

d) Daylight signaling lamp



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e) Emergency escape

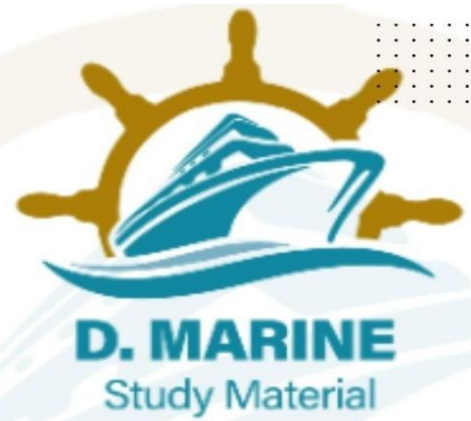
**2025/SEP/Q8**

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## OCTOBER - 2025

Q1.a) What do you understand by the term EEXI Provide an overview and its implementation process (8)

(b) Discuss the improvement methods commonly considered in order to achieve energy efficiency optimization with respect to EEXI (12)

**2023/DEC/Q1** **2024/APR1/Q1** **2024/JUN/Q3** **2025/JAN1/Q1**  
**2025/OCT/Q1**

[Click Here to See the Answer](#)

Q2.a) How does the Selective Catalytic Reduction (SCR) system work (10)

(b) If Selective Catalytic Reduction (SCR) has such an extremely high NO<sub>x</sub> reduction efficiency why is it so rare in marine applications (10)

**2023/DEC/Q2** **2024/APR1/Q2** **2024/MAY2/Q2** **2024/JUN/Q4**  
**2024/AUG/Q2** **2025/JAN1/Q2** **2025/APR2/Q2** **2025/OCT/Q2**

[Click Here to See the Answer](#)

Q3.a) Explain why bunkering is considered a hazardous operation What type of casualty can occur during bunkering Discuss the implications of such incidents if so happens (10)

(b) Name the bunkering procedure to be followed

(i) In preparation of receiving bunkers (4)

(ii) While receiving bunkers (3)

(iii) On completion of bunkering (3)

**2023/DEC/Q4** **2024/APR1/Q4** **2024/MAY2/Q4** **2024/JUN/Q6**  
**2024/AUG/Q4** **2024/SEP2/Q4** **2025/JAN1/Q3** **2025/APR2/Q4**  
**2025/OCT/Q3**

[Click Here to See the Answer](#)

Q4.a) What are the sulphur limits for fuel in use under MARPOL (5)

(b) What happens if compliant fuel cannot be obtained in the port of bunkering (5)

(c) What if the sulphur analysis resulting from a commercial analysis does not match the bunker delivery note (5)



(d) What are the timelines for installation of in use fuel sampling points on ships Does it apply for existing ships (5)

2023/DEC/Q5	2024/APR1/Q5	2024/MAY2/Q5	2024/AUG/Q5
2024/SEP2/Q5	2025/JAN1/Q4	2025/APR2/Q5	2025/OCT/Q4

[Click Here to See the Answer](#)

Q5. Write short notes on the following:

- (a) EPIRB and SART (5)
- (b) Hydrostatic Release Unit HRU (5)
- (c) Pyrotechnics (5)
- (d) Muster list indicating essential elements (5)

2023/DEC/Q6	2024/APR1/Q6	2024/MAY2/Q6	2024/JUN/Q7
2024/AUG/Q6	2025/JAN1/Q5	2025/APR2/Q6	2025/OCT/Q5

[Click Here to See the Answer](#)

Q6.a) State the causes of scavenge fire in a two stroke engine and explain how the possibility of such an occurrence can be reduced (10)

(b) If a scavenge fire does occur what action should be taken Discuss the use of CO2 and dry powder for extinguishing such a fire and describe a fixed installation for applying one of these chemicals (10)

2023/APR/Q1	2023/DEC/Q7	2024/APR1/Q7	2024/MAR/Q7
2024/MAY1/Q9	2024/SEP2/Q7	2024/OCT/Q9	2025/JAN1/Q6
2025/FEB/Q3	2025/JUN/Q7	2025/OCT/Q6	

[Click Here to See the Answer](#)

Q7.a) What are the requirements of Emergency source of electrical power as per SOLAS Convention as amended in cargo ships (6)

(b) Name the services that are required to be supplied power from emergency source (6)

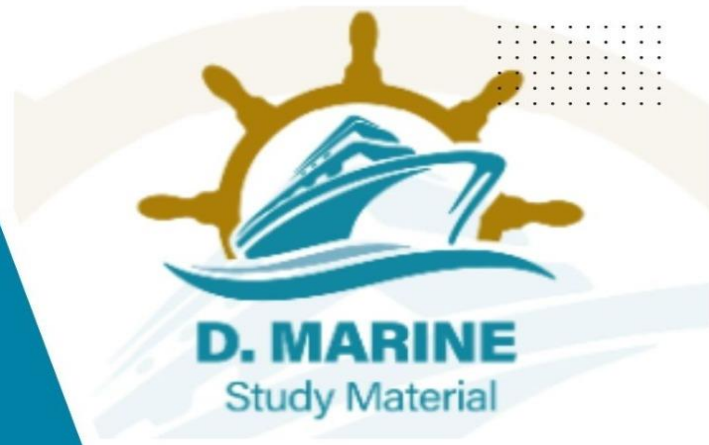
(c) What are the starting arrangements for emergency generating sets (8)

2022/DEC/Q1	2023/DEC/Q8	2024/APR1/Q8	2024/MAY2/Q8
2024/JUN/Q8	2024/AUG/Q8	2024/SEP2/Q8	2025/JAN1/Q7
2025/APR2/Q8	2025/OCT/Q7		

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Q8. How would you test the preparedness of your ship in anticipation of a Port State Control PSC inspection before arrival port in the following areas

- (a) Paint store and galley (4)
- (b) Fire control station and CO2 room (4)
- (c) Steering gear including chemical locker (4)
- (d) Lifeboat deck (8)

**2023/DEC/Q9** **2024/APR1/Q9** **2024/MAY2/Q9** **2024/AUG/Q9**

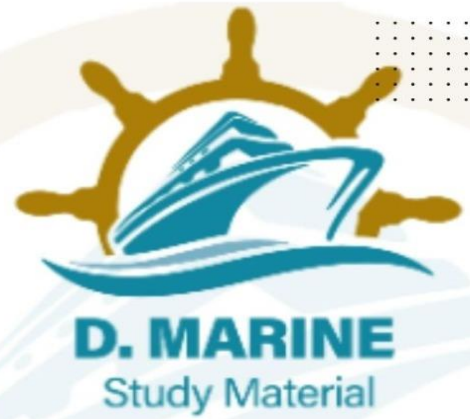
**2025/JAN1/Q8** **2025/APR2/Q9** **2025/OCT/Q8**

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## NOVEMBER – 2025

Q1. In engine rooms that are operated under UMS conditions describe with the aid of sketches how the following are monitored:

- (a) The perforation of a high pressure fuel pipe (7)
- (b) The imminence or possibility of a scavenge fire (7)
- (c) Engine room bilges (6)

**2022/OCT/Q4** **2024/APR2/Q1** **2024/NOV/Q1** **2025/MAR/Q1**  
**2025/NOV/Q1**

[Click Here to See the Answer](#)

Q2. With reference to the ISPS Code state the following:

- (a) Duties of ship's security officer (8)
- (b) Shipping company's responsibilities (6)
- (c) Certificate issued as per the code and its validity (6)

**2022/SEP/Q7** **2023/MAY1/Q8** **2024/APR2/Q2** **2024/NOV/Q2**  
**2025/MAR/Q2** **2025/NOV/Q2**

[Click Here to See the Answer](#)

Q3.a) Sketch and describe a non-portable 136 liter foam fire extinguisher engine (8)

- (b) Briefly explain how to operate the foam extinguisher engine (3)
- (c) State the two constituents used which enable stable foam to be produced (3)
- (d) State for what approximate length of time the engine should generate foam (3)
- (e) Where on board ship would you expect such an extinguisher to be located (3)

**2024/APR2/Q3** **2024/NOV/Q3** **2025/MAR/Q3** **2025/NOV/Q3**

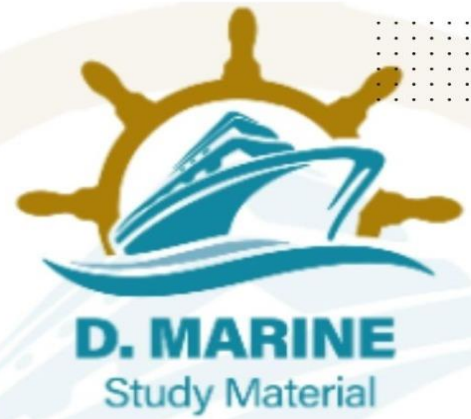
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Q4. With reference to an emergency source of electrical power in cargo ships:

- (a) Describe a typical power source (10)
- (b) Give a typical list of essential services which must be supplied



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simultaneously (5)

(c) Explain how the emergency installation can be periodically tested (5)

**2024/APR2/Q4** **2024/NOV/Q4** **2025/MAR/Q4** **2025/NOV/Q4**

[Click Here to See the Answer](#)

Q5.a) Describe the routine testing required for self-contained breathing apparatus sets (10)

(b) Describe the procedure that you would adopt to find missing personnel in a smoke-filled accommodation area (10)

**2022/AUG/Q3** **2023/AUG/Q1** **2024/APR2/Q5** **2024/NOV/Q5**

**2025/MAR/Q5** **2025/NOV/Q5**

[Click Here to See the Answer](#)

Q6.a) Describe with the aid of a sketch the braking arrangement for the controlled lowering of lifeboats (10)

(b) State the periodic survey requirements relating to the wire rope fall of lifeboats (10)

**2024/APR2/Q6** **2024/NOV/Q6** **2025/MAR/Q6** **2025/NOV/Q6**

[Click Here to See the Answer](#)

Q7.a) Sketch a simple line diagram showing a shipboard oily water separator in series with a coalescing second stage (8)

(b) Briefly describe the above arrangement and its operations also state the allowable oil content in ppm of the discharge effluent from such an arrangement (8)

(c) Explain how oil density and temperature relate to separation (4)

**2024/APR2/Q7** **2024/NOV/Q7** **2025/MAR/Q7** **2025/NOV/Q7**

[Click Here to See the Answer](#)

Q8.a) List the SOLAS requirements for steering gear system of an ocean-going ship (10)

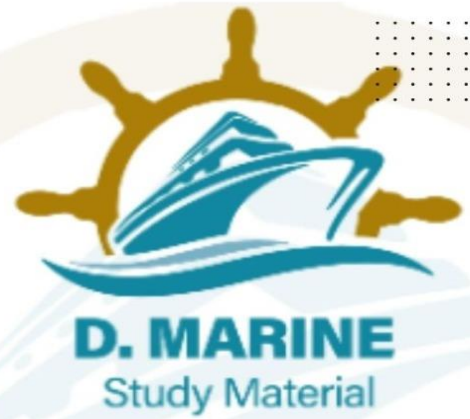
(b) Describe the drills and exercises mandated by the SOLAS convention with regards to the steering gear system with reference to the convention

**2024/APR2/Q8** **2024/NOV/Q8** **2025/MAR/Q8** **2025/NOV/Q8**

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## DECEMBER – 2025

Q1. Considering that the engine room is the most common single space on board ships for fire to break out discuss the merits and demerits of the following fixed firefighting systems (20)

- (a) Carbon dioxide
- (b) Pressure water spray
- (c) High expansion foam

**2024/MAY1/Q1** **2024/OCT/Q1** **2025/FEB/Q1** **2025/DEC/Q1**

[Click Here to See the Answer](#)

Q2. Describe an emergency electrical power generating plant for use in the event of a complete failure of the main electrical power and make reference to

- (a) Location (4)
- (b) Starting arrangements (4)
- (c) Fuel oil and its supply (4)
- (d) Cooling system (4)
- (e) Periodic attention required (4)

**2023/AUG/Q2** **2024/MAY1/Q2** **2024/OCT/Q2** **2025/FEB/Q2**  
**2025/DEC/Q2**

[Click Here to See the Answer](#)

Q3.a) How is the number of Carbon Dioxide CO<sub>2</sub> bottles required for a ship calculated for

- (i) Machinery spaces (12)
- (ii) Cargo spaces
- (b) What means are provided to prevent the inadvertent release of CO<sub>2</sub> in the engine room or other protected spaces (8)

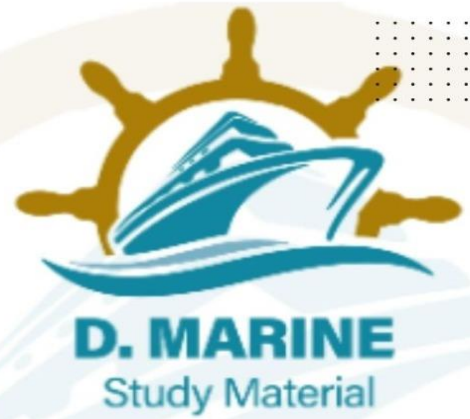
**2025/DEC/Q3**

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Q4. During the loading of a petroleum tanker the incoming cargo forces out from the tank its previous atmospheric contents air vapour inert gas



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Explain

(a) The dangers of venting during the loading via open tank hatches (10)

(b) Why the pressure vacuum valves is not used for venting (10)

**2024/MAY1/Q4** **2024/OCT/Q4** **2025/FEB/Q4** **2025/DEC/Q4**

[Click Here to See the Answer](#)

Q5.a) Describe the changes which take place within a lead acid battery during discharge and when charging is taking place (10)

(b) What are the safety features you would find in

(i) Paint store

(ii) Battery room (10)

**2024/MAY1/Q5** **2024/OCT/Q5** **2025/FEB/Q5** **2025/DEC/Q5**

[Click Here to See the Answer](#)

Q6.a) What are the different types of garbage's that are generated on board as per MARPOL Annex V and what are the provisions for dealing with them (10)

(b) State the requirements for maintaining Garbage management plan and Garbage Record Book Name the entries to be made in garbage record book

**2024/SEP2/Q2** **2025/JUN/Q2** **2025/DEC/Q6**

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Q7.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)

**2024/MAY1/Q7** **2024/OCT/Q7** **2025/FEB/Q7** **2025/SEP/Q6**

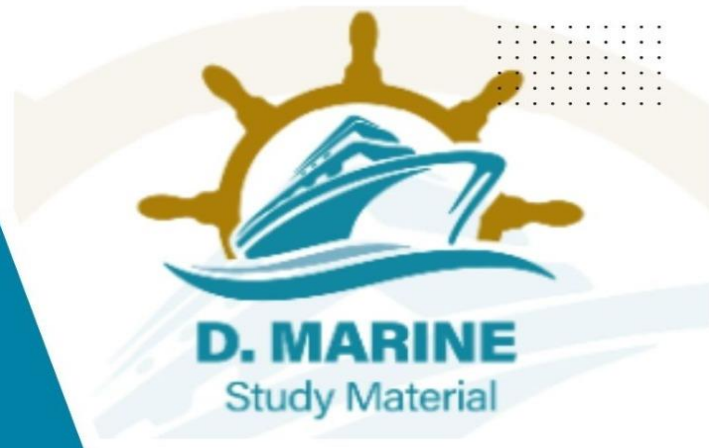
**2025/DEC/Q7**

[Click Here to See the Answer](#)

Q8.a) The centrifugal ballast pump in the engine room also doubles as a fire pump in your ship What specific precautions would you take to change over the ballast pump from ballast de ballast mode to fire pump mode (10)



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(b) How is the emergency bilge suction tested (10)

**2024/MAY1/Q8** **2024/OCT/Q8** **2025/FEB/Q8** **2025/DEC/Q8**

[Click Here to See the Answer](#)

