



MEO CLASS 2

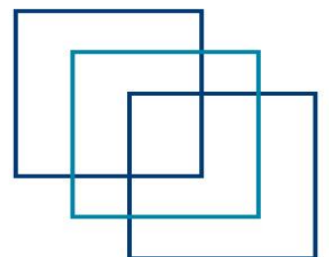
WRITTEN: SSEP

(SHIP SAFETY & ENVIROMENTAL PROTECTION)

FOR INDIAN COMPETENCY EXAM

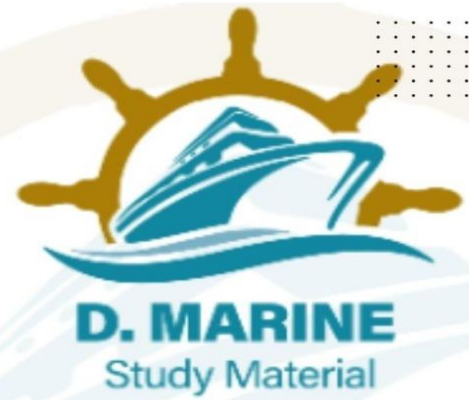


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JAN- 2026

1. For an ISM certification, explain the key clauses, which are required to be complied with for obtaining Interim DOC. State the responsibility of a Second Engineer with respect to satisfactory implementation of SMS on board ship.

2026/JAN/Q1

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- 2.a) Sketch a line diagram of a mechanical low expansion foam fixed firefighting system suitable for machinery spaces.
b) Describe the operation of the system sketched.
c) Explain how a mixture of foam making compound and sea water are converted into foam.
d) What are the periodic maintenance required on the system.

2021/MAR/04 **2023/JUN/02** **2026/JAN/02**

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3. India, one of the world's five major ship recycling countries, has acceded to the IMO Hong Kong Convention, the treaty that will set global standards for safe and environmentally sound ship recycling. Discuss the key features of "The Hong Kong International convention for the safe and environmentally sound Recycling of Ships".

2026/JAN/02

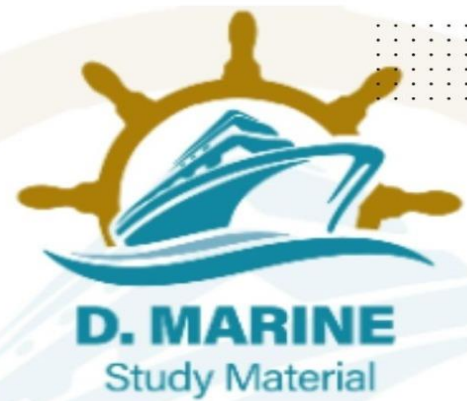
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4. a) Sketch a simplified circuit that may be incorporated in a control panel for an array of fire detectors.
b) Describe the following features that may be found in a control panel for fire detectors:
i) Audible fire alarm circuits.
ii) Identification of zone of fire
iii) Automatic change over from normal power supply

2022/NOV/09 **2023/JUN/04** **2026/JAN/04**



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5. Prepare a proposal for safe manning requirements for a ship of your choice considering the IMO guidelines on the issue, also considering frequent port calls, rest hour management and high-risk areas. (20)

2023/AUG/02 **2023/DEC/08** **2024/FEB/04** **2025/APR/01**
2025/JUL/07 **2025/OCT/01** **2026/JAN/05**

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6. As a Second Engineer, list of risk you envisage in the process of opening and cleaning of a double bottom tank in Engine room. Give methodology used in detail for determining the risk for above process. Mention names of other methods which can be used to determine such risks.

2026/JAN/06

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7. Explain the following with reference to MARPOL Annex-VI

- a) Ozone depleting substances and its emissions control.
- b) Volatile Organic and its emissions control.
- c) NOx emissions and its control from ships.

2023/JUN/07 **2026/JAN/07**

[Click Here to See the Answer](#)

8. With reference to regulation 12 SOLAS Chapter XII, dealing with Water Level Detection and Alarm System to spaces;

- a) Type of ships Water Level Detection and Alarm System is required to be installed. (5)
- b) Brief description of such installation.
- c) Requirements with respect to detection system
- d) Requirements with respect to alarm system.

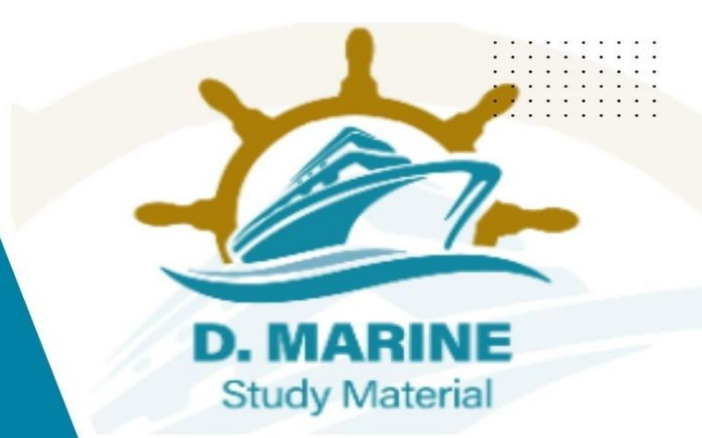
2022/OCT/07 **2023/MAR/04** **2023/JUN/08** **2024/JUN/07**
2026/JAN/08

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9. With reference to Port State Control:



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- a). State the various MOU's and the purpose of having a port state control regime.
- b) Give at least 3 examples of deficiency which may lead to detention of your vessel
- c) If your vessel gets detained by the PSCO owing to a deficiency, what would be your action for redressal. (4)
- d) What are the various deficiency action code used in PSC.
- e) Briefly explain the difference between PSC and FSI.

2026/JAN/09

[Click Here to See the Answer](#)

FEB-2026

Q1. What is an Enhanced Survey Program? Which SOLAS chapter covers it? When and Which type of vessels it becomes applicable?
Describe procedural method of ESP for engine room, as a Second Engineer
Which parts and structures you will present for ESP?

2026/FEB/Q1

[Click Here to See the Answer](#)

Q2. With respect to **MARPOL 73/78, Annex - II**, Noxious liquid chemicals are divided into categories.

- a) State the number of categories, and what does each category signify. (7)
- b) State the requirement of Procedures and Arrangements Manual, and what information is available. (7)
- c) What are the latest amendments in IBC code. (6)

2022/DEC/Q2 **2023/OCT/Q2** **2024/DEC/Q2** **2026/FEB/Q2**

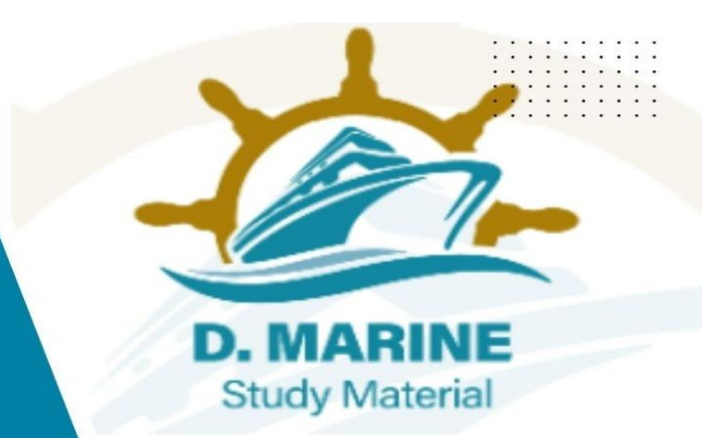
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Q3. With reference to **Annex VI of MARPOL**, what are the salient features of

- a) EEXI (Energy Efficient Existing Ship Index) (5)
- b) EEOI (Energy Efficiency Operational Indicator) (5)
- c) Enhanced SEEMP (Ship Energy Efficiency Management Plan) (5)
- d) CII (Carbon Intensity Indicator) (5)



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2022/DEC/Q3 **2023/OCT/Q3** **2024/DEC/Q3** **2026/FEB/Q3**

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Q4. Explain how PSC inspection is different from **FSC inspection**? Discuss Clear Grounds under SOLAS, MARPOL and the STCW with examples. (20)

2022/DEC/Q4 **2023/OCT/Q4** **2024/DEC/Q4** **2026/FEB/Q4**

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Q5. Discuss the following with respect to International Safety Management (ISM) code:

- a) Emergency preparedness, drills and training. (7)
- b) Reporting of near miss, non-conformities, accidents/incidents and hazardous occurrences. (7)
- c) Risk assessment Identification of critical equipment, tests, and minimum spares requirement. (6)

2022/DEC/Q5 **2023/OCT/Q5** **2024/DEC/Q5** **2026/FEB/Q5**

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Q6. Discuss on the following with respect **AFS Convention**:

- a) Salient features and benefits of **AFS Convention** (5)
- b) Benefits of new generation TBT free paints (5)
- c) Survey and certification requirements for vessels GT 400 and above. (5)
- d) Survey and certification requirements for vessels GT less than 400. (5)

2022/DEC/Q6 **2023/OCT/Q6** **2024/DEC/Q6** **2026/FEB/Q6**

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Q7. A. State where information can be obtained with regard to the safe carriage of hazardous substances as cargo. (8)

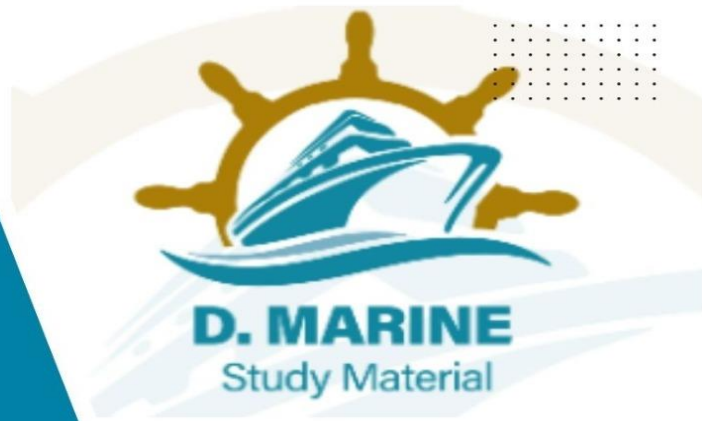
B. For a hazardous cargo of your choice discuss the following. (12)

- i) Storage and transport.
- ii) Hazardous properties.
- iii) Firefighting and suppression techniques.
- iv) Medical effects and treatment after physical contact with the cargo.

2022/DEC/Q7 **2023/OCT/Q7** **2024/DEC/Q7** **2026/FEB/Q7**



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Q8. What are the core features of the **FSS Code**? (International fire safety systems code). Elaborate on any one test prescribed by the Code. (20)

2022/DEC/Q8	2023/OCT/Q8	2024/JUL/Q6	2024/DEC/Q8
2026/FEB/Q8			

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Q9. With reference to a recent ILO notice on the health hazards from asbestos.

- State where asbestos may be found on board ship. (6)
- State the health risks from asbestos. (7)
- Outline the precautions necessary to minimize exposure to asbestos during an emergency repair. (7)

2022/DEC/Q9	2023/OCT/Q9	2024/DEC/Q9	2026/FEB/Q9
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[Click Here to See the Answer](#)

MAR-2026

Q1. Prepare a proposal for safe manning requirements for a ship of your choice taking into account the IMO guidelines on the issue, also considering frequent port calls, rest hour management and high- risk areas. (20)

2021/APR/Q4	2021/JUL/Q5	2021/SEP/Q1	2021/OCT/Q1
2022/FEB/Q4	2022/APR/Q4	2023/JUNE/Q5	2023/AUG/Q2
2023/DEC/Q8	2024/FEB/Q4	2025/APR/Q1	2025/JUL/Q7
2025/OCT/Q1	2026/JAN/Q5	2026/MAR/Q1	

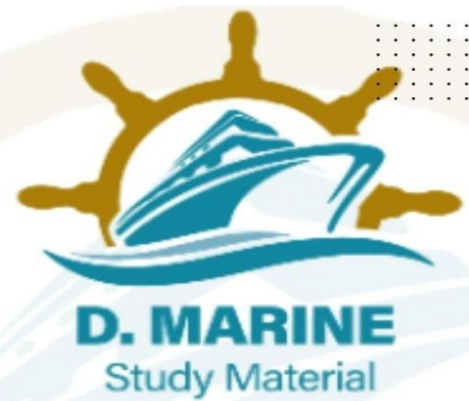
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Q2. Explain the principle of port state control and give in detail the verification the Port State Control Officer (PSCO) may carry out with particular reference to the following:

- Emergency generator (4)
- Auxiliary steering gear (4)



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c) Lifeboat engine (4)

d) Bilge pumps (4)

e) SOPEP (4)

2025/OCT/Q2 **2025/DEC/Q6** **2026/MAR/Q2**

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Q3. A. Define the meaning of the term "Conditions of Assignment" as applied to ships. (7)

B. State how conditions of assignment contribute towards the water integrity of ships. (7)

C. Give reasons why conditions of assignment need periodic inspection, giving specific instances where they can be found to be less than fully effective. (6)

2025/APR/Q3 **2025/OCT/Q3** **2026/MAR/Q3**

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Q4. Name various Statutory Certificates and Documents to be carried on board container ships giving reference to the conventions and justify for their requirement. (20)

2024/JUN/Q1 **2024/SEP/Q1** **2025/DEC/Q1** **2026/MAR/Q4**

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Q5. a) Explain the objectives and scope of SOLAS Chapter XII. What are the structural and operational safety measures required for bulk carriers carrying high-density cargoes? (10)

b) Discuss the requirements related to the fitting of water ingress alarms and loading/unloading procedures. Why are these measures critical for the safety of bulk carriers? (10)

2025/APR/Q5 **2025/OCT/Q5** **2026/MAR/Q5**

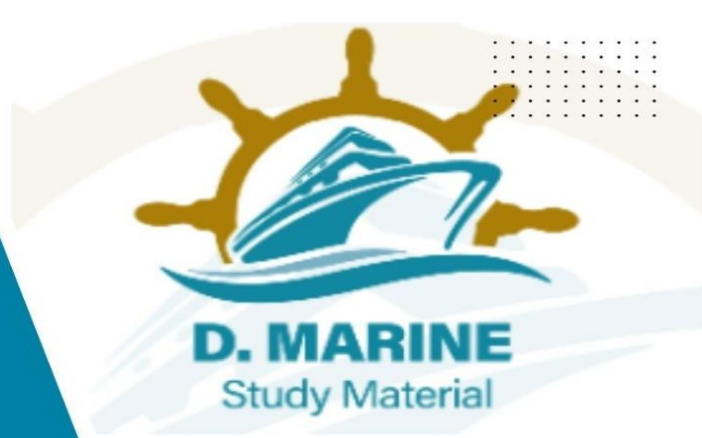
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Q6. A) Briefly discuss the purpose and structure of MLC, 2006. (7)

b) What are the health and safety protections offered to seafarers under MLC? (7)



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c) Describe the onboard complaint procedures as per MLC. (6)

2025/APR/Q6 **2025/OCT/Q6** **2026/MAR/Q6**

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Q7. a) What is Hong Kong Convention? When did it come into force? What are its salient features of this convention? (10)

b) How inventory of Hazardous materials (IHM) Part I under Hong Kong conventions is made for ships in operation? What is the Scope of IHM Part I? (10)

2026/MAR/Q7

[Click Here to See the Answer](#)

Q8. A vessel is due for International Air Pollution Prevention Certificate renewal survey and company instructed to offer this vessel for survey at next port of call.

A. As a 2nd Engineer officer of above-mentioned vessel, what all checks you carry out and how you prepare for the IAPP renewal survey. (10)

B. What records, procedures, certificates etc., you will keep ready for attending surveyor verification. (10)

2021/JUL(M)/ Q1 **2021/AUG/Q2** **2021/SEP/Q2**

2022/JUN/Q3 **2024/JUL/Q4** **2025/APR/Q8** **2025/OCT/Q8**

2026/MAR/Q8

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Q9.a) Briefly discuss the types of records that can be maintained electronically under MARPOL and the approval process for ERBs. (10)

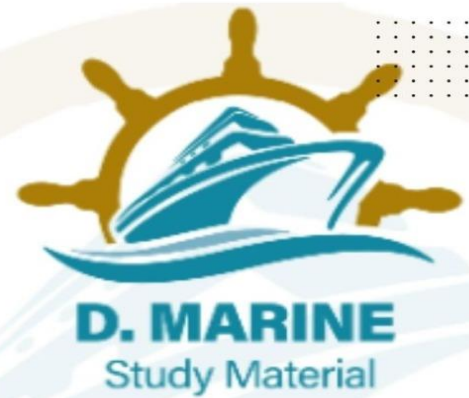
b) Highlight the advantages of using ERBs compared to traditional paper-based record books and state the measures required to ensure data integrity and security. (10)

2024/JUL/Q9 **2025/APR/Q9** **2025/OCT/Q9** **2026/MAR/Q9**

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APR-2026

1. Prepare a proposal for safe manning requirements for a ship of your choice taking into account the IMO guidelines on the issue, also considering frequent port calls, rest hour management and high-risk areas. [20]

2021/OCT/Q1	2022/FEB/Q4	2022/APR/Q4	2023/JUNE/Q5
2023/AUG/Q2	2023/DEC/Q8	2024/FEB/Q4	2025/APR/Q1
2025/JUL/Q7	2025/OCT/Q1	2026/JAN/Q5	2026/MAR/Q1
2026/APR/Q1			

[Click Here to See the Answer](#)

2.a) Differentiate between annual, intermediate, renewal, damage and repair surveys. What are the purposes of each survey onboard? [12]

(b) Enlist all statutory certificates carried onboard, their issuing authority, and the IMO Convention under which they are issued. [8]

2025/APR/Q2	2026/APR/Q2
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[Click Here to See the Answer](#)

3.a) Define the meaning of the term "Conditions of Assignment" as applied to ships. [7]

(b) State how conditions of assignment contribute towards water integrity of ships. [7]

(c) Give reasons why conditions of assignment need periodic inspection, giving specific. [6]

2025/APR/Q3	2025/OCT/Q3	2026/MAR/Q3	2026/APR/Q3
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4.a) State the difference between an audit and survey. [4]

(b) State the action taken by a recognized organization carrying out ISM certification on behalf of the Administration towards handling of an ISM certificate in case:

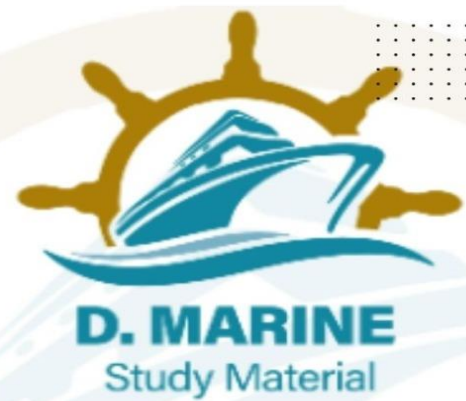
(i) When there is evidence of a major nonconformity

(ii) When nonconformities are found

(iii) When an extension of the Safety Management Certificate is requested



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for

(iv) When revision of an entry for a certificate is requested for. [10]

(c) Under what circumstances SMC and DOC may be invalidated? [6]

2025/APR/Q4 **2025/APR/Q4**

[Click Here to See the Answer](#)

5.a) Explain the objectives and scope of SOLAS Chapter XII. What are the structural and operational safety measures required for bulk carriers carrying high-density cargoes? [10]

(b) Discuss the requirements related to the fitting of water ingress alarms and loading/unloading procedures. Why are these measures critical for the safety of bulk carriers? [10]

2025/APR/Q5 **2025/OCT/Q5** **2026/MAR/Q5** **2026/APR/Q5**

[Click Here to See the Answer](#)

6.a) Briefly discuss the purpose and structure of MLC 2006. [7]

(b) What are the health and safety protections offered to seafarers under MLC? [7]

(c) Describe the onboard complaint procedures as per MLC. [6]

2025/APR/Q6 **2025/OCT/Q6** **2026/MAR/Q6** **2026/APR/Q6**

[Click Here to See the Answer](#)

7.a) Explain the purpose and objectives of the Ballast Water Management (BWM) Convention. Describe the D-1 and D-2 standards specified under the convention, highlighting the key differences between them. [10]

(b) Describe the ballast water exchange methods used on board ships. Explain the three main methods and discuss the precautions and limitations associated with each. [10]

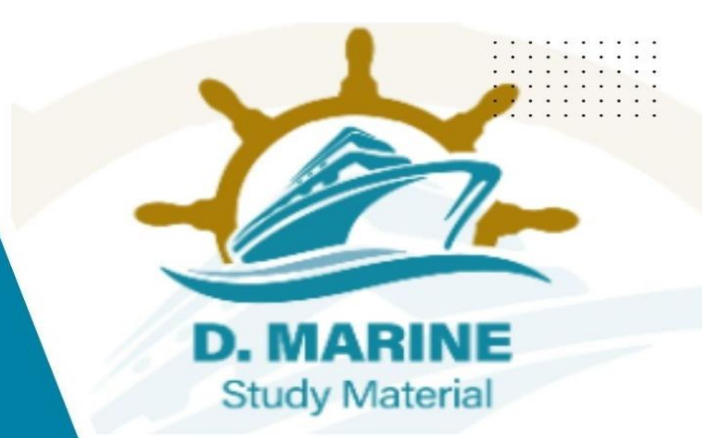
2025/APR/Q7 **2025/OCT/Q7** **2026/APR/Q7**

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8.A vessel is due for international air Pollution Prevention Certificate renewal survey and company instructed to offer this vessel for survey at next port of call.



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(a) As a 2nd Engineer officer of above-mentioned vessel, what all checks you carry out and how you prepare for the IAPP renewal survey. [10]

(b) What records, procedures, certificates etc., you will keep ready for attending surveyor verification. [10]

2022/JUN/Q3 2024/JUL/Q4 2025/APR/Q8 2025/OCT/Q8

2026/MAR/Q8 2026/APR/Q8

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9.a) Briefly discuss the types of records that can be maintained electronically under MARPOL and the approval process for ERBs. [10]

(b) Highlight the advantages of using ERBs compared to traditional paper-based record books and state the measures required to ensure data integrity and security. [10]

2024/JUL/Q9 2025/APR/Q9 2025/OCT/Q9 2026/MAR/Q9

2026/APR/Q9

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JUNE-2026

Q1. What preparations will you be required to carry out as a Second Engineer, for successful and timely completion of the following surveys? (2X10)

A. IOPP survey.

B. SEQ survey.

Restrict your answer to engine room only.

2024/MAR/Q8 2026/JUN/Q1

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Q2. Steering system failure has caused shipping casualties and oil pollution. Discuss

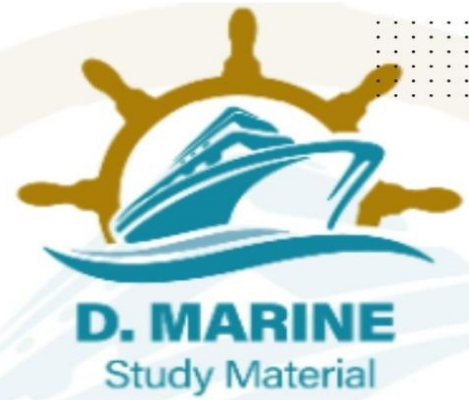
a) The causes of such failure (8)

b) The precaution necessary in design, operation, and maintenance of these systems. (6)

c) Requirements on tankers, which was made mandatory after the shipping casualty incidents. (6)



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2023/JUN/Q6 **2023/SEP/Q3** **2024/JUN/Q8** **2026/JUN/Q2**

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Q3. Explain the following terms used by the classification societies.

- a) Anniversary date (3)
- b) Condition of class (3)
- c) Window period for survey (4)
- d) Memoranda (4)
- e) Addition note (3)
- f) Statutory recommendation. (3)

2023/FEB/Q1 **2024/MAR/Q3** **2026/JUN/Q3**

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Q4. a) CO₂ is to be released in engine room in case of fire. Briefly describe steps taken before it can be released. What means are provided to prevent inadvertent release of CO₂ in engine room? (12)

b) Briefly discuss the procedure for re-entering the engine room after the release of CO₂. (8)

2024/MAR/Q7 **2026/JUN/Q4**

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Q5. With reference to Maritime Labour Convention, answer the following:

- a) Briefly discuss DMLC Part I and Part II covering the welfare points for seafarers. (10)
- b) Briefly discuss the grievance redressal mechanism for seafarers of Indian flagged vessel. (10)

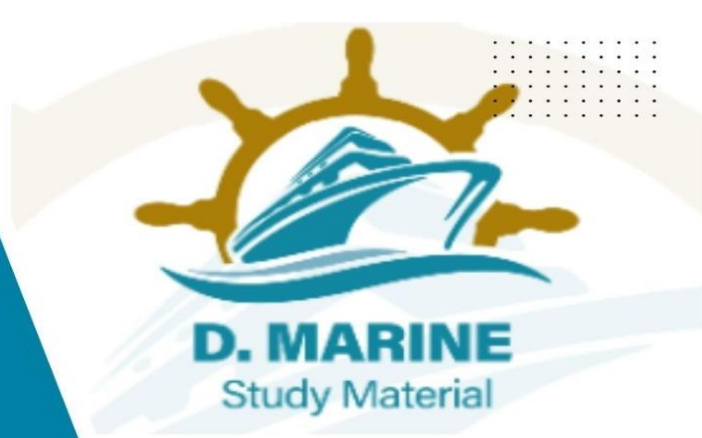
2022/SEP/Q2 **2023/NOV/Q8** **2024/MAR/Q1** **2026/JUN/Q5**

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Q6. a) Identify and explain the primary causes of VOC emissions in oil tankers. Discuss how these emissions occur during various stages of the shipping process, including loading, transportation, and unloading. (7)



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b) Discuss the health risks associated with VOC emissions for both humans and marine life and its impact on air quality, climate change, and marine ecosystems. (6)

c) Describe various methods and technologies used to prevent VOC emissions in oil tankers and discuss the effectiveness of these prevention measures. (7)

2024/MAR/Q8 **2026/JUN/Q6**

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Q7. With reference to fire smothering agents explain as to why:

A. Effectiveness of foam is directly related to its degree of effervescence and surface tension? (7)

B. Low expansion foam is best suited for use against localized fire, whilst high expansion foam is most effective in major conflagrations? (7)

C. In the absence of foam appliances, water jets can be effectively used against oil fires? (6)

2024/FEB/Q1 **2026/JUN/Q7**

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Q8. a) Briefly discuss crude oil washing (COW) and its environmental benefits compared to traditional tank cleaning methods, highlighting its role in reducing the discharge of oily residues into the marine environment. (10)

b) Explain the safety considerations associated with crude oil washing procedures, including potential risks to personnel, equipment, and the vessel's structural integrity. (10)

2024/FEB/Q5 **2026/JUN/Q8**

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