

EXAMINATION OF MARINE ENGINEER OFFICER

Function: Marine Engineering at Management Level

ENGINEERING MANAGEMENT

India	M.E.O. Class I (MAR 2024)	(Time allowed - 3hours) Total Marks 100
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NB: (1) Answer any SIX Questions

(2) All questions carry equal marks

(3) Neatness in handwriting and clarity in expression carries weightage

(4) Illustration of an Answer with clear sketches / diagrams carries weightage.

(5) Start answering from the backside of the front cover page

(6) Blank pages if any, to be struck off by (X) at the end of each question.

Q1. (A) Define the concept of big data in the context of the maritime sector and the ways in which big data is utilized in different segments of the maritime sector, Such as shipping operations, port management, fleet optimization, cargo tracking and maritime safety.

(8)

(B) Briefly discuss the role of big data in enhancing decision-making processes in maritime sector and evaluate the challenges and barriers associated with the integration and implementation of big data technologies in the maritime domain.

(8) 2024/MAR

Q2. a) Define Bill of Lading (B/L) and explain its significance in maritime commerce. (3)

b) Distinguish between a Bill of Lading issued to the ship and other types of B/Ls, highlighting the unique features and purposes of each. (5)

c) Briefly Discuss the legal obligations and responsibilities of the shipowner, carrier, and consignee under a B/L issued to the ship, citing relevant maritime laws and conventions. (8) 2024/MAR

Q3. a) Discuss the concept of general average with the principles underlying general average and contribution among parties involved in a maritime venture. (8)

b) Provide examples of scenarios where general average might be declared, highlighting the criteria and conditions necessary for its application in modern maritime commerce. (8) 2024/MAR/Q3

Q4. Improving efficiency of propellers is recognized as a growing means to improve energy efficiency of ships. Discuss any three of the following high-efficiency propellers with its merits and demerits:

- a) Ducted Propellers
- b) Kappel Propellers
- c) Contra rotating Propellers.
- d) Azimuth Propulsion.

2022/AUG, 2023/FEB, 2024/MAR

Q5. Guidelines on Maritime Cyber Risk Management are laid down in MSC. FAL.1/Circ.3, considering these guidelines elaborate following:

- (A) Name all the on-board systems which are prone of cyber risks due to vulnerabilities created by accessing, interconnecting or networking of such systems**
- (B) Explain the Elements of Cyber risk management.**
- (C) Discuss the importance of cyber security in Maritime sector.**
- (D) Differentiate between IT and OT system with suitable examples.**

2022/SEP 2024/MAR

Q6. Guidelines for the use of electronic record books under MARPOL are laid down in resolution MEPC.312(74), considering these guidelines elaborate following:

- a) Name all the record books which can be maintained electronically on board.**
- b) How does the electronic log book meet the regulations under MARPOL?**
- c) Briefly discuss the security and accountability of the electronic log book.**

2022/OCT, 2024/MAR

Q7. Referring to the IMO Instruments Implementation Code.

- a) Briefly Discuss the objectives of the code and strategy recommended to flag state to achieve the objective. Which all IMO instruments covered in the code. (6)**

- b) What are the key performance indicators for evaluation of Flag state performance as per the code.**

(4)

- c) Briefly discuss the Flag state, coastal state, and Port state responsibilities. (6)**

2023/FEB, 2023/AUG, 2024/JAN, 2024/MAR.

Q8. Whilst approaching dock gates, the main engines did not respond to bridge control, driving ahead instead of braking astern, until the bow made contact with the dock wall. As Chief Engineer, report to head office why the engines failed to respond to Bridge control, the temporary measure instituted to avoid further trouble on this voyage and suggesting permanent measures to avoid repetition in the future.

- Q9. a) Discuss the key provisions and requirements outlined in the MLC, including those related to seafarers' employment contracts, working hours, accommodation, health and safety, and access to medical care and welfare facilities. (8)**

- b) Discuss the challenges and limitations associated with the effective implementation and enforcement of the MLC, including issues related to flag State jurisdictions, Port State Control, and non-compliance by shipowners and operators. (8)**