

# EXAMINATION OF MARINE ENGINEER OFFICER

*Function: Marine Engineering at Management Level*

## ENGINEERING MANAGEMENT

India	M.E.O. Class I (Feb 2023)	(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. Maritime industries have taken several initiatives to explore new digital technologies and "Big Data" is one of such initiatives. with brief introduction on the principles of Big Data explain the following**

- The challenges and opportunities of big data analytics for upcoming regulations and future transformation or the shipping industry.**
- How usage of big data analytics helps in chartering, operations, vetting and designing of the vessel**

**Q2. Referring to the IMO Instruments Implementation Code.**

- 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.**
- What are the key performance indicators for evaluation of Flag state performance as per the code.**
- Briefly discuss the Flag state, coastal state, and Port state responsibilities.**

**Q3. a) IMO has introduced the EEXI requirements under MARPOL Annex VI Chapter IV for existing vessels from 2023 as a measure towards reduction of CO<sub>2</sub> emissions from shipping. Explain the various design features adopted in the existing vessels to comply with the present EEXI which meets the EEXI framework under Phase 2 ( f 20% - 30% reduction).**

- Explain the concept of CII rating and critically discuss the role of measuring metrics of AER and EEOI.**

**What are the measures required to be taken by the vessel to improve its CII ratings.**

**4.State the difference between Maritime salvage and contractual salvage. Give simple examples. Who is responsible for payment of award to the salvor, for salvage of maritime property, as per the salvage convention? Which form popularly used in case of contractual salvage? How is the amount of award calculated. JS per this form?**

5. a) Explain "Effective communication" as mentioned in the ISM Code. How can principles of Engine Resource Management be used to improve communication on board and with outsiders. Give two examples of near misses or accidents which were mainly due to incorrect, faulty, or unclear communication and how this could have been avoided through assessment or monitoring?

Q6. (a) Discuss, in detail the main function of a Bill of Lading and explain the reasons for a Bill of lading being made out 'to order' instead of to a named consignee.

(b) A Bill of Lading is said to be evidence of the contract of carriage of goods.

Discuss any circumstances when a Bill of Lading may become the actual contract of carriage.  
2016/MAR 2021/JULY/Q5 2023/FEB

Q7. 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) Cortra rotating Propellers.

d) Azimuth Propulsion.

2022/AUG/Q7 2023/FEB

Q8. Referring to the Maritime Labour Convention (MLC) 2006, discuss:

a) Flag State & Port State responsibilities.

b) On-board & On-shore Compliant Procedures.

c) Detainable deficiencies.

d) Grievance Redressal Mechanisms for Indian seafarers.

2017/AUG 2019/JAN 2019/APR 2019/JULY 2019/OCT 2020/MAR/ 2022/JAN/ 2022/NOV  
2023/FEB/

Q9. Compare and discuss the basic features of CLC'92 and Bunker Convention 2001, with specific reference to the type of ships, Oil & nature of pollution damages covered, limits of liability and geographical coverage.