

# EXAMINATION OF MARINE ENGINEER OFFICER

*Function: Marine Engineering at Management Level*

## ENGINEERING MANAGEMENT

India	M.E.O. Class I (Mar 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. A. One of the objectives of UNCLOS is protection of marine environment and prevention of pollution. Define pollution as per UNCLOS and discuss the key features of obligations of coastal states in this regard.**

**B. State the 3 main tiers of the oil pollution damage compensation conventions of the IMO. In each case elaborate one who is responsible for payment of compensation. Also, state the source of funds as well as certification required by ship under each tier.**

**2015/AUG 2015/NOV 2017/OCT 2021/APR/ 2022/OCT/ 2023/MAR**

**Q2. What is Decarbonisation in shipping? Briefly discuss the IMO decarbonisation ambitions and pathways with focus on the short term, mid-term and long term goals. Explain the two short-term measures approved by the IMO for implementation with their guidelines.**

**2022/AUG 2023/FEB/ 2023/MAR/**

**Q3. What are the perils of the sea which are covered in a Marine Insurance contract? What can an insured do to cover a peril other than an insured peril of the sea? Explain with examples. Also enumerate the perils which are covered under a marine insurance contract, but the onus of proof is upon the insurers to prove the assured's want of "due diligence" to avoid the claim.**

**2022/AUG 2023/MAR**

**Q4. Exhaust emission control is a major global issue and under serious consideration by world shipping. In this context, comment on the following: -**

**A. Primary NOx reduction vis-a-vis secondary NOx reduction measures; (8)**

**B. Scavenge Air Moisturizing & Exhaust Gas Recirculation for main engine**

**2013/FEB 2013/AUG 2010/AUG 2012/OCT 2013/OCT 2013/DEC 2014/APR  
2014/NOV 2015/APR 2015/OCT 2015/FEB 2016/MAR 2017/NOV 2023/MAR**

- Q5. A. Describe the stages during which the power produced by the main engine of the ship transformed into the effective power.**  
**B). Discuss the essential sea trial maneuvers (navigation trials) conducted and typical objectives of each test.**

**2016/JUL 2023/MAR**

- Q6. (a) It is common statement that '80% of accidents are caused due to human errors, discuss the term 'human error' referred to here of a complex hierarchical socio-technical system (8)**

**(b) The terms human element, human error and human factors have often been used interchangeably in relation with the maritime incidents/accidents. How in your opinion do these terms differ? Discuss with suitable examples. (8)**

- Q7. During a port State control inspection, the PSCO desired to carry out detailed inspection of the vessel.**

- a) What are clear grounds for a PSCO to conduct a more detailed inspection? State your answer with examples. (8)**  
**b) What is the difference between 'corrective action' and 'preventive action. (8)**

- Q8. a) Enumerate the structure of IACS and explain difference between UI, UR, PR from IACS. Does it have any significance to ship owners/operators?**

**b) What is a Recognized organization? What are the salient features of the R.O. Code? How do Administrations monitor R.O.s?**

- Q9. Periodical Lubricating Oil Analysis, its correct interpretation and corrective measures are of critical significance for the maintenance of marine machineries. With reference to the modern analysis techniques employed for the condition of L.O, discuss the following:**

- A) Elemental (Spectrometric) Analysis**  
**B) Fourier Transform Infrared (FTIR) Spectroscopy**  
**C) Particle Count**  
**D) Base Number Vs Acid Number**