

Indian Maritime University

(A Cent2ral University, Govt of India)

End Semester Examinations – June 2025

Programme Name: B Tech Marine Engineering

Semester: IV

Subject Code: UG11T4404

Subject Name: Marine Pollution Prevention and Safety

Date: 06.06.2025

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.

Section A
Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable.

10x1=10

1. What does MARPOL 73/78 stand for?
 - a) Marine Pollution and Protection Law
 - b) International Convention for the Prevention of Pollution from Ships
 - c) Marine Pollution and Recovery Law
 - d) Maritime Pollution Act of 1978
2. Which of the following is NOT a requirement under MARPOL Annex III for the carriage of harmful substances in packaged form?
 - A) Proper labelling and marking of packages according to the IMDG Code.
 - B) Maintaining a manifest or stowage plan indicating the location of harmful substances.
 - C) Immediate disposal of damaged harmful substance packages overboard in open seas.
 - D) Compliance with packaging standards to prevent leakage during transport
3. What is the main function of an Oily Water Separator (OWS)?
 - a) To remove sediments from ballast water
 - b) To separate oil from bilge water before discharge
 - c) To incinerate hazardous waste
 - d) To purify drinking water onboard

4. Marine Incinerator combustion chamber operative chamber temperature is between –
 - A) 300 °C to 400 °C
 - B) 400 °C to 600 °C
 - C) 850 °C to 1200 °C
 - D) 950 °C to 1500 °C
5. What is the purpose of an Oil Record Book on a ship?
 - a) To record oil spills only
 - b) To record oil transfers, discharges, and sludge handling
 - c) To track fuel consumption
 - d) To maintain cargo loading details
6. Which ships are exempt from the requirements of MARPOL Annex IV related to sewage discharge?
 - A) All passenger ships operating within 12 nautical miles of shore.
 - B) Ships of less than 400 gross tonnage not certified to carry more than 15 persons.
 - C) All vessels fitted with a sewage treatment plant approved by the flag state.
 - D) Ships engaged exclusively in international voyages with fewer than 10 crew members.
7. Under MARPOL, what is the minimum distance from the nearest land for discharging food waste when using a grinder?
 - a) 3 nautical miles
 - b) 12 nautical miles
 - c) 25 nautical miles
 - d) 50 nautical miles
8. Which part of the ship is most commonly equipped with an Oily Water Separator?
 - a) Cargo hold
 - b) Bridge
 - c) Engine room
 - d) Ballast tanks
9. Which of the following is required for ships under the BWM Convention?
 - A. Ships must maintain a Ballast Water Record Book
 - B. Ships must have a backup ballast water treatment system
 - C. Ships must store ballast water in refrigerated tanks
 - D. Ships must reduce their ballast water capacity by 50%
10. What is the purpose of the Lockout-Tagout (LOTO) system onboard ships?
 - a) To lock all cabins during an emergency
 - b) To prevent accidental startup of machinery during maintenance
 - c) To secure cargo containers
 - d) To prevent unauthorized access to bridge controls

Section B

Five Questions of 02 Marks each. Attempt all question

11. Why is the Shipboard Oil Pollution Emergency Plan (SOPEP) essential on ships?
12. What are the key requirements for food waste disposal under MARPOL Annex V?
13. State the regulations regarding sewage discharge as per MARPOL Annex IV.
14. What are the methods of ballast water exchange?
15. What are the various gas checks done prior entering Enclosed Space?

Section C

Five out of Seven Questions to attempt each containing 10 Marks

16. Explain the key objectives of MARPOL 73/78 and its importance in protecting the marine environment. 10
17. Describe the working principle of an Oilly Water Separator (OWS) with a sketch and its role in pollution prevention. 10
18. Discuss the different types of waste covered under MARPOL Annex V and the disposal regulations for each. 10
19. a) What are the functions and operational requirements of a Sewage Treatment Plant on board ships?
b) Draw a neat sketch of Sewage Treatment Plan. (5+ 5)
20. a) What is the use of Incinerator Onboard? Sketch such an Incinerator with all accessories (Only sketch is required).
b) What are the safety precautions to be taken while working with an Incinerator on a ship? (7+3)
21. . a) Name the Emission Control Areas (ECAs) under MARPOL Annex VI and describe the purpose and significance of ECA areas. What specific pollutants are regulated within these areas? (5 Marks)
b) What are the requirements for NOx emission under MARPOL Annex VI, and how do they differ inside and outside Emission Control Areas? (5 Marks)
22. Explain the importance and salient features of following on-board drills
a) Fire drills (5Marks)
b) Enclosed space entry & rescue drills (5 Marks)