
**Indian Maritime University
(A Central University, Govt of India)**

Mar/Apr'26 SE

Programme Name: B Tech (ME)

Semester: 3

Subject Code: UG11T5305

Subject Name: MARINE BOILERS

Date: 25.03.2026

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

Section A

Choose the correct answer as applicable.

1. It is desirable for an Auxiliary Boiler Safety Valve to pop open and reseal late to
 - a. Give warning that excessive boiler has been reached.
 - b. Prevent wire drawing of the disc and seat.
 - c. Prevent valve pounding.
 - d. Provide sufficient blow down.

 2. The purpose of a super-heater is to
 - a. Produce high pressure steam
 - b. Increase the steam output
 - c. Increase the temperature of the saturated steam
 - d. Control the pressure of the steam

 3. Which of the following component is used to harvest the waste heat of flue gases of Main Engine?
 - a. Air preheater
 - b. Super heater
 - c. Economizer
 - d. Steam separator

 4. In a water tube boiler, which tube is placed outside the hot gas stream
 - a. Screen tubes.
 - b. Super heater tubes.
 - c. Water wall tubes.
 - d. Down comer tubes.

 5. Hydrazine is a chemical added to Boiler Feed water to remove
 - a. Carbon-di-oxide
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- b. Nitrogen
- c. Hydrogen
- d. Oxygen

6. When the Flame sensor on a Boiler senses no flame, it will

- a. Stop the Feed water pump
- b. Shut the Main steam stop valve
- c. Close the fuel shut off valves to stop combustion
- d. Stop the Forced draught Fan

7. The boiler feed water temperature with should be

- a. As low as possible
- b. Above 85 deg. Celsius
- c. Below 50 deg. Celsius
- d. Lukewarm

8. Type of boiler burner with highest turn down ratio is

- a. Pressure jet
- b. Rotary cup
- c. Steam Jet
- d. Pilot burner

9. The Ideal and desirable value of Chlorides in Boiler Feed water is

- a. 0
- b. 100
- c. 200
- d. 300

10. In a 3-element water level control method, the 2nd element to be monitored is

- a. Water level
- b. Steam Flow
- c. Feed water flow
- d. Hot well level

Section B

Five Questions of 02 Marks each

- 11. State a few important uses of steam on board a ship.
- 12. State the purpose of an observation tank in a Hot well.
- 13. Explain the effect of scale formation on the water tube in a boiler.
- 14. Will you weld a leaking Boiler tube on your ship? Explain.
- 15. Define a soot fire.

Section C

Seven Questions of 10 Marks each of which any 05 questions to be answered.

16. Sketch an exhaust gas boiler and explain its operation and advantages in marine applications. (10 Marks)
17. Draw and explain the Boiler Feed Water System used on board ships. (10 Marks)
18. a) What is meant by Flashing up a boiler up a Boiler from Cold condition? Explain the steps involved. (6 Marks)
b) Explain the different types of Refractories used in Boiler (4 Marks)
19. List all the boiler mountings found on a water tube boiler and explain a few. (10 Marks)
20. Testing of Boiler Feed water is critical to the well-being of the Boiler. Explain the need to test the following in a few lines.
 - a. Alkalinity (4 Marks)
 - b. Chlorides (3 Marks)
 - c. Sulphite test (3 Marks)
21. Boiler being a pressure vessel needs to be protected by alarms and trips. Enumerate a few. (5 Marks)
 - b. State the function of flame eye and its importance in Boiler Automation. (5 Marks).
22. a. Sketch and explain the Steam Jet burner. (5 Marks)
b. When does the Boiler get tested hydraulically? Explain the testing procedure. (5 Marks)

