

Indian Maritime University
(A Central University, Govt. Of India)
End Semester Examination June - July 2023
B. Tech (Marine Engineering)
Semester –IV
Marine Boilers
UG11T3401

Date: 01.06.2023
Time: 3 Hrs

Max Marks: 70
Pass Marks: 35

Part A –Q.No.1; 10 MCQs (10 X 01 Mark)

1. It is desirable for an Auxiliary Boiler Safety Valve to pop open and reseal quickly 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. In a smoke tube boiler
 - a. Smoke passes through the tubes.
 - b. Water passes through the tubes.
 - c. Smoke and water passes through the tubes.
 - d. None of the above.
3. 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.
4. Feed check valve is used in order to
 - a. Regulate the flow of boiler water.
 - b. Check the boiler water level.
 - c. Recirculate the unwanted boiler feed water.
 - d. Allow high pressure feed water to flow to drum and not allow reverse flow to take place.
5. Which of the below option is true
 - a. Stress in longitudinal joint is less than the circumferential joint.
 - b. Stress in longitudinal joint is greater than the circumferential joint.
 - c. Stress in longitudinal joint is equal to the circumferential joint.
 - d. Stress in circumferential joint is greater than the longitudinal joint.
6. The economiser is used in Boiler to
 - a. To increase thermal efficiency of the system.
 - b. Economise on fuel.

- c. Extract heat from exhaust gases.
 - d. All of the above.
7. The water in an Auxiliary Boiler should be tested daily for alkalinity and _____
- a. Hardness.
 - b. Nitrogen content.
 - c. Chloride content.
 - d. Dissolved CO₂.
8. Down comer tubes are used to circulate feed water between _____.
- a. steam drum and soot blowers.
 - b. economiser and steam drum.
 - c. steam drum and water drum.
 - d. side header and water drum.
9. Composite Boiler can receive heat from:
- a. Main Engine exhaust gases.
 - b. By the burning of oil in the boiler furnace.
 - c. Both of the above.
 - d. None of the above.
10. Which from the below material tests is destructive test:
- a. Tensile Test.
 - b. Ultrasonic Test.
 - c. Magnetic Particle Test.
 - d. Dye – penetrant test.

Part B –Q.No. 2; 5 Short Questions (05 X 02 Marks)

11. Why soot blowers are fitted in boilers?
12. In the event of a gauge glass fracture, how the escape of water gets restricted?
13. What is the function of Easing Gear in Safety Valves?
14. State the purpose of using refractory in the furnace of a boiler.
15. Enlist the conditions leading to boiler shutdown essential for safe boiler Operation

Section C

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

16. a. Describe with a sketch a waste heat recovery system including an exhaust gas boiler, capable of supplying the auxiliary steam requirements of a motor ship (7Marks)
- b. What are the limitations of this system during operation.(3 marks)

17.a) Explain fire tube type boiler with the help of a simple diagram. (5 marks)

b) Explain water-cooled type attemperator employed for superheated steam temperature control. (5 marks)

18. Include the advantages of a three-element feed water controller as compared to two element and single element controllers, in your answer. (10 marks)

19. List the Boiler mountings and explain the function of each component. (10 marks)

20. Compare between Smoke Tube Boiler and Water Tube Boiler (10 marks)

21.a) State the action in the case of boiler water contamination by oil. (5 marks)

b) Explain procedure of closing up and raising steam from cold on a Water Tube Boiler (5 marks)

22. Draw and explain the operation of jet burner in a marine boiler. (10 marks)

Tolani

