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## Fifth Semester B.E. Degree Examination, Jan./Feb. 2021

### Marine Boilers

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

#### Module-1

- 1 a. Explain the principle of operation of a boiler and explain the use of a boiler on board ship. (04 Marks)
- b. Sketch and explain a composite type of boiler used for Auxiliary purposes (Cochran boiler). (16 Marks)

**OR**

- 2 a. List out the differences between fire tube and water tube boilers. (06 Marks)
- b. Draw and explain the working of a scotch type boiler used for Auxiliary purposes. (14 Marks)

#### Module-2

- 3 a. Sketch and describe a consolidated type of full lift safety V/V. (18 Marks)
- b. What is a soot blower? (02 Marks)

**OR**

- 4 a. Sketch and describe reflux type of water level gauge. (16 Marks)
- b. List the steps for the blow down of the boiler gauge glass. (04 Marks)

#### Module-3

- 5 a. What is boiler water testing and why do we have it? (04 Marks)
- b. What are the common boiler water tests? Explain any 3 in detail. (16 Marks)

**OR**

- 6 a. What are the most commonly used boiler water treatment chemicals? Explain where they are used. (16 Marks)
- b. Briefly explain the boiler blowdown arrangement. (04 Marks)

#### Module-4

- 7 a. Sketch and explain a steam blast fuel oil burner. Discuss the reasons for the use of this type of burner over pressure jet fuel oil burner. (18 Marks)
- b. What are the 3 types of refractory materials used in boilers? (02 Marks)

**OR**

- 8 a. Describe a fuel oil system from the settling tanks (Boiler) to the boiler but not including the burners. (18 Marks)
- b. What do you mean by a primary and secondary flame? (02 Marks)

#### Module-5

- 9 Write short notes on boiler damage due to i) Corrosion ii) Erosion iii) Overheating iv) Cracking v) Mechanical damage (20 Marks)

**OR**

- 10 a. Describe the process of raising steam from cold on a scotch boiler. (18 Marks)
- b. What do you mean by a boiler survey? (02 Marks)