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***B.Tech. Degree V Semester Examination in
Marine Engineering December 2019***

**MRE 1502 MARINE BOILER AND STEAM ENGINEERING
(2013 Scheme)**

Time: 3 Hours

Maximum Marks: 100

(5 × 20 = 100)

- I. (a) Describe the advantages and disadvantages of water tube boilers over fire tube boilers. (6)
- (b) Sketch and explain 'D' type package boiler. (8)
- (c) What are different types of water wall tubes used in water tube boiler. (6)
- OR**
- II. (a) Describe the destructive and non-destructive tests carried out on plates and welded joints used for boiler construction. (8)
- (b) Sketch and describe a Scotch fire tube boiler with all-important dimensions. (12)
- III. (a) Enumerate Cochran composite boiler and mark all mounting. (10)
- (b) Explain routines carried out to maintain boiler in good condition. (6)
- (c) Various alarms and trips on boiler. (4)
- OR**
- IV. Write short note on
- (a) Improved high lift safety valve (10)
- (b) Medium pressure gauge glass (5)
- (c) De-superheater (5)
- V. (a) Procedures to follow during Wet and Dry lay-up of boiler. (6)
- (b) Explain three element water level controller with diagram. (8)
- (c) Purpose of blowing down boiler and Explain blow down procedure with line diagram. (6)
- OR**
- VI. Write short note on
- (a) Pressure jet burner and turn down ration. (8)
- (b) Explain firing sequence in boiler. Why pre/post purging is necessary in boiler firing sequence? (6)
- (c) Hydraulic test on boiler. (6)
- VII. (a) Difference between impulse and reaction turbine. (6)
- (b) What are advantages of compounding in turbine? Explain pressure and velocity compounding of turbine. (8)
- (c) What are various alarms and trip in turbine and how they activate? (6)
- OR**
- VIII. (a) What are the materials used various components blades, rotors, casings, sealing glands, gears of a steam turbine and justify your answer? (10)
- (b) Describe different types turbine blade fixing methods. (5)
- (c) Describe labyrinth packing glands in steam turbine. (5)

(P.T.O.)

- IX. (a) Describe difference between jet and surface condenser. (6)
- (b) Describe regenerative surface condenser. (6)
- (c) How water level is maintained in condenser? (8)

OR

- X. (a) Explain the main objects of warming up a steam turbine and detail out the procedure for warming up. (6)
- (b) Sketch line diagram of steam power plant and feed water system to boiler. (8)
- (c) How to identify leak detection in surface condenser and its corrective measures. (6)
