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***B. Tech. Degree V Semester Examination in Marine Engineering
December 2016***

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

Time: 3 Hours

Maximum Marks: 100

(5 × 20 = 100)

I. Illustrate the structural difference between smoke tube and water tube boiler with the help of suitable sketch. Indicate the application of each. (20)

OR

II. Sketch and describe a typical water tube boiler for marine use. What periodical inspections are required for it? (20)

III. Sketch and describe an improved high lift safety valve of boiler. Explain the salient features of it compared to ordinary safety valve. (20)

OR

IV. Write short notes on:

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|-----|--------------------------|-----|
| (a) | Superheater | (5) |
| (b) | Economiser | (5) |
| (c) | Automatic feed regulator | (5) |
| (d) | Gauge glass | (5) |

V. (a) Discuss step by step procedure of blowing down a boiler in operation. (10)
(b) Discuss the procedure to blow through the gauge glass. Why is such blow through required? (10)

OR

VI. (a) Why and how is the hydraulic tests carried out for a boiler? When is it required? (10)
(b) Explain steam raising and operating procedure of boiler. (10)

VII. (a) What is the need for boiler water treatment? Elucidate the procedure indicating the chemicals generally used. (10)

(b) Why is partial blow down of boiler done? (10)

OR

VIII. (a) Sketch and describe an oil burning furnace of boiler. (10)
(b) Narrate uses and types of refractory materials used. (10)

IX. (a) Discuss types of blades used and the method of their fixing in steam turbines. (10)
(b) Justify the materials used for blades and rotors. (10)

OR

X. Write short notes on:

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|-----|------------------------------|-----|
| (a) | Condensers. | (5) |
| (b) | Replacement of boiler tubes. | (5) |
| (c) | Labyrinth gland. | (5) |
| (d) | Vibrations in steam turbine. | (5) |