

**INDIAN MARITIME UNIVERSITY**  
(A Central University, Govt.of India)

**May/June 2015 End Semester Examinations**

**SEMESTER – IV, B.TECH ( MARINE ENGINEERING)**

**MARINE BOILER STEAM ENGINEERING (T 2402 / T 1402)**

**Date:09.06.2015**  
**Time:-3 Hrs**

**Max.Marks:100**  
**Pass Marks:50**

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**PART – A**  
(Compulsory Questions)

**(3 x10 = 30 Marks)**

1. Explain
  - a) Why Drum Type Rotor is preferred for Reaction Turbine ?
  - b) Built up Rotors are generally used for Low Pressure Turbines.
  - c) 40 % Reaction .
  - d) Erosion prevention of turbine blades .
  - e) Dummy Piston & Equalizing pipe arrangement .
  - f) Fitting of a non return valve in vapor line of air ejector
  - g) Function of louver plate in plate type gauge glass
  - h) Necessity of rubbing strip in turbine main bearing
  - i) Factors influence condenser efficiency
  - j) Orifice type drain arrangement in astern turbine

**PART – B**  
(Answer any five of the following)

**(5 x14 = 70 Marks)**

2. Explain with the aid of suitable diagrams how the pressure , velocity , enthalpy & volume of steam varies as it passes through a reaction turbine .  
Compare advantages and disadvantages of Impulse Turbine and Reaction Turbine.

**(10 + 4 = 14)**

3. Describe with sketches four methods that would be suitable for fixing blades to an Impulse Turbine Rotor. What are Shroud Rings and Lacing Wires? Explain why they are fitted? (10 + 4 = 14)
4. Using suitable sketches describe how Turbine Casing expansion arrangements are provided? Explain how connecting steam pipe expansions are taken up and what are the materials used for casing construction? (10 + 4 = 14)
5. Sketch & Describe a Deaerator Suitable for H.P. Boiler Plant? Why it is fitted high up in the engine room? What are the alternatives to have it near the same platform as the Feed Pump? (10 + 4 = 14)
6. Sketch and label closed feed system suitable for use with high pressure water tube boilers and steam turbines. Discuss working of level controller when water level falling and water level rising (7 + 7 = 14)
7. Explain in detail with a neat sketch how a turbine plant may be operated when L.P. turbine is damaged. Why it is necessary to have a drain arrangement? Sketch and describe a turbine drain System. (7 + 7 = 14)
8. Sketch and label a Radiant Heat Boiler. Indicate Tube sizes, gas & water flow and give gas temperatures from furnace to funnel. Explain function of external down comers and advantages of roof firing. (10 + 4 = 14)
9. With a diagrammatic sketch describe a simple control system incorporating the basic requirements for the protection of a main turbine plant. Briefly discuss the additional turbine protection devices you could expect to find on a vessel fitted with a comprehensive alarm & control system. (10 + 4 = 14)

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