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***B.Tech. Degree VIII Semester Examination in
Marine Engineering July 2017***

**MRE 1803 MARINE MACHINERY SYSTEM DESIGN
(2013 Scheme)**

Time: 3 Hours

Maximum Marks: 100

(5 × 20 = 100)

- I. (a) List and briefly describe the components of a Marine Diesel Engine that are manufactured by casting and by forging. Compare the advantages and disadvantages of these two methods of manufacturing. (10)
- (b) Describe the factors that need to be considered while designing items of machinery for installation on board ships. (10)
- OR**
- II. (a) Which are the different types of cast iron used for manufacturing marine machinery components? What are the factors that cause the differences in their properties? (10)
- (b) Describe the challenges faced by the engineer in maintaining machinery on board a ship. (10)
- III. (a) What are the differences between the piston designed for a four stroke engine and the one designed for a two stroke engine? Explain the reasons for the differences. (10)
- (b) List and describe with the aid of simple sketches the different types of valves used in piping systems on board the ship. (10)
- OR**
- IV. (a) Sketch and describe thrust bearing used in a modern ship. How does the lubrication of this bearing differ from that of a journal bearing? (12)
- (b) Describe with the aid of a simple sketch a safety valve the design of which incorporates a pilot valve. (8)
- V. Describe with the aid of simple sketches the differences between the propeller shafts used on a large ship fitted with (i) fixed pitch propeller and (ii) controlled pitch propeller. What are the reasons for these differences? (20)
- OR**
- VI. Describe with the aid of sketches the jacket cooling water system of a modern ship with special reference to the heat exchanger used and its advantages over conventional type. (20)
- VII. List the different L.O. Systems in the engine room of a large diesel engine driven ship. Sketch and describe the L.O. System for the Main Engine. (20)
- OR**
- VIII. Make a schematic diagram of the air starting system of a Main Diesel Engine showing all components. Describe the various components of the system using sketches wherever necessary. (20)
- IX. What are the inputs required for designing the scavenge and exhaust system of marine diesel engine used for propulsion? Explain such a system with the aid of a schematic diagram showing all components. (20)
- OR**
- X. List the various means available for fighting a fire in a modern sea-going vessel. Describe any two of them with the aid of sketches. (20)