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***B.Tech. Degree VIII Semester Examination in  
Marine Engineering August 2015***

**MRE 803 MARINE MACHINERY SYSTEM DESIGN**

Time: 3 Hours

Maximum Marks: 100

(5 × 20 = 100)

- I. (a) Describe in detail how the engine components are manufactured by castings and forgings. (10)  
 (b) Explain the terms 'Machine tolerance' and 'Surface Finish' with the help of sketches. (10)
- OR**
- II. (a) While designing machinery components for the use on board a ship, what special factors are to be considered by the designer? (10)  
 (b) Few important parts of IC engines are made by the processes "Casting" and "Forging". Explain the reasons for the same, detailing the advantages of using the said processes. (10)
- III. (a) What are the design considerations you would consider for the design of the connecting rod of a marine diesel engine? (10)  
 (b) Describe in detail the important factors to be considered while designing the crankshaft of the 2-stroke diesel engine of an ocean going ship. (10)
- OR**
- IV. (a) Describe in detail the various stresses acting on the propeller shaft of a marine diesel engine and how they are all taken care during its design. (10)  
 (b) Explain the design aspects of a flywheel used for a 2-stroke engine. (10)
- V. Describe with the help of sketches the different types of heat exchangers used in a modern diesel engine driven ship and state their important design considerations. (20)
- OR**
- VI. Sketch and describe the Fresh Water Cooling System for a 2 stroke marine diesel engine of a merchant ship. Explain the design aspects to be considered for the said system, including the various components. (20)
- VII. Sketch and describe the steering gear system of a marine propulsion diesel engine including the rudder, rudder stock, tiller arm and rams and state the design considerations for them. (20)
- OR**
- VIII. Sketch and describe the air starting system of a marine propulsion diesel engine stating the important safety aspects to be considered while designing the system. (20)
- IX. What are the factors to be considered while designing  
 (a) Steam Turbine Plants (10)  
 (b) Life boat and it's launching device (10)
- OR**
- X. (a) Describe with sketches the marine diesel engine scavenging systems and explain the design factors to be considered. (10)  
 (b) Sketch and describe the fire fighting system including emergency fire pump, stating the important design factors considered for the various components of the system. (10)