

***B. Tech. Degree VIII Semester Examination in  
Marine Engineering July 2013***

**MRE 803 MARINE MACHINERY SYSTEM DESIGN**

Time : 3 Hours

Maximum Marks : 100

- I. (a) What are the different methods used for manufacturing various engine components? (10)  
(b) Describe with the help of sketches the terms 'Machine tolerance' and 'Surface finish'. (10)
- OR**
- II. (a) Explain in detail the special considerations to be given while designing machinery components for the use on board a ship. (10)  
(b) What are the advantages and disadvantages of 'Casting' and 'Forging'? Give examples of important parts of IC engine made by the above said processes. (10)
- III. (a) What are the design considerations you would consider for the design of the crank shaft of a marine diesel engine? (10)  
(b) Connecting rod of a 2 stroke diesel engine is subjected to various stresses. Explain in detail how each one of these is taken care of during its design. (10)
- OR**
- IV. (a) Describe the various stresses acting on the propeller shaft of a marine diesel engine and how they are all taken care of during its design in detail. (10)  
(b) Explain the design aspects of a piston used for a 2 stroke engine. (10)
- V. Sketch and describe 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, including the design aspects, used for a 2 stroke marine diesel engine of a merchant ship. (20)
- VII. 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)
- OR**
- VIII. Sketch and describe the lubricating oil system of a 2 stroke marine diesel engine of a ship with all the equipments and state how the operational requirements are met by the design of the system. (20)
- IX. What are the factors to be considered while designing  
(a) Marine Diesel Engine Scavenge systems. (10)  
(b) Marine Diesel Engine Exhaust system. (10)
- OR**
- X. (a) Describe the various aspects considered for the design of a refrigeration system used for a cargo ship meant to carry frozen cargo. (10)  
(b) Describe the design aspects of the fuel injection system used for a marine diesel engine. (10)