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***B.Tech. Degree VIII Semester Examination in  
Marine Engineering July 2014***

**MRE 803 MARINE MACHINERY SYSTEM DESIGN  
(2006 Scheme)**

Time : 3 Hours

Maximum Marks : 100

(5 x 20 = 100)

- I. (a) List different types of cast irons available for manufacturing machinery components and describe their characteristics. (10)
- (b) How do these characteristics influence the design of a component? (10)
- OR**
- II. (a) Describe the different considerations that affect the design of a machinery item to be used (i) Ashore (ii) On board ship. (10)
- (b) List and briefly describe the nonmetallic materials used for making machinery items. Describe their advantages/disadvantages compared to metals. (10)
- III. (a) What are the factors to be considered while designing the crankshaft of a two stroke diesel engine? Describe how they are taken care of in the design. (10)
- (b) How does the piston of a two stroke diesel engine differ from that of a four stroke diesel engine? Explain reasons for these differences. (10)
- OR**
- IV. Write notes on:
- (i) Boiler safety valves. (5)
- (ii) Thrust bearing in a shafting system (5)
- (iii) Springs - types and characteristics (5)
- (iv) Valves – types and characteristics (5)
- V. Sketch and describe the central cooling water system on a modern ocean going vessel with notes on various components of the system. (20)
- OR**
- VI. Describe the factors affecting the selection of the type of propeller – F.P or C.P for a ship. What are their advantages and disadvantages? (20)
- VII. Describe with the help of sketches, the construction and operation of a purifier. How does a clarifier differ from a purifier and how does this difference affect their performance? (20)
- OR**
- VIII. List and describe the two major types of steering gears used on a large vessel. What are the main statutory requirements of the steering gear? (20)
- IX. List and describe different methods used to fight fires on board modern vessels. What are the rule requirements for the systems? (20)
- OR**
- X. Write notes on:
- (i) Life boat and its launching system (6)
- (ii) Pressure relief valves (4)
- (iii) Steam turbines (6)
- (iv) Starting system of main engine. (4)