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B.Tech. Degree VIII Semester Examination in Marine Engineering July 2016

MRE 803 MARINE MACHINERY SYSTEM DESIGN

Time : 3 Hours

Maximum Marks : 100

(5 × 20 = 100)

- I. (a) Differentiate clearly between the manufacturing methods “Castings” and “Forgings” and detail the advantages and disadvantages of both. (10)
 (b) Explain the terms ‘Machine tolerance’ and ‘Surface Finish’ with the help of sketches. (10)
- OR**
- II. (a) Discuss the four important factors that you would consider while designing marine machinery components. (10)
 (b) Describe the different methods used for the manufacture of various non-metallic items used onboard ships. (10)
- III. (a) What are the important factors you would consider for the design of the connecting rod of a marine diesel engine? (10)
 (b) Describe in detail the important factors that must be considered while designing the crankshaft of 2 stroke marine diesel engines. (10)
- OR**
- IV. (a) Describe in detail the various factors to be considered for the design of the propeller shaft system of a ship along with journal and thrust bearings. (12)
 (b) Explain the design aspects of a piston used for a 4 stroke engine. (8)
- V. Describe with the help of sketches the different types of heat exchangers used in diesel and steam engine plants and state their important design considerations. (20)
- OR**
- VI. Explain the important factors to be considered for the design of the fresh water cooling system. Sketch a typical fresh water cooling system along with all components used onboard a merchant ship and explain the working of the same. (20)
- VII. Sketch and describe the steering gear system used on a VLCC including the rudder, rudder stock etc. and state the design considerations for them. (20)
- OR**
- VIII. Sketch and describe the Lubricating oil system with all components of a 2 stroke marine diesel engine. Describe clearly the design factors to be considered for the same. (20)
- IX. What are the factors to be considered while designing?
 (a) Marine diesel engine scavenge systems. (10)
 (b) Marine diesel engine fuel injection system. (10)
- OR**
- X. Sketch and describe the fire fighting system including emergency fire pump of a merchant ship stating the important SOLAS requirements for the various components of the system. (20)