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***B.Tech. Degree V Semester Examination in Marine Engineering
December 2016***

**MRE 1504 MARINE INTERNAL COMBUSTION ENGINES I
(2013 Scheme)**

Time : 3 Hours

Maximum Marks : 100

(5 × 20 = 100)

- I. (a) Explain the suitability of slow speed and medium speed marine diesel engines on board merchant ships. Where are they used on ships? (10)
(b) Describe 4 stroke and 2 stroke engines for above. Differentiate between petrol and diesel engines. (10)
- OR**
- II. (a) Sketch and describe a cylinder liner of a large marine diesel engine showing various parts. (10)
(b) How is cylinder lubrication accomplished in diesel engines? Enumerate the properties of cylinder lubrication oil. (10)
- III. (a) How is scavenging achieved in 2 stroke diesel engines? Narrate types of scavenging with their merits and demerits. (10)
(b) Sketch the exhaust ducting of a 2 stroke main engine according to pulse type and constant pressure type turbo charging. (10)
- OR**
- IV. (a) Enumerate reasons for causing scavenges fire. How can it be avoided? How do you deal with such a fire at sea? (10)
(b) What is scavenge air moisturising? What are its objectives? (10)
- V. (a) What grades of fuel are used for main engine and generator engines nowadays at sea? Explain the importance of viscosity of fuel. How are they controlled? (10)
(b) Sketch and describe a fuel injector of diesel engine. (10)
- OR**
- VI. What is meant by delayed injection of fuel? What are its disadvantages? Why is that considered desirable in the light of emission control? (20)
- VII. (a) Sketch the water cooling system of a large marine diesel engine. How is cooling of piston achieved? Explain bore cooling. (10)
(b) What is the function of expansion tank in cooling water system? What additives are added to cooling water and its purpose? (10)
- OR**
- VIII. (a) Explain the consequences of cooling water temperature of engine becoming excessive. What steps will you take in such a case? (10)
(b) Indicate the significance of bore-stroke ratio. Why are super long stroke diesel engines desirable? (10)
- IX. (a) Sketch and describe a common rail fuel injection system. (10)
(b) What are the advantages of electronic fuel injection system? (10)
- OR**
- X. (a) Sketch and describe a jerk type fuel pump. (10)
(b) How is the fuel injector timing controlled? (10)