B. Tech. Degree V Semester Examination in Marine Engineering December 2013

MRE 504 MARINE INTERNAL COMBUSTION ENGINES-I

Time : 3 Hours   Maximum Marks : 100

I. (a) What are the criteria evaluated for selection of a diesel engine for propulsion purpose?   (8)
    (b) Describe the practical heat balance diagram for a large two stroke marine diesel engine.   (12)
         What are the different methods adopted for improving the overall thermal efficiency of the
         plant?

OR

II. (a) Sketch and describe a piston of a two stroke diesel engine   (10)
    (b) Describe the valve timing diagram for a four strike diesel engine.   (10)

III. (a) What are the different methods of supercharging?   (5)
     (b) What are the advantages of a supercharged engine?   (5)
     (c) Sketch and describe a piston of a two stroke diesel engine   (10)

OR

IV. (a) Sketch and describe different modes of scavenging. What are their relative advantages? (10)
    (b) Sketch and describe the scavenging arrangement for a two stroke marine diesel engine with (10)
         turbocharger and auxiliary blowers.

V. Describe in detail about the preparation of fuel oil from bunker storage tank to the inlet to   (20)
    engine. Mention the need for every stage of the process. Indicate approximate range of
    values recommended at each stage.

OR

VI. Write short notes on the following   (20)
        (i)   NOx control   (ii)   Ignition delay of fuel
        (iii) Variation in peak pressure   (iv)   After burning of fuel

VII. (a) Sketch and describe the jacket cooling water system of a two stroke diesel engine.   (12)
     (b) What are the desirable qualities of a coolant and how it is maintained?   (8)

OR

VIII. Explain the following terms: (20)
        (i)   Crankcase explosion   (ii)   Scavenge Fire
        (iii) Starting air line explosion

IX. What is VIT in a fuel injection system? With the help of a valve timing diagram of a two   (20)
    stroke engine explain its significance. What is the effect on peak pressure when VIT is
    varied?

OR

X. Sketch and describe a jerk type of fuel pump. Explain how the quantity of fuel injected is   (20)
    varied.

***