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***B.Tech. Degree V Semester Supplementary Examination in
Marine Engineering December 2015***

MRE 504 MARINE INTERNAL COMBUSTION ENGINES I

Time: 3 Hours

Maximum Marks: 100

(5 × 20 = 100)

- I. (a) Explain with sketches, the working cycle of a 4 stroke super charged engine. (12)
 (b) What is the difference between cycle of a super charged and a naturally aspirated engine? (8)
- OR**
- II. Write short notes on:
 (a) NOX emission control on exhaust gases from marine diesel engines. (10)
 (b) Causes of uptake fire and steps to prevent the same. (10)
- III. Make a simple diagrammatic sketch of jacket cooling water system for a slow speed marine diesel engine. Indicate temperatures and pressures at cardinal points in the system. (20)
- OR**
- IV. Write short notes on:
 (a) Ignition quality of fuels used in marine diesel engines. (10)
 (b) Main engine air starting line explosion. (10)
- V. (a) Describe how is fuel treated for efficient combustion in a marine diesel engine. (10)
 (b) Describe catalyst fines and their effect on marine diesel engine. (10)
- OR**
- VI. (a) Explain the two types of turbocharging system used in modern low speed marine diesel engines nowadays. (10)
 (b) What are the factors that can lead to fouling of turbochargers? (10)
- VII. Describe with simple sketches, the construction of cross head guides and columns for any large two stroke main propulsion marine diesel engine. (20)
- OR**
- VIII. Write short notes on:
 (a) Reasons for variation in compression pressure and peak pressure in marine diesel engines. (10)
 (b) Developments in selection of material and heat treatment of various marine engine components. (10)
- IX. Discuss the precautions which can be taken to minimize the possibility of a marine diesel engine crankcase explosion and transmission of dangerous flame into machinery space by:
 (a) Design and equipment (10)
 (b) Operating personnel. (10)
- OR**
- X. In case of main propulsion diesel engines, explain the indications and possible effects which might be expected from:
 (a) Crankshaft misalignment. (10)
 (b) Excessive bearing clearances. (10)