B. Tech Degree V Semester Examination in Marine Engineering, November 2009

MRE 504 MARINE INTERNAL COMBUSTION ENGINES – I

Time: 3 Hours Maximum Marks: 100

I. Sketch and describe an oil cooled piston of a 2-Stroke diesel engine showing the cooling arrangements, the piston crown and the piston rod. (20)

OR

II. Sketch and describe a Uniflow Scavenged 2-Stroke diesel engine cylinder head showing the combustion chamber, exhaust valve and cooling water arrangements. Explain what is bore cooling. (20)

III. Sketch and describe a constant pressure turbo charging system showing the engine cylinder, exhaust manifold, turbine, compressor, charge air cooler and booster blower. Explain the working of the electrically driven booster blower during starting and manoeuvring. (20)

OR

IV. Sketch the sectional view of a water cooled exhaust gas turbo charger and explain in detail its working. Why labyrinth glands are fitted in turbo chargers instead of ordinary glands. (20)

V. (a) Sketch a crank case mist detector and explain how it is giving an alarm to avoid crank case explosions. (10)

(b) Sketch a crank case pressure relief valve and explain how it operates. (10)

OR

VI. Sketch and describe the working of a helical controlled Bosch Type diesel engine fuel pump and explain in detail how the fuel quantity is varied according to the engine load. (20)

VII. Sketch and describe the fuel oil system of a large marine diesel engine using heavy fuel oil. Explain how the viscosity of the oil supplied to the fuel injector is automatically controlled. (20)

OR

VIII. (a) What is NOx and Sox emissions in the exhaust of a marine diesel engine and their effects in the atmospheric pollution. (10)

(b) What are main vibration problems on ships and explain the basic elements of vibration and also describe the importance of critical speed of an engine. (10)

IX. What are the causes of starting air system explosions? What are the preventive measures to be taken to avoid the above explosions? What are the safety fittings fitted on the air starting system to avoid starting line explosions? (20)

OR

X. Write short notes on the following:

(i) Viscosity (5)

(ii) Flash Point (5)

(iii) Ignition Delay (5)

(iv) Variable Injection Timing (VIT) (5)

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