B. Tech Degree VI Semester Examination in Marine Engineering June 2011

MRE 604 MARINE INTERNAL COMBUSTION ENGINES – II

Time : 3 Hours Maximum Marks : 100

I. What are the different methods of starting a diesel engine. Sketch and describe a main engine starting and reversing system of a large two stroke diesel engine. What are the safety inter locks in the system and what is meant by critical speed. (20)

OR

II. (a) Sketch and describe an Air Starting Valve fitted on the cylinder head of a large two stroke diesel engine. (10)

(b) Sketch and describe an Automatic Starting Air Valve fitted between the Air Bottle and the engine. What is the purpose of fitting this valve in the starting air line. (10)

III. Describe the method of taking the indicator diagram of a two stroke diesel engine. With the help of an indicator diagram how the following defects can be identified in a two stroke marine diesel engine.

(a) Early injection (b) Late injection
(c) Leaky fuel injector (d) After burning (20)

OR

IV. Write short notes on any **FIVE** of the following properties of fuel oils:

(a) Viscosity (b) Specific Gravity
(c) Calorific Value (d) Flash Point
(e) Ignition Quality (f) Pour Point
(g) Carbon Residue (20)

V. What are the causes of Crank Shaft misalignments? Describe the different methods of measuring Crank shaft alignment and how the readings are recorded. (20)

OR

VI. What are the requirements of UMS operations of ships and explain with the help of sketches the following controls in automation

(a) Proportional control (b) Integral control
(c) Derivative control (20)

VII. Sketch and describe the working principles and operation of a variable speed hydraulic governor and explain what is hunting and speed droop. Why an over speed governor is fitted on diesel engines. (20)

OR

VIII. Sketch and describe a rotary type air compressor and compare the same with reciprocating compressor for starting air duties of main engine. Why inter coolers are fitted in an air compressor. Explain the importance measuring clearance volume of a compressor after overhaul. (20)

IX. (a) .Sketch and describe a gas turbine showing the compressor, combustor, HT and LT turbine and also the output shaft. (10)

(b) Sketch and describe Free Piston Engine gasifier. (10)

OR

X. Sketch and describe the following: (20)

(a) Simple cycle gas turbine
(b) Regenerative cycle gas turbine
(c) Intercooled, regenerative cycle gas turbine
(d) Combined gas and steam turbine

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