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***B.Tech. Degree VI Semester Examination in
Marine Engineering June 2014***

MRE 604 MARIE INTERNAL COMBUSTION ENGINES – II

Time : 3 Hours

Maximum Marks : 100

(All questions carry *EQUAL* marks)

(5 x 20 = 100)

- I. (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)
- OR**
- II. (a) List the different safety provisions provided in the starting system of a reversible marine diesel engine. Explain each one of them. (10)
- (b) Sketch and describe a camshaft reversing system of a diesel main engine. (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. (20)
- (i) Early injection (ii) Late injection
(iii) Leaky fuel injector (iv) After burning
- OR**
- IV. Write short notes on any FIVE of the following properties of fuel oils: (20)
- (i) Viscosity (ii) Specific gravity (iii) Calorific value
(iv) Flash point (v) Ignition quality (vi) Carbon residue (vii) Pour point
- V. (a) Explain the different types of crankshaft manufacture and the advantages of each type of manufacture. (10)
- (b) What is crankshaft web slip, how web slip is measured and what are the causes of web slip? (10)
- OR**
- VI. What are the causes of crankshaft misalignments? Describe the different methods of measuring crankshaft alignment and how the readings are recorded. (20)
- VII. What are the requirements of UMS operations of ships? Explain with the help of sketches the following controls in automation. (20)
- (i) Proportional control (ii) Integral control (iii) Derivative control
- OR**
- VIII. Sketch and describe the working principles and operation of a variable speed hydraulic governor and explain what is hunting and speed droop. Why is an over speed governor fitted on diesel engines? (20)
- IX. Sketch and describe a rotary type air compressor and compare the same with reciprocating compressor for starting air duties of main engine. Why are inter coolers fitted in an air compressor? Explain the importance measuring clearance volume of a compressor after overhaul. (20)
- OR**
- X. (a) Sketch and describe a gas turbine showing the compressor, combustor, HP and LP turbines and also the output shaft. (10)
- (b) Sketch and describe free piston engine gasifier. (10)