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***B.Tech. Degree VI Semester Supplementary Examination in
Marine Engineering June 2022***

**MRE 1604 MARINE INTERNAL COMBUSTION ENGINES-II
(2013 Scheme)**

Time: 3 Hours

Maximum Marks: 100

(5 × 20 = 100)

- I. (a) Explain why cylinder lubrication is important in a large two stroke marine diesel engine. (8)
- (b) Explain how the liner is lubricated and what are the qualities required for a good cylinder lubricating oil. (12)
- OR**
- II. (a) Describe the method of taking indicator diagram of a two stroke diesel engine. (8)
- (b) With the help of indicator diagram how the following defects can be identified (12)
- (i) Early injection
- (ii) Late injection
- (iii) After burning
- (iv) Exhaust gas passage not clear.
- III. (a) Explain various methods of control of NO_x emissions from marine diesel engines. (15)
- (b) Briefly explain the Intelligent engine concept. (5)
- OR**
- IV. (a) Sketch and describe the operation of a Hydraulic governor. (15)
- (b) Briefly explain s overspeed governor. (5)
- V. (a) What are the improvements made in Main Engine for increased TBO? (10)
- (b) Discuss briefly about the SOLAS requirements for a UMS operation of a ship. (10)
- OR**
- VI. Write short notes on:
- (i) High temperature corrosion (5)
- (ii) NO_x Technical file (5)
- (iii) Poor quality of lubricating oil (5)
- (iv) Lubricating oil contamination. (5)
- VII. Sketch and describe a rotary air compressor and compare the same with a reciprocating compressor used for starting of main engine. Why intercoolers are provided in compressors? (20)
- OR**
- VIII. Write short notes on:
- (i) Use of compressed air motor (6)
- (ii) Rotary positive displacement compressor (7)
- (iii) Slip and Slip factor (7)
- IX. Sketch and describe the following:
- (i) Simple cycle gas turbine (6)
- (ii) Intercooled Regenerative cycle gas turbine (7)
- (iii) Combined Gas and steam turbine (7)
- OR**
- X. (a) Sketch and describe the gas turbine showing the compressor, Combustor, LP and HP turbine along with output shaft. (10)
- (b) Sketch and describe a Free piston engine Gasifier. (10)