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

**MRE 1504 MARINE INTERNAL COMBUSTION ENGINES I**

Time: 3 Hours

Maximum Marks: 100

(5 × 20 = 100)

- I. (a) Explain with PV diagram otto cycle and diesel cycle. (8)  
 (b) Explain how to take power card and draw card with indicator instrument. (6)  
 (c) Explain early fuel injection, leaky fuel valve & leaky Piston ring, with the help of draw card. (6)
- OR**
- II. (a) Explain mean piston speed, MCR & CSR rating. (10)  
 (b) Elaborate the function of Tie Rods & Engine components tightened together by Tie Rods. (10)
- III. (a) Explain pulse type and constant pressure type Turbocharging with their merits and demerits. (10)  
 (b) Explain briefly the components of Turbocharger. (10)
- OR**
- IV. Sketch and describe 2-stroke main engine cylinder head (20)
- V. (a) How is the fuel valve test carried out? What are the checks required? (10)  
 (b) With line diagram explain how the fuel is prepared for efficient combustion. (10)
- OR**
- VI. Write short notes on:  
 (a) Blood Poisoning. (5)  
 (b) After burning. (5)  
 (c) Ignition delay. (5)  
 (d) Compression ratio. (5)
- VII. (a) Explain the causes of crank case explosion, monitoring and prevention. (10)  
 (b) How to find out the air starting valve leaking and what are safety fittings on air starting line. (10)
- OR**
- VIII. Sketch and describe the main engine exhaust valve. (20)
- IX. Sketch and describe spill type fuel pump used in main engine. (20)
- OR**
- X. (a) What are the different methods of controlling NO<sub>x</sub> & SO<sub>x</sub> emissions? (10)  
 (b) Explain VIT system, electronic injection system and fuel quality setting system. (10)