

## ***B.Tech. Degree V Semester Examination in Marine Engineering, March 2008***

### **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, piston crown and 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 starting and reversing system of a two stroke main engine of a large ship. Show the safety items fitted in the system. (20)
- OR**
- IV Sketch and describe the following of the starting system of a main engine:
- i) Air starting valve on the cylinder head (7)
  - ii) Pilot air distribution valve (7)
  - iii) Automatic master starting air stop valve (6)
- V 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 maneuvering. (20)
- OR**
- VI 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)
- VII Sketch and describe the lubricating oil system of a large marine diesel engine with turbo charger. How is the turbo charger which is running at a high speed lubricated when the engine is stopped in an emergency. (20)
- OR**
- VIII Sketch and describe the fuel oil system of large marine diesel engine using heavy fuel oil. Explain how the viscosity of the oil supplied to the fuel injector is automatically controlled? (20)
- IX Write short notes on the following:
- i) Viscosity (5)
  - ii) Flash Point (5)
  - iii) Ignition Delay (5)
  - iv) Variable Injection Timing (VIT) (5)
- OR**
- X a) Sketch a crank case mist detector and explain how it is giving an alarm to avoid crank case explosions. (12)
- b) Sketch a crank case pressure relief valve and explain how it operates. (8)

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