

## Question Bank (I scheme)

**Name of subject: POWER ENGINEERING & REFRIGERATION (PER 22562)**

**Unit Test: I**

**Course: ME**

**Semester: V**

### **Chapter 1: CO1 (Internal Combustion Engines) (2 Marks)**

1. Draw Diesel cycle on PV and TS diagram.
2. Draw Carnot cycle on PV and TS diagram.
3. State the equation of thermal efficiency of Carnot cycle and state the meaning of each term involved in it.
4. Explain the term cut off ratio w. r. to I.C.engine .
5. State the assumptions made for air standard cycle .
6. If compression ratio of Otto cycle is changed from 5 to 6. What is the percentage increase in the efficiency?

### **Chapter 1: CO1 (Internal Combustion Engines) (4 Marks)**

1. Draw actual valve timing diagram of 4-stroke petrol engine.
2. Name any four sensors used in I.C. engines and explain working of any one.
3. Differentiate between supercharging and turbocharging in IC engine.
4. Differentiate between two stroke and four stroke engine.
5. Explain MPFI with neat sketch.
6. Explain working of EGR with neat sketch.
7. In an ideal Otto cycle, the air at the beginning of the isentropic compression is at 1 bar and  $15^{\circ}\text{C}$ . The compression ratio is 7. If the heat added during the constant volume process is 200 KJ/Kg, determine: a) maximum temperature in the cycle. b) Air standard efficiency

**Chapter 2: CO2 (Testing of IC Engines and Emission control) (2Marks)**

1. Define Mean Effective Pressure (MEP).
2. Write two pollutants in exhaust gasses and explain their effects on human body and atmosphere.
3. State the function of catalytic convertor.
4. State the purpose of testing in IC engine?
5. Give the limitations of selective Catalytic Reduction (SCR).

**Chapter 2: CO2 (Testing of IC Engines and Emission control) (4Marks)**

1. Define for IC engine: 1) IP, 2) BP. 3) Mechanical efficiency 4) BSFC.
2. Explain with neat sketch two way catalytic convertor.
3. A four stroke petrol engine develops 5 KW at 2000 rpm when it's mean effective pressure is 7.5 bar. If for the engine,  $L = 1.25D$ , Find it's dimensions.
4. The following observations were made while taking trial on a single cylinder I.C. engine.  
Brake power = 45KW, mechanical efficiency = 80percent, brake thermal efficiency = 35percent, calorific value of fuel = 42000KJ/kg.  
Determine: 1) Indicator power. 2) Fuel consumption.
5. What is the necessity of heat balance sheet? Explain how heat balance sheet of an I C engine is prepared.