



- Notes :
1. All questions carry marks as indicated.
  2. Solve Question 1 OR Questions No. 2.
  3. Solve Question 3 OR Questions No. 4.
  4. Solve Question 5 OR Questions No. 6.
  5. Solve Question 7 OR Questions No. 8.
  6. Solve Question 9 OR Questions No. 10.
  7. Solve Question 11 OR Questions No. 12.
  8. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) With neat sketch writes basic function of Engine block, crank – shaft and piston. **7**
- b) Explain Diesel cycle based on P – V diagram. **7**

**OR**

2. a) Name various types of cooling system used in IC Engine. Explain forced pump cooling system. **7**
- b) What are the various frictional losses are in engine? Explain blow by loss and pumping loss. **6**
3. a) What are the desirable properties of SI Engine fuel. Explain them in brief. **7**
- b) Describe use of Ethanol & methanol as alternative fuel. **6**

**OR**

4. a) Describe MPFI system with their advantages and disadvantages. **6**
- b) The venturi of a simple carburetor has a throat diameter of 20 mm and coefficient of air flow is 0.85. The fuel orifice has a diameter of 1.25 mm and coefficient of fuel flow is 0.66. The petrol surface is 5 mm below the throat. Find : (i) The air fuel ratio for a pressure drop of 0.07 bar when nozzle tip is neglected. (ii) The air fuel ratio when nozzle tip is taken into account. **7**
5. a) Explain stages of combustion in SI engine using P –  $\theta$  diagram. **6**
- b) What do you mean by abnormal combustion. Explain phenomenon of knock in SI engine. **7**

**OR**

6. a) With neat sketch explain working of battery Ignition system. **7**
- b) What do you mean by scavenging. Explain its type with neat sketch. **6**

