Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ME) (2011 Batch Elective-II) (Sem.–7,8)

I.C.ENGINES

Subject Code : DE/ME-1.1

Paper ID : [A3065]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

(a) State the applications of C.I. Engines.

(b) Write the drawbacks of a simple carburetor.

(c) State the function of intake manifold.

(d) Define the term pre-ignition.

(e) Write the function of a supercharger.

(f) Differentiate between I.H.P. and B.H.P.

(g) Draw the P-V and T-S diagrams of Diesel cycle.

(h) Write four differences between two-stroke and four-stroke engine.

(i) List the difference between Air injection and Solid injection.

(j) Enumerate the factors affecting delay period.

SECTION-B

2. Find the air fuel ratio of a four-stroke, single-cylinder, air-cooled engine with fuel consumption time for 10 cc is 20.4 s and air consumption time for 0.1 m^3 is 16.3 s. The load is 7 kg at the speed of 3000 rpm. Find also brake specific fuel consumption in g/kW h and brake thermal efficiency. Assume the density of air as 1.175 kg/m^3 and specific gravity of fuel to be 0.7. The lower heating value of fuel is 43 MJ/kg and the dynamometer constant is 5000.

3. Draw the valve timing diagram of four-stroke engine and compare them with actual diagrams.

4. Explain the phenomenon of knocking in S.I engine and list the effect of various engine variables on S.I engine knock.

5. What do you understand by the term turbocharging? Sketch the principle of exhaust turbocharging of a single-cylinder engine.

6. With a suitable sketch explain the starting circuit of a Solex carburetor.

SECTION-C

7. A gasoline engine working on the four-stroke develop a brake power of 20.9 kW. A Morse test was conducted on this engine and the brake power (kW) obtained when each cylinder was made inoperative by short circulating the spark plug are 14.9, 14.3, 14.8 and 14.5 respectively. The test was conducted at constant speed. Find the indicated power, mechanical efficiency and *bmep* when all the cylinders are firing. The bore of the engine is 75 mm and the stroke is 90 mm. The engine is running at 3000 rpm.

8. What is the purpose of using a governor in C.I. engines? What are the two major types of governors? Explain them.

9. Write short notes on :

   (a) Classification of I.C. engines.

   (b) Comparison of air standards & fuel air cycles.