(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2106   Roll No. ☐☐☐☐☐☐☐☐☐☐

B. Tech.

(SEM. V) ODD SEMESTER THEORY EXAMINATION 2013-14

IC ENGINES AND COMPRESSORS

Time :2 Hours   *Total Marks : 50*

Note : Attempt **ALL** the questions.

1.   Attempt any *two* questions :—   (7×2=14)

   (a)   Explain the difference between two stroke and four stroke engines. Draw the actual valve timing diagram for a 4 stroke and 2 stroke S.I. Engine.

   (b)   Discuss the effects of gasoline volatility on cold starting, hot starting, warm up and vapour lock. What is performance number and diesel index ?

   (c)   Following data was obtained during the trial of two cylinders, 2 stroke engine :
         Bore 10 cm, stroke 14 cm, speed 1500 rpm, Area of the positive and negative loop are 6 cm² and 0.25 cm² respectively. Length of indicator diagram is 6 cm, spring constant of indicator is 3.8 bar/cm, Net brake load on the dynamometer is 237.5 N, Brake drum radius is 0.4 m, Fuel consumption is 4.7 kg/hr, calorific value of fuel 45000 kJ/kg. Find indicated power, brake power, mechanical and thermal efficiencies.

2.   Attempt any *two* questions :—   (6×2=12)

   (a)   Explain the stages of combustion in S.I. Engine. Explain the terms flame speed and ignition delay.

EME505/DNG-51830   1   [Turn Over

(b) Discuss the effect of following engine variables on S.I. engine performance :

   (i) Compression ratio

   (ii) Ambient pressure and temperature

   (iii) Air-fuel ratio

   (iv) Turbulence.

(c) Explain the construction and working of simple carburettor in a S.I. engine. Explain the carburetion by compensating jet method with sketch.

3. Attempt any *two* questions :—   **(6×2=12)**

   (a) What is ignition delay in case of C.I. engines ? Discuss the variables affecting ignition delay.

   (b) Explain the types of fuel injection systems in diesel engine.

   (c) What are the types of combustion chamber used in C.I. engines ?

4. Attempt any *two* questions :—   **(6×2=12)**

   (a) Differentiate between centrifugal compressor and axial flow compressor.

   (b) Show advantages of multistage compression with help of PV and TS diagram. Derive optimum pressure ratio for 2 stage minimum work of compression.

   (c) Write short notes on any *two* :

   (i) Roots blower

   (ii) Supercharging

   (iii) Surging and choking.

   (iv) Radiator.