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Roll No .....

ME-604 (GS)

B.E. VI Semester Examination, June 2020

Grading System (GS)

Internal Combustion Engines

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. Show that the mean effective pressure of an Otto cycle may be expressed in the form:

$$p_m = \frac{n_{th}\Delta p}{(r-1)(y-1)}$$

Where n_{th} is the thermal efficiency of the cycle, ΔP is the pressure rise during the heat transfer to the cycle, r is compression ratio and y is the ratio of specific heats of the working fluid.

2. Describe various types of combustion chambers employed in different S.I. engines. Discuss their salient features also.

3. Define 'combustion'. Discuss the combustion phenomenon in SI engine with neat diagram and comments on the effect of engine variables on flame propagation.

4. Explain the difference between the
   i) Pre ignition
   ii) Auto-ignition
   iii) Detonation.

5. a) Explain briefly the essential features of a good commercial carburetor for automotive engines.
   b) Why overcooling and overheating of I.C. engine is harmful.

6. Write a short note of the following:
   a) Mist lubrication
   b) H.U.C.R.
   c) Hydrogen as an alternative fuel

7. The power output of an I.C. engine is measured by a roped brake dynamo-meter. The diameter of the brake pulley is 700 mm and the rope diameter is 25 mm. The load on the right side of the rope is 50 kg mass and spring balance needs 50 N. The engine running at 900 rpm consumes fuel of calorific value of 44000 kJ/kg at a rate of 4 kg/h.
   Assume g = 9.81 m/sec^2 Calculate
   i) Brake specific fuel consumption
   ii) Brake thermal efficiency

8. Write a short note of the following:(Any two)
   a) Rotary engines
   b) Splash lubrication
   c) Knock inhibitors.

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