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Roll No .....

ME-604 (GS)

B.E. VI Semester

Examination, May 2018

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. 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

2. A 4-cylinder two stroke cycle petrol engine develops 30 kW at 2500 rpm. The mean effective pressure on each piston is 8 bar and mechanical efficiency is 80%. Calculate the diameter and stroke of each cylinder of stroke-to-bore ratio 1.5. Also calculate the fuel consumption of the engine. if brake thermal efficiency is 28%. The calorific value of the fuel is 43900 kJ/kg.

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. Discuss in detail the salient features of various type combustion chamber of SI engine.

5. What is Combustion Chamber? Explain briefly any two of the combustion chamber with neat diagram.

6. Enlist the advantage and disadvantage of induction swirl and write the short note on cold starting aids for C.I. engine.

7. A simple carburetor under a certain condition delivers 5.45 kg/h of petrol with an air fuel ratio of 15. The fuel jet area is 2mm^2 with a calorific discharge of 0.75. If the tip of fuel jet is 0.635 cm above the level of petrol, in float chamber and the venturi throat coefficient of discharge is assumed to be 0.80. Calculate
   i) The venturi throat diameter.
   ii) The velocity of air across the venturi throat. Take density of air = 1.29 kg/m^3 and specific gravity of petrol = 0.72

8. Answer any four of the following:
   a) An engine working on two and four stroke cycles. Differentiate between them on various aspect.
   b) What do you mean by pre-ignition?
   c) Explain the factors on which delay period depends.
   d) Explain the wet sump lubrication system.
   e) Define the term 'Boost pressure' and 'Pressure ratio'.
   f) "SI engine are generally not supercharged". Justify this statement.

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