DIPLOMA IN MECHANICAL ENGINEERING (DME) / ADVANCED LEVEL CERTIFICATE COURSE IN MECHANICAL ENGINEERING (DMEVI / ACMEVI)

Term-End Examination

00457

December, 2017

BME-033 : HEAT POWER TECHNOLOGY

Time : 2 hours   *Maximum Marks : 70*

*Note : Answer any **five** questions. Use of scientific calculator is allowed. Assume any missing data suitably.*

1. A single cylinder 4-stroke diesel engine has a bore of 150 mm and a stroke of 200 mm. When the engine runs at 400 rpm, it develops a power of 10 kW. The area of the indicator diagram is 7·25 cm^2 and its maximum length is 6·125 cm. The spring constant is 8. Determine the

   (a) mean effective pressure,

   (b) indicated power, and

   (c) mechanical efficiency of the engine.   *14*

2. (a) Explain the working of a magneto-ignition system.

(b) With a neat diagram, explain the dry sump lubrication system. **7+7**

3. (a) What is the function of a governor ? Describe the Porter governor with a neat sketch.

(b) Differentiate between flywheel and governor. **7+7**

4. Find the power transmitted by a belt running over a pulley of 600 mm diameter at 200 rpm. The coefficient of friction between the belt and the pulley is 0·25, and the angle of lap is 160°. Maximum tension in the belt is 2500 N. **14**

5. (a) Describe with a sketch, the principle of a hydraulic dynamometer.

(b) What are the various methods of measuring indicating power ? Explain in brief. **7+7**

6. (a) What are the different modes of heat transfer that occur in an I.C. engine ? State the drawbacks of an over-cooled engine.

(b) Explain the role of anti-freeze solutions in a water cooling system. **7+7**

7. Write short notes on the following :   7+7

   (a)   Two-stroke and Four-stroke S.I. Engines

   (b)   Air Pollution

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