

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

Term-End Examination

June, 2016

00610

BME-033 : HEAT POWER TECHNOLOGY

Time : 2 hours

Maximum Marks : 70

Note : Answer five questions in all. Question no. 1 is compulsory. Answer four more questions from the remaining questions. Use of scientific calculator is permitted.

1. (a) The combustion process in a C.I. engine starts with the help of
- (i) spark
 - (ii) temperature
 - (iii) pressure
 - (iv) All of the above
- (b) The velocity ratio is defined as
- (i) speed of follower/speed of driver
 - (ii) speed of driver/speed of follower
 - (iii) speed of belt/speed of pulley
 - (iv) speed of pulley/speed of belt

- (c) The noise developed in an engine is controlled with the help of the following device(s) :
- (i) Control valve
 - (ii) Mufflers
 - (iii) Filters
 - (iv) All of the above
- (d) Mechanical efficiency of a two-stroke engine is defined as the ratio of
- (i) $\frac{\text{Brake thermal efficiency}}{\text{Indicated thermal efficiency}}$
 - (ii) $\frac{\text{Brake power}}{\text{Indicated power}}$
 - (iii) $\frac{\text{Volume of charge inducted}}{\text{Volume of cylinder}}$
 - (iv) None of the above
- (e) The ratio of the maximum fluctuation of speed to the mean speed is called
- (i) fluctuation of speed
 - (ii) maximum fluctuation of speed
 - (iii) coefficient of fluctuation of speed
 - (iv) None of the above
- (f) A carburettor is used to supply
- (i) petrol, air and lubricating oil
 - (ii) air and diesel
 - (iii) petrol and lubricating oil
 - (iv) petrol and air

(g) The thermal efficiency of a petrol engine is about

(i) 15%

(ii) 30%

(iii) 50%

(iv) 70%

7×2=14

2. (a) With a neat sketch, explain the working of a four-stroke spark ignition engine.

(b) Draw a typical fuel injector and label its parts.

7+7

3. (a) What are the functional requirements of an injection system used in compression ignition or diesel engine ?

(b) Explain the working principle of a simple carburettor with a neat diagram.

7+7

4. (a) With the help of a neat sketch, explain the working of a battery ignition system.

(b) State the advantages and limitations of an air cooling system.

7+7

5. Find the power transmitted by a belt running over a pulley, 700 mm diameter at 300 rpm. Given $\mu = 0.3$, angle of lap is 160° and the higher tension in the belt is 2453 N.

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