

**DIPLOMA IN MECHANICAL ENGINEERING
(DME)**

00308

Term-End Examination

June, 2014

BME-061 : AUTOMOBILE ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : Answer **five** questions. Question no. 1 is **compulsory**. Use of scientific calculator is allowed.

1. Choose the correct alternative in case of the following multiple choice questions. $7 \times 2 = 14$
- (a) Following does not come under automobile
 - (i) Scooter
 - (ii) Car
 - (iii) Rickshaw
 - (iv) Van

 - (b) King pin is a part of
 - (i) braking system
 - (ii) transmission
 - (iii) steering system
 - (iv) electrical system

 - (c) Power is obtained during
 - (i) suction
 - (ii) expansion
 - (iii) compression
 - (iv) exhaust

- (d) Scavenging is the process of
 - (i) removal of dirt
 - (ii) removal of dirty oil
 - (iii) removal of excess fuel
 - (iv) removal of exhaust gases

- (e) The component which supplies high voltage to proper spark plug at proper time is
 - (i) condenser
 - (ii) distributor
 - (iii) ignition coil
 - (iv) contact breaker

- (f) The component which transmits power from gear box to differential is
 - (i) propeller shaft
 - (ii) trunnion joint
 - (iii) final drive
 - (iv) rear axle

- (g) Brake fluid is used in case of
 - (i) mechanical brakes
 - (ii) hydraulic brakes
 - (iii) vacuum brakes
 - (iv) electric brakes

2. Explain the working of a 4-stroke diesel engine by giving suitable sketches. Also write three main differences between a diesel and a petrol engine. 14

3. Describe the working of a battery or coil ignition system with the help of a suitable sketch. 14

4. What is a gear train ? List its various types and describe each with the help of suitable sketch. Also describe the following terms related to gear train : 14
- (i) Driver
 - (ii) Driven
 - (iii) Follower
 - (iv) Shaft
5. Describe propeller shaft and final drive with the help of suitable sketches. 14
6. Describe the function of braking system of an automobile. Also describe disc brakes and list their advantages and disadvantages. 14
7. A simple gear train consists of three gears, each mounted on a separate shaft. All the three shafts are parallel. Gear 1 is driver which has 20 teeth and a speed of 600 rpm. The number of teeth on gears 2 and 3 is 40 and 60 respectively. Determine : 14
- (a) The speed ratio of gear train
 - (b) Speed of follower
 - (c) Direction of rotation of follower if driver rotates in clockwise direction.