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BIME-012

**B.Tech. – VIEP – MECHANICAL ENGINEERING
(BTMEVI)**

Term-End Examination

December, 2015

BIME-012 : AUTOMOBILE ENGINEERING

Time : 3 hours

Maximum Marks : 70

Note : Answer any *five* questions. All questions carry equal marks. Assume missing data suitably, if any.

1. (a) Differentiate between petrol and diesel engines. Briefly explain the working of four-stroke, water-cooled, single-cylinder spark ignition engine.

(b) A single-cylinder petrol engine running at 1800 rpm develops a torque of 8.0 Nm. The indicated power of the engine is 1.8 kW. Calculate the friction power and loss of power as percent of brake power.

7+7

2. (a) Compare SI and CI engines with respect to the following :
- (i) Compression ratio
 - (ii) Fuel used
 - (iii) Speed
 - (iv) Ignition
 - (v) Weight
 - (vi) Efficiency
 - (vii) Combustion noise
- (b) What is the necessity of cooling an IC engine ? Describe in brief, the cooling system of an SI engine. 7+7
3. (a) How are the constant mesh transmissions arranged for obtaining torque changes ? Discuss the merits and demerits of constant mesh gearbox over sliding mesh gearbox.
- (b) Explain the common troubles encountered in gearboxes and suggest suitable remedies. 7+7
4. (a) Write short notes on the following :
- (i) Leaf Spring
 - (ii) Torsion Bar
- (b) What is the purpose of independent suspension ? Explain various methods to achieve the same in a rear axle car. 7+7

5. (a) What is the function of a clutch ? Discuss various factors affecting the torque transmission in a clutch.
- (b) Compare dry and wet type friction clutches. Discuss their merits and demerits. 7+7
6. (a) Explain hydraulically operated four-wheel brake system with the help of a neat sketch.
- (b) Draw a simplified wiring circuit for lighting system of a car and discuss its working. 7+7
7. Write short notes on any *two* of the following : $2 \times 7 = 14$
- (a) Alternators used in Automobiles
- (b) Engine Lubrication
- (c) Torque Converters
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