

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

Term-End Examination

00676

June, 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) What are the various factors considered for selecting power unit in a vehicle ? Explain the differences between SI and CI engines.
 - (b) What are the main components of an automobile ? Describe any two of them briefly.
- 7+7
2. (a) The bore and stroke of a water-cooled, vertical, single cylinder 4-stroke diesel engine are 80 mm and 110 mm respectively. Calculate bmep of the engine, if torque is 23.5 Nm.

- (b) What are the important components of an internal combustion engine ? Explain them briefly. 7+7
3. (a) What is perfect steering ? Discuss in detail the Ackermann steering mechanism.
- (b) What is meant by power steering ? Why is it required in an automobile ? Sketch any power steering system and explain its working. 7+7
4. (a) Explain the working of a synchromesh gear box. What are its merits and demerits as compared to constant mesh gear box ?
- (b) What is the principle of working of a torque converter in an automobile ? Discuss its advantages and disadvantages. 7+7
5. (a) In which type of vehicles are leaf springs used ? What is the material used in leaf springs ? What are its advantages over other automobile springs ?
- (b) Briefly describe the construction and working of a torsion bar. 7+7

6. (a) Briefly describe the construction and working of disc brakes. Compare them with the conventional drum type brakes.
- (b) Discuss the criterion for designing the headlight system of a vehicle. 7+7
7. Write short notes on any *two* of the following : 2×7
- (a) Starter motors
 - (b) Automobile air-conditioning
 - (c) Maintenance of batteries