

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

**Term-End Examination**

**June, 2016**

00158

**BIME-012 : AUTOMOBILE ENGINEERING**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Answer any five questions. All questions carry equal marks. Assume missing data suitably, if any. Use of scientific calculator is permitted.*

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1. (a) Explain briefly the various parts of an automobile (four-wheeler) with the help of a neat sketch. 7
- (b) State the differences in the knocking phenomena of S.I. and C.I. engines. Enlist various methods of controlling knocking in a diesel engine. 7
2. (a) Explain the construction and working of a four-stroke S.I. engine with a neat sketch. 7

- (b) A four-cylinder four-stroke S.I. engine has a compression ratio of 8 and bore of 100 mm, with stroke equal to the bore. The volumetric efficiency of each cylinder is equal to 75%. The engine operates at a speed of 4800 rpm with an air-fuel ratio of 15. Given that the calorific value of fuel = 42 MJ/kg, atmospheric density =  $1.12 \text{ kg/m}^3$ , mean effective pressure in the cylinder = 10 bar and mechanical efficiency of the engine = 80%. Determine the indicated thermal efficiency and the brake power. 7
3. (a) What are the requirements of a good steering system ? Discuss the different steering systems, with their relative advantages or disadvantages. 7
- (b) What do you mean by a Power Transmission System ? Mention the different components of a transmission system along with their purpose. 7
4. (a) What are the types of clutches ? Explain any one with a neat sketch. 7
- (b) What do you understand by the 'Ignition timing' ? Enumerate the various factors which affect ignition timings. 7

5. (a) Discuss the classification of brakes for vehicles. Describe any one type of mechanical brake with a neat sketch. 7
- (b) What are the different types of batteries used in automobiles ? Explain any one of them with a neat sketch. 7
6. (a) Discuss the various electrical accessories used in automobiles along with their purpose in brief. 7
- (b) What are the important points relating to preventive maintenance in automobiles ? 7

7. Write short notes on any *four* of the following :  $4 \times 3 \frac{1}{2} = 14$

- (a) Eco-friendly Vehicle
- (b) Trouble-shooting
- (c) Starter Motor
- (d) Power Brakes
- (e) Suspension Systems
- (f) Multipoint Fuel Injection System