

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

**Term-End Examination**

**June, 2012**

**BIME-012 : AUTOMOBILE ENGG.**

01595

*Time : 3 hours*

*Maximum Marks : 70*

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

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1. (a) What are the parameters that are considered for the classification of the vehicles? Explain them. **7+7=14**
- (b) A 4 cylinder, 4 stroke, S1 engine develops a maximum brake torque of 160 N-m at 3000 rpm. Calculate the engine displacement, bore and stroke. The brake mean effective pressure at the max. Engine torque is 960 kpa. Assume bore = stroke length.
  
2. (a) What are the main functions of a piston and piston rings in an I.C. engine? Describe in brief different types of piston and piston rings. **7+7=14**
- (b) Explain the steering system of an automobile with neat sketch.

3. (a) What are the functions of the suspension system of a vehicle ? Discuss the utility of a coil spring and a shock absorber in a suspension system. 7+7=14
- (b) How the power of an engine is transmitted to the wheels of an automobile ? Describe the working principle, Construction and working of a torque converter.
4. (a) What is the function of differential in a vehicle ? Discuss the need for locking a differential. 7+7=14
- (b) Compare the front wheel rear wheel and four wheel drive and explain the differences between them.
5. (a) What are hydraulic brakes ? Show the layout of a hydraulic brake system and its working. What is meant by bleeding of brakes ? 7+7=14
- (b) Compare disk brakes with drum brakes and explain the differences between them.
6. (a) What are the different electrical systems used in a vehicle ? Describe the construction and working of lead acid batteries. 7+7=14

- (b) Why starting motors are used in Automobiles ? Describe the working of a dynamo used in an automobile.
7. (a) List the various electrical accessories used in an automobile and give their functions. Describe the working of a wind screen wiper.  $7+7=14$
- (b) Describe the automobile air conditioning system with a block diagram and write down the functions of its main parts.
8. Write short notes on following :  $3\frac{1}{2}\times 4=14$
- (a) Firing order
- (b) Synchromesh Gear box
- (c) Telescopic Propeller shaft.
- (d) On-board diagnostics.
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