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

Term-End Examination

OO632   December, 2017

BIME-012 : AUTOMOBILE ENGINEERING

Time : 3 hours   *Maximum Marks : 70*

Note : *Answer any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. (a)   What are the factors on which the performance of an automobile depends ? Discuss.   7

   (b)   Describe in brief the components of an automobile air-conditioning system.   7

2. (a)   What are the functions of a gear-box in the transmission system of an automobile ? Explain.   7

   (b)   Define the term 'Ignition'. How is ignition related with combustion ? Discuss the requirements of an ignition system in an I.C. engine.   7

3. (a) Define scavenging and scavenging efficiency. With the help of neat sketches, explain different scavenging arrangements based on charge flow. 7

   (b) What is the function of a chassis ? List the various components of a chassis. 7

4. (a) What are the different types of clutches used in an automobile ? Explain any one with a neat sketch. 7

   (b) Define the term 'braking efficiency'. How are brakes classified ? Write the components of a braking system. 7

5. (a) Give the layout of a steering system and label its various parts. Explain the working of the steering system. 7

   (b) Describe the lighting systems used in modern vehicles. Write the purpose of directional signal lights and tail lights. 7

6. (a) Explain the working principle, construction and functions of an alternator used in automobiles. 7

   (b) A 4-cylinder 4-stroke C.I. engine develops 14·7 kW at 1000 r.p.m. The mean effective pressure is 5·5 bar. Calculate the bore and length of stroke. The ratio of length of stroke to bore dia is 1·5. 7

7. Write short notes on any *two* of the following : 7+7=14

(a) Suspension Systems used in Automobiles

(b) Batteries used in Automobiles

(c) Engine Lubrication

(d) Cooling Systems in Automobiles

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