| BIME-012 |

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

Term-End Examination

☐☐☳☶☲ **December, 2016**

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. Use of scientific calculator is permitted.*

1. (a) Explain the general classification of vehicles with examples.   7

   (b) Discuss the differences between S.I. and C.I. engines.   7

2. (a) What are the desirable properties of a good I.C. engine fuel ? Explain 'octane number' and 'cetane number'.   7

(b) The following particulars were obtained on a four-stroke gas engine :

Duration of trail = 1 hour

Revolutions = 14000

Number of missed cycles = 500

Net brake load = 1470 N

Mean effective pressure = 7·5 bar

Gas consumption = 20000 litres

L.C.V of gas at supply = 21 kJ/litre

Cylinder diameter = 250 mm

Stroke = 400 mm

Effective brake circumference = 4 m

Compression ratio = 6·5 : 1

Determine : 7

(i)   Indicated power

(ii) Brake power

(iii) Mechanical efficiency

(iv) Indicated thermal efficiency

3. (a) What is a suspension system ? What are the functions of a suspension system ? 7

(b) What are the various types of Gear boxes used in automobiles ? Explain any one with a neat sketch. 7

4. (a) What is a propeller shaft ? What are the functions of a propeller shaft in the transmission system of a vehicle ? 7

(b) What are the two objectives of employing a suspension system on any automobile ? Discuss the role of springs and shock absorbers in it. 7

5. (a) Classify the different types of brakes. 7

(b) Explain the fluid coupling with a neat sketch. 7

6. (a) Sketch the layout of a lighting circuit suitable for modern cars and explain its working in brief. 7

(b) "Battery is the heart of the system in an automobile." Explain with suitable examples. 7

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

(a) Pneumatic Brakes

(b) Maintenance of Batteries

(c) Automobile Air-conditioning

(d) Panel Board Instruments

(e) Axles in Automobiles

(f) Effect of Couplings