

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

Term-End Examination

June, 2017

00305

BIME-012(S) : 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) Make a classification of automobiles from different aspects. Quote examples of each basic of their classification. 7
- (b) What are the desirable properties of a good I.C. engine fuel ? Explain octane number and cetane number. 7
2. (a) What is a suspension system ? What are the functions of a suspension system ? List the requirements of a suspension system. 7
- (b) Explain briefly the various sources from which pollutants are emitted from S.I. engines. 7
3. (a) Define scavenging and scavenging efficiency. Explain with sketches, different scavenging arrangements. 7
- (b) What is a clutch ? What are the various functions of a clutch ? 7

4. (a) Enumerate the factors which affect battery life. Explain briefly 'trickle charging'. 7
- (b) What is a Propeller Shaft ? What are the functions of a propeller shaft in the transmission system ? 7
5. (a) What is engine 'tuning' ? Explain briefly the tuning procedure. Explain briefly the 'trouble-shooting of automobile'. 7
- (b) A four-cylinder, four-stroke engine of 100 × 120 mm cylinder size was tested at 1600 rpm and the following readings were obtained :

Fuel consumption = 0.27 lit/min

Specific gravity of fuel = 0.74

Net load on brake = 400 N

Constant dynamometer K = 20380

Calorific value of fuel = 44 MJ/kg

Assuming 80% mechanical efficiency,
calculate

- (i) Brake thermal efficiency,
(ii) Indicated thermal efficiency,
(iii) Brake specific fuel consumption, and
(iv) Indicative mean effective pressure. 7

6. (a) "Battery is the heart of the electrical system in an automobile." Explain. 7
- (b) List out the points relating to preventive maintenance which should be kept in mind for the smooth operation of an automobile vehicle. 7
7. (a) What are the different types of springs used in automotive suspensions ? Discuss their characteristics and suitability of application. 7
- (b) Discuss the various electrical accessories used in automobiles along with their purpose in brief. 7
8. Write short notes on any *four* of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Eco-friendly Vehicles
 - (b) Suspension System
 - (c) Non-slip Differential
 - (d) Starter Motor
 - (e) Panel Board Instruments
 - (f) Effect of Couplings
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