

5E6207	Roll No. _____	Total No of Pages: 3
	5E6207 B. Tech V Sem. (Main/Back) Exam. Nov-Dec. 2015 Mechanical Engineering 5ME6.2A Automobile Engineering	

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal marks**. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL

2. NIL

UNIT-I

- Q.1 (a) What are the loads coming on a chassis frame? With the help of line diagram, explain the frame construction, briefly. Enumerate the different types of chassis frames. [8]
- (b) Describe briefly the constructional features and working of fluid coupling. [8]

OR

- Q.1 (a) Describe the constructional features and working of a semi-centrifugal clutch with the help of neat sketch. [6+3=9]
- (b) With the help of suitable sketches, explain the principle and working of hydraulic brakes. Mention the advantages of hydraulic brakes over mechanical brakes. [7]

UNIT-II

- Q.2 (a) Draw a simple diagram to show the layout 5 forward 1 reverse speed gear box. Explain its working in detail. [9]
- (b) What is the necessity of differential in an automobile? Discuss in detail, the construction and operation of differential. [2+5=7]

OR

- Q.2 (a) Write short note on (**any two**) - [4+4=8]
- (i) Overdrive
 - (ii) Front wheel drive
 - (iii) Hotchkiss and Torque tube drive
- (b) Explain the synchronizer action in manual transmissions with the help of a neat sketch. Explain the purpose of inter-lock device used in manual transmission. [8]

UNIT-III

- Q.3 (a) What are the functions of wheel in an automobile? Describe the types and constructional features of tyre, briefly. [3+4=7]
- (b) Explain the following terms - [9]
- (i) Over steering and under steering
 - (ii) Power steering
 - (iii) Caster and Camber

OR

- Q.3 (a) What is the difference between sprung and unsprung weight. Describe the independent rear suspension system with neat sketch and explain how it affects ride quality? [7]
- (b) Explain the constructional features and working of telescopic absorber. [9]

UNIT-IV

- Q.4 (a) Describe briefly the constructional features of battery used in automobile, with the help of neat sketch. How a battery is tested and charged? [5+3=8]
- (b) Describe briefly, the constructional features and working principle of starter motor in an automobile. [4+4=8]

OR

- Q.4 (a) Explain the Battery Ignition system with the help of neat sketch. Compare its advantages and disadvantages with that of Magneto Ignition system. [6+4=10]
- (b) With the help of neat sketch, explain the working of the electric horn. [6]

UNIT-V

- Q.5 (a) List the common faults related to automotive air conditioning system. How these faults are diagnosed and rectified? [5+3=8]
- (b) Explain the significance and features of Night Vision system and Global Positioning system. [3+5=8]

OR

- Q.5 (a) Enumerate the different loads on automotive air conditioning system. Explain the working of various components of automotive air conditioning system. [8]
- (b) List the various safety requirements of an automobile. Explain the functions of various safety devices incorporated in automobiles now days. [3+5=8]