

4E 2050

Roll No. _____

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4E 2050**B.Tech. IV Semester (Main/Back) Examination 2012****Mechanical Engineering****4ME2 Automobile Engineering**

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 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 may suitably be assumed and stated clearly.) Units of quantities used/ calculated must be stated clearly.

Unit - I

1. a) Explain the characteristics, constructional features, and advantage of frameless body, unitary body, low slung body and fibre glass body for automobiles.
- b) Describe briefly the following :
- Hydraulic clutch
 - Electromagnetic clutch
 - Vacuum clutch
- (8+8=16)

OR

1. a) Explain the principle of centrifugal clutch and working with a suitable sketch.
- b) What is the difference between a centrifugal and semi centrifugal clutches?
- c) List the various components of chasis.
- (8+4+4=16)

Unit - II

2. a) What are the different types of gear boxes? With the help of neat diagram explain the construction and working of sliding mesh gear box.

- b) What do you understand by overdrive? With the help of a neat diagram describe the construction and working of an overdrive. (8+8=16)

OR

2. a) What is a free wheel? Describe the construction and working of a free wheel unit.
b) What are the general requirements of transmission? What are various components of transmission system? Describe their role. (8+8=16)

Unit - III

3. a) Describe the construction and operation of power steering.
b) Explain the following terms with sketches:
i) Camber ii) Caster
iii) king pin inclination (iv) toe in and toe out (6+10=16)

OR

3. a) What are the merits of hydraulic brakes over mechanical brakes?
b) Describe with a neat sketch, the hydraulic brake system of a car.
c) Sketch a master cylinder. Explain its working. (2+7+7=16)

Unit - IV

4. a) Sketch the layout of the vehicle battery charging system and name the components.
b) Explain the working of the ignition system for a four cylinder passenger car engine with the aid of a schematic diagram. (8+8=16)

OR

4. a) Give a neat sketch of magneto ignition system for a 4-cylinder engine, and describe how does it work?
b) Write short notes on following :
i) Function of distributor in the ignition system.
ii) Contact breaker.
iii) Importance of spark plug gap.
iv) Electric harn. (8+8=16)

Unit - V

5. a) What do you understand by automobile air-conditioning? Draw a simple diagram of an automobile air conditioning system.
- b) How does automobile air-conditioning system differ from domestic air conditioning system:
- c) Discuss the air-conditioning power requirements for an automobile.

(6+6+4=16)

OR

5. a) Describe the different components of an automobile air conditioning system.
- b) Write short notes on following :
- i) Air Bags
 - ii) Global positioning system
 - iii) Night Vision system.

(8+8=16)