4E 2050

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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 :

   i) Hydraulic clutch

   ii) Electromagnetic clutch

   iii) 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)**