

4E2050

Roll No. _____

Total No of Pages: **3****4E2050****B. Tech. IV Sem. (Back) Exam., June/July-2014****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 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. _____

2. _____

UNIT-I

Q.1 Describe a hydraulically operated clutch in detail with the help of neat sketch. Also compare it with vacuum and pneumatic methods of operating clutches. [16]

OR

Q.1 (a) Describe the functions and requirements of chasis, frame and bodies. [8]

(b) Starting from front to rear end, briefly describe components attached on the chasis. [8]

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UNIT-II

- Q.2 (a) Describe the principle and working of torque converter with its advantages and disadvantages. [8]
- (b) Describe the principle of automatic transmission with neat sketch. Also give its advantages and disadvantages over manual transmission. [8]

OR

- Q.2 (a) Describe the working principle of differential. Why it is necessary in automobile? [8]
- (b) Describe the methods employed in obtaining different gear ratios in a constant mesh gear box. [8]

UNIT-III

- Q.3 (a) Explain the terms: camber, king pin inclination, toe-in, toe-out and castor. Why do we give camber to the tyres initially? [8]
- (b) Explain the construction of a propeller shaft with the help of a neat sketch. [8]

OR

- Q.3 (a) Discuss in detail Davis steering gear & Ackermann steering gear mechanism. [8]
- (b) What do you mean by over steering and under steering? Derive the fundamental equation for correct steering. [8]

UNIT-IV

Q.4 Describe the following two types of ignition systems with the help of neat sketch:-

(i) Magneto Ignition System.

(ii) Coil Ignition System. [16]

OR

Q.4 (a) Write short note on charging and testing of a lead acid battery. [8]

(b) Sketch a layout of lighting circuit suitable for a modern car. Describe all the components. [8]

UNIT-V

Q.5 (a) Explain the working of a GPS. Also give its uses in the field of automobiles. [8]

(b) Describe the working of air bags. How does it contribute to the safety of passenger? [8]

OR

Q.5 (a) Describe the different components of an automobile air conditioning system. [8]

(b) Describe the possible problems occurring in an automobile air conditioning system with their trouble shooting. [8]

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