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B.Tech. V Semester (Main/Back) Examination, Nov./Dec. - 2017
Mechanical Engineering
SME6.2A Automobile Engg.

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26

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.

Unit - I

1. a) How is a frame different from a chassis? Discuss the design aspects and salient features of frame? (2+4)
- b) With the help of neat sketch. Explain Hydraulic and Vacuum air braking system. (5+5)

OR

1. a) Explain working of fluid coupling with the help of neat sketch. (6)
- b) How the size of a clutch plate. Determined? How does the uniform pressure criteria differ from the uniform wear consideration? How does the mean effective radius influence the torque transmitting ability in both the design criteria? (2+4+4)

Unit - II

2. a) Which component in the transmission system makes a difference between the two wheel drive and the four wheel drive. Discuss the working of the same with neat sketch. (6)
- b) Explain the construction and working of constant mesh and synchromesh gear box? (5+5)

OR

2. a) Write short notes on the following (any two) :- (4+4)
- i) Over drive
 - ii) Universal Joint
 - iii) Propeller Shaft
 - iv) Torque Tube drive
- b) Explain Construction and working of hydraulic torque converter with the help of neat sketch. (8)

Unit - III

3. a) What do you mean by tyre retreading? Name various tyre retarding process and explain them. How will you ascertain whether a tyre needs retreadity or not? (2+4+2)
- b) State the Principle and derive equation for correct steering of a vehicle. Hence draw "Ackermann's Steering Mechanism" and Explain wheel lock and steering lock angles? (3+3+2)

OR

3. a) Sketch the construction of a double acting telescopic. Type Hydraulic shock absorber and explain it's working. Why it is known as "double acting" and "telescopic type"? (6+2)
- b) What do you mean by power steering? Different between a conventional and a power steering system. Explain the principles of power steering and draw its construction layout. (2+2+4)

Unit - IV

4. a) Describe in detail the method of battery charging. Also explain in detail how would perform specific gravity tests. (4+4)
- b) Describe the construction and working of starter motor for automobiles. (8)

OR

4. a) Write short notes on the following (any two) : (8)
- i) Electric horn
 - ii) Fuel level indicator
 - iii) Head Lamp

- b) With help of neat sketch explain working and construction of Magneto ignition system. (8)

Unit - V

5. a) What is refrigerant? Explain different types of refrigerants? (2+6)
- b) Describe the working of an automotive air conditioning system along with fraction of each components. (8)

OR

5. a) Explain the following : (4+4)
- i) Night Vision System (NVS)
 - ii) Global Positioning system
- b) What are safety requirement in automobile. Explain the safety devices used in automobiles? (3+5)
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