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B.Tech. (Mechanical Engineering) 6th Semester  
(F-Scheme) Examination, July-2022  
AUTOMOBILE ENGINEERING  
Paper- ME-302-F

Time allowed : 3 hours] [Maximum marks : 100

*Note : Attempt five questions. Question no. 1 is compulsory. Attempt any one question from each section.*

1. Explain the following; 10×2=20
- (a) Classify the automobile.
  - (b) Define unitized body of an automobile.
  - (c) Define four wheel drive vehicles.
  - (d) Define clutch linkage.
  - (e) Freewheel unit
  - (f) Advantages of overdrive.
  - (g) Need of suspension system.
  - (h) Give the classification of the brakes.
  - (i) Catalytic convertor.
  - (j) Wheel balancing.

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**Section-A**

2. What is an Automobile? How do you classify automobiles? Explain in detail giving examples. 20
3. With the help of suitable diagram, describe the constructional features of a diaphragm spring type clutch. Discuss the advantages and disadvantages relative to the clutch employing helical spring. 20

**Section-B**

4. What is epicyclic gear box? Describe its principle with the help of a neat sketch. 20
5. Explain the following:
  - (a) Hotchkiss Drive 10
  - (b) Torque Tube Drive 10

**Section-C**

6. Explain the different types of suspension systems in detail with neat and clean diagram. 20
7. Discuss in detail the Ackermann steering mechanism. 20

**Section-D**

8. Write short note on:
  - (a) Hydraulic brakes. 10

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- (b) Compression of radial and bias-ply tyres. 10

9. Write short note on:

- (a) Positive Crankcase Ventilation (PCV) Systems 10
- (b) Exhaust Gas Recirculation ( EGR ) Systems.10

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