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	5E1724	
	B.Tech. V-Sem. (Main&Back) Examination, November/December - 2025	
	Automobile Engineering 5AE5-12 Automobile Engineering (Elective-I) AE, ME	
Time : 3 Hours		Maximum Marks : 70

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of seven questions from Part B and Three questions out of five questions from Part C.

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.
(Mentioned in form No. 205).*

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory.

(10×2=20)

1. Write any three scopes and three objectives of automobile engineering.
2. List any four types of chassis frames used in automobiles.
3. What is the function of a fluid coupling in automotive systems?
4. Differentiate between mechanical and hydraulic brakes.
5. Name the components of a synchromesh gearbox.
6. What is the purpose of a differential in automobile drive systems?
7. State any four causes of tyre wear in vehicles.
8. Define understeer and oversteer in steering systems.
9. What are the main components of an automotive battery charging system?
10. List various safety devices used in modern automobiles.

PART - B

(Analytical / Problem Solving Questions)

Attempt any Five questions.

(5×4=20)

1. Explain the constructional features and working principle of a single plate clutch with a suitable diagram.

2. Compare sliding mesh and constant mesh gear boxes with their advantages and disadvantages.
3. Describe the construction and working of Hotchkiss drive system with a suitable diagram.
4. Explain the effect of camber, caster and king pin inclination on vehicle steering geometry with a suitable diagram.
5. Explain the working principle of the independent suspension system and its benefits.
6. Describe the construction and working of a magneto ignition system.
7. Discuss the components and working of an automotive air conditioning system with a suitable diagram.

PART - C

(Descriptive / Analytical / Problem Solving / Design Questions)

Attempt any Three questions.

(3×10=30)

1.
 - a) Explain the construction, working and application of multi-plate clutch system. (5)
 - b) Compare electromagnetic and vacuum clutches with their merits and demerits. (5)
2.
 - a) Describe the construction and working of epicyclic gear boxes with a neat sketch. (5)
 - b) Explain the principle and advantages of automatic transmission system in modern vehicles (5)
3.
 - a) Explain the construction and working principle of hydraulic brake systems with line diagram. (5)
 - b) Discuss the brake shoe material and their selection criteria for different vehicle applications. (5)
4.
 - a) Explain the construction and working of power steering systems. (5)
 - b) Describe the steering geometry parameters and their effects on vehicle handling and stability. (5)
5.
 - a) Describe the construction, working and testing procedures of automotive batteries. (5)
 - b) Explain the construction of alternator, its regulation and rectification process in charging systems. (5)