



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S4 (R) Examinations April 2026 (2024 Scheme)

Course Code: PEMRT413
Course Name: AUTOMOBILE ENGINEERING

Max. Marks: 60

Duration: 2 hours 30 minutes

PART A

(Answer all questions. Each question carries 3 marks)

		CO	Marks
1	State three advantages of frameless (monocoque) construction.	CO1	(3)
2	Differentiate between dry clutch and wet clutch.	CO1	(3)
3	Define power-to-weight ratio and state two effects on vehicle performance.	CO2	(3)
4	Identify two operating conditions requiring low gear and one reason.	CO2	(3)
5	Define Anti-lock Braking System (ABS) and state two reasons for its importance as a safety feature in modern automobiles.	CO3	(3)
6	Differentiate between oversteer and understeer.	CO3	(3)
7	List out the advantages of fuel injection over carburettors.	CO4	(3)
8	State two advantages of electric vehicles over conventional vehicles and one limitation.	CO4	(3)

PART B

(Answer any one full question from each module, each question carries 9 marks)

Module -1

9	a) Classify automobiles based on fuel type and load capacity, and give one example for each category.	CO1	(6)
	b) Describe the construction of a conventional chassis.	CO1	(3)
10	Draw a labelled diagram of a single plate pull-type diaphragm clutch and describe its construction and working, highlighting three advantages over a	CO1	(9)

coil spring type clutch.

Module -2

- | | | | |
|----|--|-----|-----|
| 11 | Draw a labelled diagram of a constant mesh gearbox and describe its construction and working. | CO2 | (9) |
| 12 | Draw a labelled diagram of a MacPherson strut suspension and describe its construction and working, highlighting its advantages and limitations. | CO2 | (9) |

Module -3

- | | | | |
|----|---|-----|-----|
| 13 | Classify Anti-Lock Braking System based on actuation and explain the working of any two types. | CO3 | (9) |
| 14 | a) State the need for power steering in modern automobiles. | CO3 | (3) |
| | b) Draw a labelled diagram of Ackermann steering geometry and state the condition required for correct steering, explaining how it is achieved. | CO3 | (6) |

Module -4

- | | | | |
|----|---|-----|-----|
| 15 | Draw a labelled diagram of a Multi-Point Fuel Injection (MPFI) system and describe its construction and working, highlighting three advantages over conventional systems. | CO4 | (9) |
| 16 | Classify the batteries used in electric vehicles, and describe the construction and working of any one type with a labelled diagram. | CO4 | (9) |
