10.6.25 AN

Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. / B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, APRIL / MAY 2025

MECHANICAL ENGINEERING
Sixth Semester
ME 5071 AUTOMOBILE ENGINEERING
(Regulation 2019)

Time: 3hrs Max.Marks: 100

CO 1	Explaining various types of automobiles, their power packs and types of vehicle bodies
CO 2	Analyzing the various types of power train and fuel supply and management systems
CO 3	Analyzing the various types of transmission systems for a vehicle
CO 4	Analyzing the working parameters of various braking and suspension system in a vehicle
CO 5	Analyzing the working parameters of various electrical and electronic devices in a vehicle

BL – Bloom's Taxonomy Levels
(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analysing, L5 - Evaluating, L6 - Creating)

PART- A (10 x 2 = 20 Marks)
(Answer all Questions)

Q. No	Questions	Marks	CO	BL
1	Write down two safety standards for an automobile.	2	1	L1
2	What emission norms is currently followed in India?	2	1	L2
3	List two major emissions from SI engine tailpipe	2	2	L2
4	What is the difference between IC engine and electronically controlled IC engine	2	2	L2
5	Mention the function of a differential in an automobile.	2	3	L2
6	What is the function of an axle in an automobile?	2	3	L2
7	List types of steering gear used.	2	4	L1
8	What working fluid is used in pneumatic braking system?	2	4	L2
9	How will you specify the rating of an automotive battery? Give an example.	2	5	L2
10	Mention some vehicle safety systems provided in a modern day passenger car	2	5	L1

PART- B (5 x 13 = 65 Marks)
(Restrict to a maximum of 2 subdivisions)

Q. No	Questions	Marks	CO	BL
11 (a) (i)	Explain with suitable illustrations some commonly found types of automobile chassis layout and their application.	13	1	L3
	OR			
11 (b) (i)	Discuss briefly about resistance to vehicle motion.	5	1	L2

(ii)	With a schematic discuss briefly about different types of body for automobiles.	**8**	1	L3
12 (a) (i)	Describe with a schematic the operation of a three-way catalytic converter.	**9**	2	L3
(ii)	List a few pollutants from the IC engine exhaust.	**4**	2	L2
	OR			
12 (b) (i)	With a sketch describe the functioning of a common rail direct injection system employed in an CI engine.	**9**	2	L3
(ii)	Briefly mention about the necessity of Diesel particulate filter & exhaust gas recirculation.	**4**	2	L2
13 (a) (i)	State the need for a clutch in an automobile. With a sketch explain the operation of a clutch in a light motor vehicle.	**10**	3	L2
(ii)	Draw a simple sketch of an universal joint.	**3**	3	L3
	OR			
13 (b) (i)	Draw a neat sketch of a synchromesh gear box (4 or 5 speed) and discuss brief about its operation.	**9**	3	L3
(ii)	Draw a sketch of a hydraulic braking system employed in a car.	**4**	3	L2
14 (a) (i)	Draw a neat sketch of a front suspension system of a car and label the parts. Also discuss about the working of a front suspension system.	**9**	4	L3
(ii)	Briefly discuss about the need for Wheel balancing & alignment	**4**	4	L3
	OR			
14 (b) (i)	Describe the operation of an antilock braking system an automobile. Support your answer with an illustration	**8**	4	L3
(ii)	Draw a sketch of a hydraulic braking system employed in a car.	**5**	4	L2
15 (a) (i)	What is the need for an airbag in a vehicle? With a sketch discuss the operation of an airbag system.	**8**	5	L3
(ii)	State the necessity of a i) Alternator ii) Starter Motor	**5**	5	L2
	OR			
15 (b) (i)	Discuss briefly about – EBD, OBD, and ESP.	**6**	5	L2
(ii)	Draw a schematic of a HVAC system of a car and discuss its working.	**7**	5	L2

PART- C (1 x 15 = 15 Marks)

(Q.No.16 is compulsory)

Q. No	Questions	Marks	CO	BL
16. i)	Discuss briefly about gasoline direct injection system. How is it different from a port fuel injection system? Support your answer with a simple schematic	**7+3+5**	2	L3