CBCS SCHEME

USN

BME654D

Sixth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Modern Mobility

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

			M	L	C
		Module – 1			
Q.1	a.	With a neat sketch of an automobile engine, briefly mention their functions.	8	L2	CO1
	b.	With a neat sketch illustrate the working of splash lubrication system.	8	L2	CO1
	c.	Mention the need of cooling system.	4	L3	CO1
		OR			
Q.2	a.	Explain the working of a battery ignition system with a circuit diagram.	8	L2	CO1
	b.	With a neat sketch, explain the following : i) Piston ii) Crankshaft.	8	L2	CO1
	c.	Briefly explain the engine management system.	4	L3	CO1
		Module – 2			
Q.3	a.	With a neat sketch, explain the construction and working of single plate clutch.	8	L2	CO2
	b.	Explain the construction and working principle of torque converters.	8	L2	CO2
	c.	State the difference between conventional and radial tyres.	4	L2	CO2
		OR			
Q.4	a.	With a neat sketch, explain the construction and working of cone clutch.	8	L2	CO2
	b.	Explain the construction and working of a differential with a sketch.	8	L2	CO2
	c.	Write a note on Continuous Variable Transmission (CVT).	4	L2	CO2
		Module – 3			
Q.5	a.	Explain master cylinder of hydraulic braking system with a neat sketch.	10	L2	CO2
	b.	With a neat sketch, explain the working power steering system.	10	L2	CO2
		OR			
Q.6	a.	Explain the effects of following on steering : i) Camber ii) Castor iii) King pin inclination iv) toe-in v) toe-out.	10	L2	CO2
	b.	What are the requirements of a suspension system? Explain the air-suspension system with a neat sketch.	10	L2	CO2
		Module – 4			
Q.7	a.	Brief on exhaust gas emissions and their effect on environment.	10	L3	CO3
	b.	Write a note on parallel hybrid electric vehicle with a sketch.	10	L2	CO4
		OR			
Q.8	a.	Write a note on hydrogen fuel all vehicle mentioning its key components and its functions.	10	L2	CO3
	b.	Explain the following : i) Super capacitors ii) supply rails.	10	L2	CO4
		Module – 5			
Q.9	a.	Explain construction and working principle of lead acid battery.	10	L2	CO4
	b.	What are the different types of motors used in electric vehicles? Explain the working of a BLDC motor with a neat sketch.	10	L2	CO3
		OR			
Q.10	a.	Explain lithium ion battery.	10	L2	CO4
	b.	Write a note on battery cooling.	10	L2	CO3

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