21AU63

Model Question Paper-1/2 with effect from 2022-23 (CBCS Scheme)

USN | | | | | | | | | | |

Sixth Semester B.E. Degree Examination

Subject Title: Vehicle Body Engineering and Safety

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
02. Question on a topic of a module may appear in either its 1st or 2nd question.

		Module – 1	**C**	**Marks**
Q.01	a	List and explain different types of commercial vehicles	CO1	10
	b	Explain different types of styling forms.	CO2	10
		OR		
Q.02	a	Explain the following: a) Angle of approach, b) Angle of departure.	CO1	10
	b	What are the various types of commercial vehicles, including vans and pickups?	CO1	10
		Module – 2		
Q. 03	a	What are the properties and advantages of using aluminium alloys in vehicle body construction?	CO1	10
	b	Discuss the role of plastics in modern vehicle design and their impact on weight reduction.	CO2	10
		OR		
Q.04	a	Describe the properties and applications of glass-reinforced plastics (GRP) in vehicle bodies.	CO2	10
	b	What are thermoplastics, and why are they commonly used in vehicle interiors and exterior?	CO2	10
		Module – 3		
Q. 05	a	Explain the different types of drag forces acting on a moving vehicle.	CO3	10
	b	What are some body optimization techniques used to minimize drag in vehicle design?	CO3	10
		OR		
Q. 06	a	How are flow visualization techniques used to study airflow around vehicles?	CO3	10
	b	How do engineers analyse stress in bus body structures under bending and torsion loads?	CO3	10
		Module – 4		
Q. 07	a	What are the key aspects of interior ergonomics in vehicle design? Discuss the importance of seating dimensions and comfort.	CO4	10
	b	Describe the role of backrest adjustments and passion reducers in enhancing driver comfort.	CO2	10
		OR		
Q. 08	a	How can mechanical package layout impact the overall ergonomics of a goods vehicle?	CO4	10
	b	Define longitudinal and lateral stability in vehicles. How do operating factors affect lateral stability?	CO3	10
		Module – 5		

Q. 09	a	What are the noise characteristics?	CO5	10
	b	Explain noise level measurement techniques.	CO5	10
		OR		
Q. 10	a	Explain laws of mechanisms applied to safety.	CO5	10
	b	Explain physics of impact between deformable bodies.	CO5	10

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Model Question Paper-2/2 with effect from 2022-23 (CBCS Scheme)

USN | | | | | | | | | | |

Sixth Semester B.E. Degree Examination

Subject Title: Automotive Chassis & Suspension

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
02. Question on a topic of a module may appear in either its 1st or 2nd question.

		Module – 1	**C**	**Marks**
Q.01	a	What are the different styling forms in coachwork?	CO1	10
	b	Explain the layout of cars, buses, and coaches with different seating and loading capacities.	CO1	10
		OR		
Q.02	a	Describe the purpose and function of cross bearers in vehicle body construction.	CO1	10
	b	What is ground clearance, and why is it essential in coachwork?	CO1	10
		Module – 2		
Q. 03	a	Explain the significance of steel and alloy steels in automobile bodies.	CO2	10
	b	What are metal matrix composites, and how are they used in automotive applications?	CO2	10
		OR		
Q.04	a	How do high-strength composites contribute to safety and performance in automobile structures?	CO1	10
	b	Explain the purpose of ABS (Acrylonitrile Butadiene Styrene) and styrenes in automotive components.	CO2	10
		Module – 3		
Q. 05	a	What are the basics of aerodynamics, and how do they apply to vehicle design?	CO3	10
	b	Describe the various moments (torques) that affect vehicle stability during motion.	CO3	10
		OR		
Q. 06	a	Discuss the principle of wind tunnel technology and its role in aerodynamic testing.	CO1	10
	b	How do engineers analyze stress in bus body structures under bending and torsion loads?	CO3	10
		Module – 4		
Q. 07	a	Explain the concept of split-frame seating and its benefits for passengers and drivers.	CO4	10
	b	Discuss the significance of dashboard instruments and electronic displays in commercial vehicle cabins.	CO1	10
		OR		
Q. 08	a	What regulations governs visibility in vehicles, and what methods can be used to improve visibility for drivers?	CO4	10
	b	How does steering geometry impact the stabilization of steerable wheels, and what role does mass destruction play in overall vehicle stability?	CO1	10
		Module – 5		

Q. 09	a	What are the sources of noise?	CO5	10
	b	Explain body structural vibrations.	CO5	10
		OR		
Q. 10	a	Explain design of crash worthiness.	CO5	10
	b	Explain side impact analysis.	CO5	10