

Name: Enrolment No:			
UPES End Semester Examination, December 2025 Course: Vehicle packaging and ergonomics Program: B.Tech ADE Course Code: SDTD4026 Semester: VII Time : 03 hrs. Max. Marks: 100 Instructions: All the questions are compulsory.			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	Define Engineering Anthropometry. How is it used in vehicle design?	4	CO1
Q 2	Discuss the Standard Riding Position in two-wheelers?	4	CO2
Q 3	Define H-Point and explain its significance in driver package layout.	4	CO3
Q 4	Discuss the Forward Visibility? Mention any two factors affecting it.	4	CO2
Q 5	List and briefly explain any two key elements of vehicle styling.	4	CO3
SECTION B (4Qx10M= 40 Marks)			
Q 6	Explain the role of Engineering Anthropometry in vehicle interior layout design. Discuss how anthropometric variability influences seat height, steering placement, and pedal reach.	10	CO4
Q 7	Describe Standard, Cruiser, and Sport riding postures in two-wheelers. Compare the ergonomic advantages and limitations of each posture for different rider categories.	10	CO3
Q 8	Explain the significance of SgRP (Seating Reference Point) in occupant packaging. Describe how SgRP influences visibility, driver workspace, and H-point related dimensions.	10	CO5
Q 9	Discuss the ergonomic factors affecting forward and side visibility in cars. Explain how A-pillar thickness, dashboard height, mirror placement, and driver eye point influence the overall field of view.	10	CO5
SECTION-C (2Qx20M=40 Marks)			
Q 10	Using the principles of Engineering Anthropometry and Biomechanics, analyze the complete driver workspace of a compact hatchback car. Evaluate how seat height, pedal plane angle (A47), AHP, BOF, SgRP, and steering wheel position contribute to comfort, reach, and safety for	20	CO6

	both 5th percentile female and 95th percentile male drivers. Support your analysis with sketches and analytical reasoning. OR Compare and analyze the ergonomic design of Standard, Cruiser, and Sport motorcycle riding positions. Using posture diagrams, evaluate the effect of hip angle, knee angle, arm reach, and torso lean on rider fatigue, blood flow, vibration exposure, and control efficiency during 30–60 minute vs long-duration rides. Conclude with recommendations for an optimized hybrid riding posture.		
Q 11	Analyze the complete occupant packaging process of a mid-size SUV. Prepare a flow-based evaluation illustrating how driver eye ellipse, H-point location, pedal reach envelopes, headroom, shoulder room, and visibility zones influence interior layout decisions. Apply these concepts to redesign one parameter (e.g., dashboard height or A-pillar angle) and discuss its system-wide impact.	20	CO4