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EPMPD202

Second Semester M.Tech Degree Examination, August 2025 Industrial Design and Ergonomics

TIME:3 hrs.

Max.Marks:100

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

Module-1			M	L	C
Q.1	a	What is ergonomics? Mention the basic elements of design structure in engineering?	4	L1	CO1
	b	Explain how products move from production to consumption and how value is added at each stage? Draw a simple diagram to show this cycle.	8	L2	CO1
	c	Define product design and differentiate between 'design by evaluation' and 'design by innovation.' Illustrate your explanation with a relevant real-world example.	8	L3	CO1
OR					
Q.2	a	What is meant by a working position in ergonomics? Discuss how industrial design important in modern manufacturing systems?	4	L1	CO1
	b	Mention the important things to think about when designing a product? Discuss any three of them with simple explanations	8	L2	CO1
	c	Describe the design process through a seven-phase flow diagram, emphasizing the structure (morphology) and logical progression of each design stage.	8	L3	CO1
Module-2					
Q.3	a	How can computerized databases help in applying anthropometric data effectively?	4	L1	CO2
	b	Sketch and explain the main things to consider when designing a computer workstation to make it comfortable and easy to use.	8	L2	CO2
	c	Describe the components and working of a man-machine system using a block diagram. How do human and machine elements interact to achieve system goals.	8	L3	CO2
OR					
Q.4	a	What role does ergonomics play in the design of automated systems?	4	L1	CO2
	b	Using simple sketches, explain why body measurement data (anthropometric data) is important when choosing comfortable chairs and designing how people move from sitting to standing at work.	8	L2	CO2
	c	Classify various types of display design based on human factors principles. Explain each category in detail and support your answer with a well-labeled diagram.	8	L3	CO2

Module-3

Q.5	a	List the difference between the mechanics of seeing and the psychology of seeing?	4	L1	CO3
	b	How does having a consistent design in a product help users enjoy using it and understand it better? Give an example to explain your answer.	8	L2	CO3
	c	In what ways does a brand's house style reinforce its identity and influence audience perception? Support your answer with an example.	8	L3	CO3

OR

Q.6	a	Elucidate the role of colour in engineering equipment from an ergonomic perspective.	4	L1	CO3
	b	How do the purpose of a product, its style, and the environment where it is used work together to affect its design? Give an example to explain.	8	L2	CO3
	c	In what ways does aesthetic expression contribute to a product's market positioning and consumer appeal? Support your answer with an example.	8	L3	CO3

Module-4

Q.7	a	Explicate the concept of unity in aesthetic design, and why is it important?	4	L1	CO4
	b	What are the Gestalt principles of visual perception? Enumerate each principle with simple sketches or diagrams to show how they work.	8	L2	CO4
	c	Discuss the visual and psychological effects of line and form in design composition. Support your explanation with clear and relevant illustrations	8	L3	CO4

OR

Q.8	a	Describe a case where aesthetic style significantly influenced the success or usability of a product.	4	L1	CO4
	b	Explicate the different types of targets used in visual activity tests? give simple examples of each type.	8	L2	CO4
	c	How do engineers and designers specify design requirements for industrial equipment? Outline the importance of consumer ergonomics in enhancing user satisfaction and safety in product design. Support your answer with a specific product example.	8	L3	CO4

Module-5

Q.9	a	How do engineers and designers specify design requirements for industrial equipment?	4	L1	CO5
	b	Why are ergonomics, quality, and safety important when designing a product? Give an example of a product to support your answer?	8	L2	CO5
	c	Using a specific product, analyze how its design features contribute to improving users' quality of life in terms of comfort, efficiency, or health.	8	L3	CO5

OR

Q.10	a	At which stages of the design process does industrial design play a key role, and why?	4	L1	CO5
	b	How does ergonomics influence the design and management of technology? Give an example of a product where ergonomics played an important role.	8	L2	CO5
	c	Critically analyze the importance of consumer ergonomics in product design and user satisfaction. Support your discussion with a specific product example.	8	L3	CO5
