Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Third Semester

Product Design and Development

PPDE2415 - Human Factors Engineering in Product Design

Regulations - 2024

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BTL*	*CO*	*Marks*
1.	Define anthropometry.	L1	1	2
2.	Define the concept of "Design for Everyone".	L1	1	2
3.	Compare standing with seated work designs	L2	2	2
4.	List guidelines for reducing stress in workplace design.	L2	2	2
5.	List the principles of visual display design.	L2	3	2
6.	Compare virtual and physical environments in ergonomics.	L2	3	2
7.	List the effects of improper lighting on human performance.	L2	4	2
8.	State the importance of proper lighting in ergonomics.	L2	4	2
9.	Identify factors affecting human-computer interaction.	L2	5	2
10.	Define resonance in ergonomics.	L1	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a	i	Illustrate the principles of applied anthropometry with suitable workplace design examples.	L2	1	8
		ii	Explain how anthropometric data can be applied in ergonomics to design products.	L2	1	8
			Or			
	b		Outline the applications of anthropometry in furniture and workstation design with suitable diagrams.	L2	1	16
12.	a	i	Develop design modifications for seated workplaces to minimize musculoskeletal disorders.	L3	2	8
		ii	Apply ergonomic design principles to reduce fatigue in repetitive tasks in assembly line operations.	L3	2	8
			Or			
	b	i	Select appropriate ergonomic solutions for manual handling tasks in a warehouse environment.	L3	2	8
		ii	Identify the principles for designing workplaces to minimize stress and steps to apply it.	L3	2	8

13.	a		Explain the ergonomic principles in designing effective visual display systems.	L2	3	16
			Or			
	b		Classify different types of virtual environments and discuss the ergonomic challenges and possible design solutions.	L2	3	16
14.	a		Compare the ergonomic design requirements of workplaces in hot climates and cold climates.	L4	4	16
			Or			
	b	i	Inference the ergonomic guidelines for designing noise-free workplaces.	L4	4	8
		ii	Analyse the impact of vibration on long-term worker health and propose ergonomic interventions.	L4	4	8
15.	a		Formulate guidelines for designing safe and efficient human-machine systems using cognitive ergonomics principles.	L5	5	16
			Or			
	b		Justify the application of cognitive ergonomics in reducing accidents and enhancing workplace reliability.	L5	5	16