

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***M.E DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025*****First Semester******Product Design and Development*****ED4153 – Computer Applications in Design*****Regulations - 2021******Duration : 3 Hrs******Maximum : 100 Marks******PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)***

Q.No	Questions	BLT	CO	Marks
1.	Select the appropriate situations to utilize the Graphics Software.	L1	1	2
2.	State the mid-point circle algorithm in computer graphics.	L1	1	2
3.	Compare and contrast the applications of analytical and synthetic curves.	L2	2	2
4.	How to obtain the surface of revolution in surface modelling?	L2	2	2
5.	Analyze the requirement of NURBS in CAD modelling.	L4	3	2
6.	List any two applications of user interface for solid modeling.	L1	3	2
7.	Identify the purpose of hidden line removal algorithm in visual realism.	L1	4	2
8.	Differentiate animation and simulation in Computer Applications.	L2	4	2
9.	Justify the requirement of computer aided Design for Manufacturing and Assembly (DFMA).	L3	5	2
10.	Compare production and productivity.	L2	5	2

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

Q.No	Questions	BLT	CO	Marks
11.	a i To display a smooth line drawing with high resolution and less memory, select a suitable scan system in computer graphics and explain its working process.	L3	1	8
	ii Select a common Line Drawing Algorithm which will be used for image processing and video game development and explain its functions.	L3	1	8
	Or			
	b i Select a suitable 2D geometric transformation for a mirroring process of a drawing in computer graphics and explain its process transformation matrix.	L3	1	8
	ii Identify the requirements and importance of composite transformation in computer graphics.	L3	1	8

12.	a	A graphics programmer is on a game development team. The game involves a character that must follow a predefined path through a 3D world, moving smoothly between waypoints. The team wants precise control over the direction and speed at each segment of the path to create realistic and natural-looking character movement. How the programmer decide to use Hermite cubic spline curves to achieve this?	L3	2	16
		Or			
	b	A 3D graphics designer working on an architectural visualization project. The project requires creating complex, curved surfaces for a modern building exterior, including smooth, continuous walls and a curved roof. The design should be flexible, allowing adjustments to the shape without disrupting the overall smoothness. How the team decide to implement B-spline surfaces for this purpose?	L3	2	16
13.	a	Explain the regularized Boolean set operations with suitable examples.	L3	3	16
		Or			
	b	Explain the Constructive Solid Geometry process with suitable examples.	L3	3	16
14.	a	Utilization of hidden surface removal is most beneficial in rendering scenes with complex geometries and explain the algorithm involved for the same.	L3	4	16
		Or			
	b	Identify the suitable engineering animation techniques to improve the visual realism in product design simulations and explain the same with simple examples.	L3	4	16
15.	a	Organize the evaluation processes involved in the principles of design for manufacturing for the aircraft components with tight tolerances to ensure precision and reliability.	L3	5	16
		Or			
	b	Construct the stages of Product Life Cycle Management for a solar powered four wheeler as a new product development and explain the stages in detail.	L3	5	16