

# CBCS SCHEME

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BCG402

## Fourth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026 Computer Graphics and Visualization

Time: 3 hrs.

Max. Marks: 100

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

Module – 1			M	L	C
Q.1	a.	List and explain the application of Computer Graphics.	08	L2	CO1
	b.	Explain Bresenham's Line Drawing Algorithm.	06	L2	CO1
	c.	Identify the points in between the line segment vertices (0, 0) to (6, 4) using Line Drawing Algorithm.	06	L3	CO1
<b>OR</b>					
Q.2	a.	Write the short note on display window management system using GLUT with suitable functions.	08	L1	CO1
	b.	What are the point functions in OpenGL? How can you set the size and color of a point in OpenGL?	06	L1	CO1
	c.	Explain OpenGL polygon fillarea functions with example.	06	L2	CO1
<b>Module – 2</b>					
Q.3	a.	Explain 2D translation, scaling and rotation with matrix representations.	12	L2	CO2
	b.	Explain OpenGL geometric transformation functions in 3D.	08	L2	CO2
<b>OR</b>					
Q.4	a.	What is the need of a homogeneous coordinate system? Explain translation, rotation and scaling in 2D homogeneous coordinate system with matrix representation.	12	L2	CO2
	b.	Write the transformation matrices for 3D scaling and 3D translation. Compare with respect to their transformation matrices and effects on objects.	08	L4	CO2
<b>Module – 3</b>					
Q.5	a.	Explain any five input devices used for logical classification.	10	L2	CO3
	b.	Demonstrate the use of OpenGL menu functions to create a right-click content menu for a simple graphics program.	10	L3	CO3
<b>OR</b>					
Q.6	a.	Explain the OpenGL Interactive Input Device functions.	12	L2	CO3
	b.	Describe the process of designing animation sequences in computer animation.	08	L2	CO3

## Module – 4

Q.7	a.	Explain clipping window and view port transformations with an example.	08	L2	CO4
	b.	Consider the world coordinate from (20, 40) to (80, 80) and the viewing coordinate from (30, 40) to (60, 60). A point is in the world coordinate at (30, 80). Find the corresponding viewing coordinate point using viewport transformation.	04	L3	CO4
	c.	Differentiate between color models : RGB and CMY.	08	L3	CO4

OR

Q.8	a.	Explain the Cohen Sutherland Line Clipping Algorithm with an example.	08	L2	CO4
	b.	Consider the clipping window coordinate from (20, 40) and (80, 80). A line is passing from $P_1(40, 60)$ to $P_2(90, 90)$ . Find the point $P_2'$ after the clipping.	06	L3	CO4
	c.	Explain the following illumination models: i) Ambient light    ii) Diffuse Reflection.	06	L2	CO4

## Module – 5

Q.9	a.	Demonstrate how transformation from world coordinates to viewing coordinates with matrix representation.	10	L3	CO5
	b.	Write depth buffer algorithm and compare the depth buffer method with other surface visibility defects on algorithms in terms of accuracy and efficiency.	10	L4	CO5

OR

Q.10	a.	Explain the Three-Dimensional Viewing Pipeline.	08	L2	CO5
	b.	Demonstrate the reference point and vanishing point perspective projections with neat diagram.	12	L3	CO5

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