

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V EXAMINATION – WINTER 2025****Subject Code:3150712****Date:19-11-2025****Subject Name:Computer Graphics****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Explain following terms 1. Persistence 2. Resolution 3. Frame Buffer	03
	(b) Write applications of Computer Graphics.	04
	(c) Explain Beam Penetration method and Shadow Mask method with diagram.	07
Q.2	(a) Explain any two Character Generation methods.	03
	(b) Which are methods of inside-outside test? Explain each method in brief.	04
	(c) Explain scan line fill algorithm with all data structures.	07
	OR	
	(c) Write DDA line drawing algorithm with all necessary derivations.	07
Q.3	(a) Write a short note on 2D shearing along with X-direction and Y-direction.	03
	(b) Explain Window to Viewport transformation.	04
	(c) Explain and write Liang Bersky line clipping algorithm.	07
	OR	
Q.3	(a) Explain 2D Rotation with example	03
	(b) Write a short note on Homogenous co-ordinates.	04
	(c) What is aliasing? How to compensate the aliasing? Explain in detail.	07
Q.4	(a) Explain 3D Translation.	03
	(b) Briefly explain 3D viewing process.	04
	(c) List the advantages of the B-splines over the Bezier splines and explain the B-spline curves properties.	07
	OR	
Q.4	(a) Compare interpolation spline and approximate spline.	03
	(b) Differentiate: Parallel vs. Perspective Projection	04
	(c) Write a short note on composite transformations in 3 Dimension and demonstrate it with composite transformation matrix (CTM).	07
Q.5	(a) Explain any two 3D display methods.	03
	(b) Explain back face detection in details.	04
	(c) Explain RGB and CMY color models.	07
	OR	
Q.5	(a) Explain ambient light in brief.	03
	(b) Explain the term hue and saturation.	04
	(c) Explain z-buffer visible surface determination algorithm.	07