Enrolment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY

M.SC INTEGRATED - SEMESTER - VI EXAMINATION - SUMMER 2025

Subject Code: 1360502 **Date: 12-05-2025**

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. **Use of simple calculators and non-programmable scientific calculators are permitted.**

		Marks
Q.1 (a)	Write the differences between Random Scan display and Raster scan display.	**03**
(b)	Explain Horizontal retrace and vertical retrace.	**04**
(c)	Explain the working of CRT with suitable diagram.	**07**
Q.2 (a)	List the application of computer graphics.	**03**
(b)	Explain any two Character Generation method with example.	**04**
(c)	Apply Mid-Point Circle Algorithm to find the coordinates of a circle with radius r=6 and center (0,0) for all octants.	**07**
	OR	
(c)	Explain the Bresenham's circle drawing algorithm with all necessary derivations. Consider start position as (0, r) and move in clockwise direction.	**07**
Q.3 (a)	Explain odd-even rule and winding number rule for Inside outside test of Polygon.	**03**
(b)	Explain Cohen-Sutherland Line Clipping algorithm.	**04**
(c)	Briefly explain NLN line clipping algorithm. What are the advantages of NLN over Cohen Sutherland line clipping algorithm.	**07**
	OR	
(a)	What is the difference between Window and Viewport?	**03**
(b)	Derive for Liang-Barskey line clipping algorithm.	**04**
(c)	Perform 45 degree rotation of a triangle A(0,0), B(1,1) and C(5,2). Find transformed coordinates after rotation , (1) About origin. (2) About point P (-1,-1).	**07**
Q.4 (a)	What is a need of homogeneous co-ordinates? Give homogeneous co-ordinates for translation, rotation and scaling.	**03**
(b)	Explain boundary fill and flood fill algorithm for polygon filling.	**04**
(c)	List and Explain various 2D transformation in detail.	**07**

OR

	(a)	Write a short note on Viewing Pipeline.	**03**
	(b)	What are the important properties of Bezier Curve?	**04**
	(c)	Explain various 3D transformations in details.	**07**
Q.5	**(a)**	Explain Back Face detection method in computer graphics	**03**
	(b)	Explain parallel projection with the help of diagram.	**04**
	(c)	Explain RGB, YIQ and CMY color models in details.	**07**

OR

	(a)	Explain DDA line drawing algorithm.	**03**
	(b)	Explain perspective projection with the help of diagram.	**04**
	(c)	List advantages of B-spline over Bazier splines. Explain B-spline curves.	**07**

***