

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- V EXAMINATION-SUMMER 2023****Subject Code: 3150712****Date: 26/06/2023****Subject Name: Computer Graphics****Time: 02:30 PM TO 05:00 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 Horizontal retrace and vertical retrace.	03
	(b) Explain Raster Scan display system.	04
	(c) Explain the working of CRT in detail.	07
Q.2	(a) Write DDA line drawing algorithm. Also state the limitations of DDA line drawing algorithm?	03
	(b) Explain any two Character Generation method.	04
	(c) Explain Bresenham's line drawing algorithm.	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) Write a short note on 2D shearing along with X-direction and Y-direction.	03
	(b) Explain boundary fill and flood fill algorithm for polygon filling.	04
	(c) Explain basic 2D transformations in details.	07
OR		
Q.3	(a) Derive 2D transformation matrix for rotation.	03
	(b) Write a short note on 2D reflection.	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) Explain the term region codes.	03
	(b) What are the important properties of Bezier Curve?	04
	(c) Explain in details the Cohen – Sutherland line clipping algorithm.	07
OR		
Q.4	(a) List and explain any one inside outside test.	03
	(b) Explain the properties of B-spline curve.	04
	(c) Briefly explain NLN line clipping algorithm. What are the advantages of NLN over Cohen Sutherland line clipping algorithm.	07
Q.5	(a) Explain parallel projection with the help of diagram.	03
	(b) What is illumination? List and explain any one illumination method.	04
	(c) Explain RGB and CMY color models.	07
OR		
Q.5	(a) Explain the term hue and saturation.	03
	(b) Explain perspective projection with the help of diagram.	04
	(c) What is depth buffer method? Explain depth buffer algorithm with example.	07