Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2021

Subject Code:3150712 Date:01/01/2022

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 Beam penetration method.	**03**
	(b)	Write the differences between Random Scan display Raster scan Display.	**04**
	(c)	Explain Scanline polygon fill algorithm in detail.	**07**
Q.2	**(a)**	Write short note on Flood fill algorithm for 8 connected region.	**03**
	(b)	What is inside-outside test? List out the method for inside-outside test	**04**
	(c)	Explain Sutherland-Hodgeman polygon clipping with example.	**07**
		OR	
	(c)	Write the Midpoint Ellipse generation algorithm.	**07**
Q.3	**(a)**	Explain DDA line drawing algorithm	**03**
	(b)	Explain 2D Rotation with example.	**04**
	(c)	Derive all necessary formulas for Bresenham line drawing algorithm. Bresenham line drawing algorithm is used to draw a line from (5, 5) to (13, 9). Determine all the pixels which will be on as the line is drawn.	**07**
		OR	
Q.3	**(a)**	Write short note on Antialiasing	**03**
	(b)	Rotate a point A(4, 3) by 45 degree in anticlockwise direction. Find the rotation matrix and resultant point.	**04**
	(c)	How Nicholl-Lee-Nicholl line clipping algorithm reduce the computation of unnecessary intersection point.	**07**
Q.4	**(a)**	Write short note on Polygon Meshes.	**03**
	(b)	Explain window to view port transformation	**04**
	(c)	What is Bezier curve? List all it important properties.	**07**
		OR	
Q.4	**(a)**	Differentiate the parallel and perspective transformation.	**03**
	(b)	Explain reflection and shear with example.	**04**
	(c)	Derive 3D Rotation matrix.	**07**
Q.5	**(a)**	Explain general 3D Viewing Pipeline.	**03**
	(b)	Explain the term hue and saturation.	**04**
	(c)	Explain how RGB to CMY color models with proper diagram.	**07**
		OR	
Q.5	**(a)**	Define cavalier and cabinet projection with example.	**03**
	(b)	What is the difference between Object-Space method and ImageSpace Method	**04**
	(c)	Write a short note on Z-Buffer algorithm.	**07**

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