Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI(NEW) – EXAMINATION – SUMMER 2019

Subject Code:2160703 Date:21/05/2019

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.]**

			MARKS
Q.1	**(a)**	Write a difference between Raster scan system and Random scan system.	**03**
	(b)	Explain shadow mask method in detail.	**04**
	(c)	Derive all formulas for bresenham's line drawing algorithm. Write an algorithm for bresenham's line drawing algorithm.	**07**
Q.2	**(a)**	Write limitations of DDA line drawing method.	**03**
	(b)	Write a note on Even-Odd rule.	**04**
	(c)	Explain midpoint ellipse drawing algorithm with example.	**07**
		OR	
	(c)	Explain scan line fill algorithm with all data structures.	**07**
Q.3	**(a)**	Explain the term region codes.	**03**
	(b)	Derive 2D transformation matrix for rotation.	**04**
	(c)	Explain 2D transformation for reflection about arbitrary line.	**07**
		OR	
Q.3	**(a)**	Write a note on 2D shearing.	**03**
	(b)	The reflection along lineY=X is equivalent to reflection along x-axis followed by counter clockwise rotation by angle φ. Find the value of φ.	**04**
	(c)	Explain the Nicholl-Lee-Nicholl(NLN) Line Clipping algorithm in detail.	**07**
Q.4	**(a)**	Compare interpolation spline and approximate spline.	**03**
	(b)	Rotate a triangle XYZ with vertices A(2,2,2),B(3,4,7) and C(8,9,12) about Y-axis in clockwise direction by angle 90 degree.	**04**
	(c)	Explain Bezier curve properties.	**07**
		OR	
Q.4	**(a)**	What is projection? List out various types of projection.	**03**
	(b)	Explain parametric and geometric continuity.	**04**
	(c)	Derive transformation matrix for 3D rotation about arbitrary line.	**07**
Q.5	**(a)**	Explain YIQ color model.	**03**
	(b)	Derive a perspective projection of a point P(x,y,z) on a view plane positioned at z=0 and center of projection is on negative z-axis at distance d.	**04**
	(c)	What is depth buffer method? Explain depth buffer algorithm with example.	**07**
		OR	
Q.5	**(a)**	Explain the term hue and saturation.	**03**
	(b)	Write a note on 3D reflection.	**04**
	(c)	Briefly explain back face detection algorithm.	**07**

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