

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 line $Y=X$ 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
