

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2018

Subject Code:2151603

Date:16/11/2018

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) What size of frame buffer (in bytes) is needed for raster system with resolution of 640 x 480 to store 12 bits per pixel?	03
	(b) Explain beam penetration method in detail.	04
	(c) Write an algorithm for bresenham's line drawing algorithm.	07
Q.2	(a) Write limitations of DDA line drawing method.	03
	(b) Explain bitmap method used for character generation.	04
	(c) Explain flood fill algorithm in detail.	07
	OR	
	(c) Explain midpoint circle drawing algorithm in detail.	07
Q.3	(a) Write a note on window to viewport transformation.	03
	(b) Translate a Square ABCD with the coordinates A (0, 0), B (5, 0), C (5, 5), D (0, 5) by 2 units in X-direction and 3 units in Y-direction.	04
	(c) Explain 2D transformation for rotation about arbitrary point.	07
	OR	
Q.3	(a) Write a note on 2D shearing.	03
	(b) Show that two dimensional reflection through x-axis followed by two dimensional reflection through line $y = -x$ is equivalent to pure rotation about origin by 270 degree.	04
	(c) Explain the Cohen-sutherland line clipping algorithm in detail.	07
Q.4	(a) Define : 1) Parametric continuity 2) Geometric continuity	03
	(b) What is projection? List out various types of projection.	04
	(c) Derive transformation matrix for 3D rotation about axis which is parallel to any one of the co-ordinate axis.	07
	OR	
Q.4	(a) Write conditions for cavalier and cabinet projection.	03
	(b) Write a note on 3D Reflection.	04
	(c) Explain Bezier curve properties.	07
Q.5	(a) Explain RGB color model.	03
	(b) Check parametric continuity c^0, c^1 and c^2 for two curves $P(t) = (t^2 + 2t - 2, t^2)$ and $Q(t) = (t^2 + 2t + 1, t + 1)$ at $P(1) = Q(0)$.	04
	(c) Explain Depth-Buffer method.	07
	OR	
Q.5	(a) Explain YIQ color model.	03
	(b) Briefly explain z-buffer visible surface determination algorithm.	04
	(c) Derive transformation matrix for parallel projection onto xy plane.	07
