Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – V (NEW) EXAMINATION – WINTER 2015

Subject Code: 2151603 Date:08/12/ 2015

Subject Name: Computer Graphics

Time:10:30am to 1:00pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain beam-penetration and shadow mask technique.	**07**
	(b)	Draw the architecture and explain working of raster scan display system.	**07**
Q.2	**(a)**	Write a program in 'C' for Boundary fill algorithm (8 connected region).	**07**
	(b)	Explain the steps in midpoint circle drawing algorithm with suitable diagram.	**07**
		OR	
	(b)	Explain scan line polygon filling algorithm with example.	**07**
Q.3	**(a)**	Derive transformation matrix for 2D rotation.	**07**
	(b)	Perform X-shear & Y-shear on a triangle having A(2,1), B(4,3),C (2,3).Consider the constant value b = c = 2.	**07**
		OR	
Q.3	**(a)**	What is shear transformation? Explain X-shear and Y-shear with example.	**07**
	(b)	A polygon has 4 vertices located at A(20,10) B(60,10) C(60,30) D(20,30).Calculate the vertices after applying a transformation matrix to double the size of polygon with point A located on the same place.	**07**
Q.4	**(a)**	How Nicholl-Lee-Nicholl line clipping algorithm reduce the computation of unnecessary intersection point.	**07**
	(b)	What is scaling transformation? Prove that two scaling transformation commute that is $S_1S_2 = S_2S_1$.	**07**
		OR	
Q.4	**(a)**	What is Bezier curve? List all it important properties.	**07**
	(b)	Generate all raster points on the line segment , if the two end points are given as (10,20) and (18,30) by using Bresenham's algorithm.	**07**
Q.5	**(a)**	Discuss two approaches used to determine hidden surfaces. Explain any one among it .	**07**
	(b)	Explain how RGB to CMY conversion is done and its usage.	**07**
		OR	
Q.5	**(a)**	Explain YIQ color model? Explain about its advantage and disadvantage.	**07**
	(b)	Difference between parallel and perspective projection.	**07**

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