Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA – SEMESTER -IV • EXAMINATION – WINTER 2015

Subject Code: 640008 **Date: 09/12/2015**

Subject Name: Computer Graphics (CG)

Time:10.30 a.m. To 01.00 p.m. **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)**	1) Differentiate following: i) Raster Scan Display and Random Scan Display ii) Track Ball and Space Ball iii) Bitmap Font and Outline Font	**06**
		2) Explain Computer Graphics Software with example and what its primary goal is?	**01**
	(b)	What are the basic attributes of Output Primitive?	**02**
		Write down Mid Point Circle Algorithm.	**05**
Q.2	**(a)**	1) Perform a 45 degree of rotation of triangle A(0,0),B(1,1) and C(5,2) about the point (-1,-1).	**04**
		2) Write down homogenous Matrix for Translation, Rotation and Scaling Transformation.	**03**
	(b)	1) Write a recursive procedure to fill area by Boundary Fill Method using 8-connected approach.	**04**
		2) Discuss Scan-line Polygon fill algorithm in brief.	**03**
		OR	
	(b)	Discuss Anti aliasing in detail.	**07**
Q.3	**(a)**	Explain Flood fill Algorithm in detail.	**07**
	(b)	1) Write the necessary steps to rotate a three dimensional object about an axis that is not parallel to one of the coordinate axes.	**04**
		2) Discuss Shear Transformation with example.	**03**
		OR	
Q.3	**(a)**	Discuss Inside-outside tests in detail.	**07**
	(b)	1) Write a short note on Character Generation.	**04**
		2) Discuss any five applications of Computer Graphics.	**03**
Q.4	**(a)**	What is Line Clipping? Explain Cohen-Sutherland line Clipping Algorithm.	**07**
	(b)	1) Explain 2-Dimensional Viewing Pipeline.	**04**
		2) Explain Window-to-Viewport coordinate transformation.	**03**
		OR	
Q.4	**(a)**	What is Polygon Clipping? Explain Sutherland-Hodgeman Polygon Clipping Algorithm.	**07**
Q.4	**(b)**	Explain Bresenham's Ellipse drawing algorithm	**07**
Q.5	**(a)**	What is Projection? Discuss Parallel Projection in detail.	**07**
	(b)	Explain 3-D Viewing Pipeline.	**07**

OR

Q.5	**(a)**	What is Projection? Discuss Perspective Projection in detail.	**07**
	(b)	What is unbundled attribute? Explain any six functions for bundled attributes.	**07**

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