GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER–IV • EXAMINATION – SUMMER • 2015

Subject Code: 2640008   **Date: 20-05-2015**
Subject Name: Computer Graphics (CG)
Time: 10:30 am - 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.**

Q.1	**(a)**	Explain the following terms: 1. Image processing 2. Anti aliasing 3. Aspect ratio 4. 2D Point clipping 5. Pixel phasing 6. Homogeneous coordinates 7. Refresh rates	**07**
	(b)	Fill in the blanks given below. 1. Each screen point is referred to as .... 2. The maximum number of points that can be displayed without overlap on a CRT is called ….................. 3. …........ is an example for non-emissive displays. 4. The transformation in which an object is moved in a minimum distance path from one position to another is called.................. 5. The region code of a point within the window is .... 6. Lower persistence phosphorus is used in.................. 7. The simplest output primitive is	**07**
Q.2	**(a)**	Explain basic design and operation of cathode-ray tube.	**07**
	(b)	Write the bresenham line drawing algorithm and specify its advantages over DDA algorithm.	**07**
		OR	
	(b)	Write detailed note on Computer Graphics applications.	**07**
Q.3	**(a)**	Explain boundary fill algorithm. How it is differ from flood fill algorithm?	**07**
	(b)	Derive and explain Mid point circle algorithm for decision parameter.	**07**
		OR	
Q.3	**(a)**	What is reflection? Explain various types of reflection with its matrices.	**07**
	(b)	Digitize the Mid point ellipse algorithm for given input rx = 8 and ry = 6	**07**
Q.4	**(a)**	Explain any seven OpenGL Functions for output primitives	**07**
	(b)	Apply the transformation to square A(0,0), B(1,0), C(1,1) and D(0,1) given below: a) Shear the original square with shx=0.5 relative to the line yref = -1 b)Shear the original square with shy=0.5 relative to the line xref = -1	**07**
		OR	
Q.4	**(a)**	Describe antialiasing. Name different antialiasing methods and explain any two.	**07**

(b) Find the transformation matrix that transforms the given square ABCD to half **07** its size with respect to selected fixed position (2,2) for the coordinates A (1,1), B(3,1), C(3,3) and D(1,3). Also get the resultant coordinates of the square ABCD.

Q.5 **(a)** Explain Sutherland-Hodgman polygon clipping algorithm. **07**

(b) What is projection? Write detailed note on parallel projections **07**

OR

Q.5 **(a)** Explain Cohen-Sutherland line clipping algorithm. **07**

(b) Write detailed note on 3D viewing pipeline **07**

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