



Reg. No. : .....

Name : .....

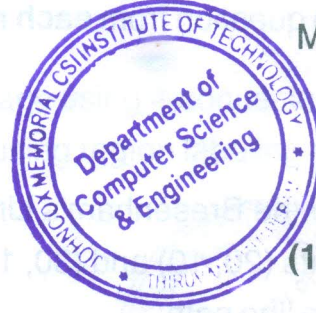
**Seventh Semester B.Tech. Degree Examination, May 2014  
(2008 Scheme)**

**08.701 : COMPUTER GRAPHICS (R)**

Time: 3 Hours

Max. Marks: 100

PART – A

Answer **all** questions :**(10x4=40 Marks)**

1. Compare raster scan systems and random scan system.
2. How is inside outside tests performed on a polygon ?
3. What are the steps required to fill a region using 4 connected boundary fill method ? Explain the situations where the 4 connected method fails to successfully fill the region.
4. What are the features of scan line algorithm for area filling ?
5. Explain the significance of a homogeneous coordinate system.
6. How can scaling with respect to a point  $P(x, y, z)$  be defined in terms of scaling with respect to origin ?
7. Find the transformation matrix for mirror reflection with respect to the  $xy$  plane.
8. The gray levels in an image  $g_1(x, y)$  range from 10 to 100. It is desired to change it into an image  $g_2(x, y)$  in which gray levels range from 0 to 255 using linear transformations of its gray levels. Write the equation for  $g_2(x, y)$  as a function of  $g_1(x, y)$ .



9. Compare Z buffer algorithm with A Buffer algorithm.
10. Explain the region labeling algorithm.

### PART – B

Answer **any one** question from **each** module :

(3×20=60)

#### Module – I

11. a) Illustrate the Bresenham's Line drawing algorithm by digitizing the line with end points (20, 10) and (30, 18). Determine the successive pixel positions along the line path. 10
- b) Explain the working principle of any two graphic output devices. 10

OR

12. a) Compare Flood fill and Boundary fill algorithms. 12
- b) Discuss about raster scan systems and random scan systems. 8

#### Module – II

13. a) Show that two successive reflections about either the x axis or y axis is equivalent to a single rotation in xy plane about the coordinate origin. 10
- b) For a triangle with coordinates (1, 1), (6, 1) and (3, 8) is translated by 5 units in x and y direction and scaled by 2 units in x and y direction and then rotated by 45 degree in clockwise. Obtain the final coordinates of the triangle. 10

OR

14. a) Explain the Cohen Sutherland Line clipping algorithm. 10
- b) Determine a sequence of basic transformations that is equivalent to the x – direction shearing matrix. 10



**Module – III**

- 15. a) Derive the projection coordinates of a point (x, y, z) for both parallel projections and perspective projections. 10
- b) Discuss about various operators used for edge detection. 10

OR

- 16. a) Show the region labels for the following image using 4-connected definition of adjacency for the following image matrix using region labeling algorithm. 10

0	0	1	0	0	2	0	0
0	1	1	1	2	2	2	1
0	0	1	1	2	2	2	0
0	0	1	1	1	1	1	1



- b) Explain the different methods used for equalizing an image with example. 10