DEPT.
1915

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 : **(10×4=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 g1(x, y) range from 10 to 100. It is desired to change it into an image g2(x, y) in which gray levels range from 0 to 255 using linear transformations of its gray levels. Write the equation for g2(x, y) as a function of g1(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**