Seventh Semester B.Tech. Degree Examination

(2013 Scheme)

Branch : Computer Science & Engineerig

13.701 : **COMUTER GRAPHICS** (R)

Model Question Paper

Time : 3 Hours.   Max.Marks: 100

Part A
(Answer all questions. Each question carries 4 marks)

1. Explain the Flood Fill algorithm.

2. Derive an expression for scaling a polygon w.r.t. one of its vertices (Vx,Vy) with scaling factors Sx=2 and Sy=3.

3. What are the steps needed to rotate an object about an axis not parallel to one of the co-ordinate axes?

4. Point out the differences between Z-buffer method and A-buffer method for determining the visible surfaces.

5. What do you understand by Gouraud Shading ?   (5x4 = 20)

Part B

(Answer **one question from each module**)

Module I

6. (a) Explain the working of a raster scan display system in detail.   (10)

   (b) Demonstrate the mid point circle generating algorithm by determining position along the circle octants in the first quadrant from x=0 to x=y with circle cetered at origin and radius r=10.   (10)

OR

7. (a) Explain the working of a Random Scan Display System.   (10)

   (b) Explain the Bresenham's Line drawing algorithm.   (10)

Module II

8. (a) What is window and viewport ? Derive an expression for window to viewport tranformations.   (10)

   (b) Explain an algorithm for polygon clipping.   (10)

OR

9. (a) A triangle is defined with co-ordinates A(20,10), B(60,10) and C(30,70). Write the
        co-ordinates of the vertices after each of the following tranformations. Do all the
        tranformations on the original triangle.

    (i) Scale the triangle about vertex A with Sx=2 and Sy=1/2.   (4)

    (ii) Rotate the triangle w.r.t the vertex C at an angle 90 in anticlockwise direction. (4)

    (iii) Reflex the triangle about the line y=x.   (2)

    (b) Explain the Cohen Sutherland Clipping algorithm.   (10)

Module III

10. (a) Describe how a 3D object is presented on the screen using perspective projection.   (10)

    (b) Explain the scan line method for removing the back faces.   (10)

                                        OR

11. (a) Explain the Depth-Buffer method for detecting visible surfaces.   (10)

    (b) Write notes on

            (i) Parallel projection   (3)

            (ii) Perspective projection   (4)

            (iii) Shearing points   (3)

Module IV

12. (a) Write notes on the color models – RGB, CMY, HSV, HLS.   (10)

    (b) Explain about the drawing primitives used in OpenGL.   (10)

                                        OR

13. (a) Write notes on

            (i) Phone shading   (ii) Diffuse Reflection.   (10)

    (b) Explain how events are handled in OpenGL with suitable example.   (10)