Code No: R5221202 R5

II B.Tech II Semester(R05) Supplementary Examinations, January 2010
COMPUTER GRAPHICS
(Common to Information Technology and Computer Science & Systems Engineering)
Time: 3 hoursMax Marks: 80
Answer any FIVE Questions
All Questions carry equal marks

1. (a) Assuming that a certain full-color (24-bit per pixel) RGB raster system has a 512 by 512 frame buffer, how many distinct color choices (intensity levels) would be available.

   (b) Explain how virtual reality systems can be used in design applications. [10+6]

2. (a) Explain the DDA scan conversion algorithm for generating the points on line segment, when two end-points are given as input.

   (b) Digitize the line with end-points (20,10) and (30,18) using DDA algorithm. [8+8]

3. Determine the form of the transformation matrix for a reflection about an arbitrary line defined with equation y = m x+b.[16]

4. (a) Explain the procedure to determine whether a polygon edge intersects a window edge or not.

   (b) Justify that the Sutherland-Hodgeman algorithm is suitable for clipping concave polygons also. [8+8]

5. (a) Explain the Phong shading algorithm.

   (b) Distinguish between intensity interpolation and vector interpolation shading models. [8+8]

6. A pyramid defined by the coordinates A(0, 0, 0), B(1, 0, 0), C(0, 1, 0) and D(0, 0, 1) is rotated 45_0 about the line L that has the direction V=J+K and passing through point C(0, 1, 0). Find the coordinates of rotated figure.[16]

7. (a) If the camera viewing direction is V and the surface normal of plane is N, how to determine whether the surface visible with respect to viewing direction or not.

   (b) Explain the depth-buffer method for elimination of hidden surfaces. [16]

8. (a) What is raster animation? Describe it.

   (b) List the typical tasks for which the animation functions are defined in animation languages.[8[+8]