B.TECH.

FIFTH SEMESTER EXAMINATION 2008-09

TCS - 501, COMPUTER GRAPHIC

Time: 3 hrs *Maximum Marks: 100*

Note : Attempt any five Questions

1. (a) Explain the construction and functioning of shadow –mask CRT device. (8)
   (b) What are the advantages and disadvantages of LCD over raster scan CRT? (4)
   (c) Explain the following terms: (8)
   (i) Persistance of phosphor
   (ii) Flicker
   (iii) Refresh rate
   (iv) Blurring

2 (a) Explain the steps involved in Bezier's method for curve generation. (14)
   (b) What is the role of control points in Bezier's approach? (6)

3 (a) Using steps followed in Sutherland-Hodgemen algorithm, determine the intersection point of the line segment $P_1 P_2$ against a clipping window $P_3 P_4$ where the coordinates of the end points are
   $P_1(0, 0)$, $P_2(3, 2)$, $P_3(3, 0)$, $P_4(0, 2)$. (10)
   (b) Why the Sutherland-Hodgemen algorithm is called as re-enterent algorithm? (5)
   (c) Distinguish between Cohen-Sutherland outcode and Sutherland-Hodgemen algorithm. (5)

4 Derive the matrix form for the geometric transformations in 3-D graphic for the following operations (5 each)
   (a) Translation
   (b) Scaling
   (c) Mirror reflections
   (d) Rotations

5 (a) Derive a transformation matrix for reflection about $y = x + 2$ line. (10)
   (b) Find the reflection of a point A(10,10) about the line $y = x + 2$. (10)

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6 (a) If P(x,y,z) is an object reference point for scaling, explain how the scaling operation is defined in terms of scaling with respect to origin. (10)

(b) Show that the multiplication of two successive scaling is cumulative. (10)

7 (a) What are the advantages of mini max test in z- buffer algorithm. (8)

(b) A polygon has a plane equation ax+by+cz+d=0 . Suppose that we know the value of 'z' at a point (x,y). What is the easiest way to calculate the value of 'z' at (x+1,y) and (x,y+1). (8)

(c) What is meant by ray tracing? (4)

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