Roll No. ..... Total No. of Pages : 2

BT6/M11 8611

Computer Graphics

Paper—IT-356

Time : Three Hours] [Maximum Marks : 100

Note :—Attempt **FIVE** questions in all, selecting at least **ONE** question from each unit.

UNIT—I

1. (a) Write a procedure for thick line using Bresenham's algorithm. 10

   (b) Write and explain the midpoint circle drawing algorithm. 10

2. (a) Explain how an ellipse displayed with midpoint method could be properly filled with a boundary filled algorithm. 15

   (b) What is aliasing ? How it can be removed ? 5

UNIT—II

3. (a) Write a routine to identify concave polygons by calculating cross products of pairs of edge vectors. 15

   (b) What do you mean by 2-D viewing pipeline ? Explain. 5

4. Compare the number of arithmetic operations performed in the Cohen Sutherland and the Liang-Barsky line clipping algorithms for several different orientations of line relative to clipping window. 20

UNIT—III

5. (a) Using Origin as the centre of projection, derive the perspective transformations onto the plane passing through the point $R_0(x_0, y_0, z_0)$ and having normal vector $N = n_1I + n_2J + n_3K$. 10

   (b) Find the general form of an oblique projection onto xy plane. 10

6. (a) Derive the transformation that rotates an object point $\theta°$ about the origin. Write matrix representation for this rotation. 12

   (b) Write and briefly explain the parts of interactive raster graphics system. 8

UNIT—IV

7. (a) Write a routine to display a Cubic Bezier Curve using subdivision method. 10

   (b) What do you mean by a Spline ? Explain Interpolation and Approximation spline. 10

8. Write and explain the depth buffer algorithm for hidden surface removal. What are its advantages and disadvantages ? 20