Roll No…….. **10410**

MCA/D—13
COMPUTER GRAPHICS
Paper—MCA-501

Time allowed: 3 hours] [Maximum marks : 80

Note : Attempt five questions in all. Question No. 1 is compulsory and is of 24 marks. Attempt four more questions selecting one question from each Um't——I, II, III and IV All questions of Unit-—I, II, III and IV are of 14 marks each.

(Compulsory Question)

1. (i) How is the resolution of a display device defined ?
   (ii) Distinguish between printers and plotters.
   (iii) How are increments computed in symmetric DDA line drawing algorithm?
   (iv) What is the significance of parameter in drawing Bezier Curves?
   (v) Derive the rotation transformation w.r.t the origin.
   (vi) What will be the composite transformation for X-shear and Y-shear?
   (vii) Write the equations used for tweening intermediate points between two points.
   (viii) Write the 3 -D transformation matrices for rotation about x, y, and z axis.

Unit—I

2. Enumerate various applications of computer graphics which you use occasionally. Also describe the input devices associated with these applications. When do you make use of an image scanner? Also describe how an image scanner works?

3. (a) How are colors obtained in a CRT ?
   (b) What is the role of look-up tables in an interactive graphics system ?

Unit—II

4. Describe the various coordinate systems that can be used for drawing circles. Explain the algorithms for circle drawing using these coordinate systems.

5. Describe how you will draw a triangle and then fill it using stack based seed fill algorithm.

Unit-III

6. Describe translation and scaling and illustrate which of these transformations are used in dragging and window-to-viewport a transformation.

7. What is the role of parameter in clipping lines using Liang - Barsky line clipping algorithm?

Unit-—IV

8. (a) Distinguish between orthographic and oblique parallel projection.
   (b) How are screen coordinates obtained using perspective projection?

9. (a) What is the purpose of sorting in Depth-Sort hidden surface algorithm?
   (b) What is the advantage of subdivision in area—subdivision hidden surface algorithm?