Roll No. .....

MCA (8-9)/D-14 **10410**

COMPUTER GRAPHICS

Paper—MCA-501

Time Allowed : 3 Hours] [Maximum Marks : 80

Note : Attempt five questions in all, selecting at least one question from each Unit. Q. N0. 1 is compulsory.

Compulsory Question

1. Answer the following questions in brief**:**

(a) What is the advantage of interlacing in CRT?

(b) If the resolution of a monitor is 512 X 512 and 1024 colors are to be displayed, then what will be the size of the frame buffer?

(c) Distinguish between Cartesian coordinates and Polar coordinates.

(d) How is an ellipse drawn using polynomial method? .

(e) Draw a flowchart to illustrate polygon clipping using Sutherland-Hodgman algorithm.

(f) Derive the composite matrix for reflecting a point w. r. t. an arbitrary line.

(g) What is the difference between Parallel and Perspective projection?

(h) How is depth used to identify hidden surfaces in Z-buffer algorithm? 8><3=24

UNIT-I

2. Describe the purpose of the following in an interactive graphics system:

(i) Frame Buffer

(ii) Display Processor

(iii) Light pen. 14

3. Categorize CRT, Plasma panel, and LCD as per following and justify according to their working :

(i) Raster scan or random scan

(ii) Emissive or non-emissive

(iii) Refresh or n0n—refresh. 14

UNIT—II

4. Scan convert a line from A(3, 4) to B(9, 6) using simple DDA algorithm. Verify Whether the same set of points are scan converted irrespective of Whether the Line is drawn from A to B or B to A. 14

5. (a) How are Bezier curves drawn?

(b) Show how a triangle will be filled using scan- line fill algorithm. 7,7

UNIT-III

6. Consider a square with diagonal vertices at (O, O) and (2, 2). What will be the new coordinates of the vertices of the square if it is scaled to 2 times its original size keeping vertex (O, O) fixed. What will be the effect of shearing this square with x-shearing factor as 2. 14

7. Compare Cohen-Sutherland line clipping algorithm with Liang-Barsky line clipping. 14

UNIT—IV

8. Using an object of your choice, describe the modeling of 3-D objects. 14

9. How is interpolation used in Ground shading and Tweening? 14