

Roll No. ....

Total Pages : 3

MCA/M-20

10542

COMPUTER GRAPHICS

Paper–MCA-14-44

Time Allowed : 3 Hours]

[Maximum Marks : 80

Note : Attempt five questions in all, selecting at least one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. Answer any four of the following questions in brief:

- (a) Describe any two kinds of Printers used for obtaining Graphics output.
- (b) Describe the polynomial method for generation of Ellipse.
- (c) Describe, how rotation transformation for a point is derived w.r.t. the origin using polar coordinate system.
- (d) What will be the position of a point on a Normalized viewport if its world coordinate representation is at (15, 10) on a window with diagonal vertices at (5, 5) and (25, 25)?

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- (e) What will be the tweened positions of a point with initial position at (6, 5) and final position at (18, 5), when the number of tweens are 4?

#### UNIT-I

2. Give an overview of the use of various coordinate systems, techniques and devices required for creation and manipulation of Pictures in an Interactive graphics system.
3. Distinguish between :
- (a) Frame buffer and look-up table.
  - (b) Touch panel and plasma panel.

#### UNIT-II

4. Bring out an explanation of Bresenham's method for drawing both lines and circles to justify that it is a total Integer algorithm in each case.
5. (a) How can a curve be drawn using its parametric representation? Is Bezier curve based on parametric representation? Justify.
- (b) What criteria is followed for filling polygons using Boundary fill algorithm?

### UNIT-III

6. Find the transformed position of a Triangle with vertices A(4, 3), B(10, 4) and C(7, 9) after the following transformations are performed :
  - (a) Scaling with a factor of 2 keeping vertex A fixed.
  - (b) X-shearing with a factor of 2.
7. Bring out a comparison between Sutherland-Hodgman and Weiler-Atherton polygon clipping algorithms.

### UNIT-IV

8. Give a brief overview of various methods of modeling 3-D objects.
9. (a) Describe, how hidden surface removal is simplified using area-subdivision method.  
(b) How are light intensities modeled?