

22/05/2019

Roll No.

Total Pages : 03

MCA/M-19

10514

COMPUTER GRAPHICS

MCA-14-44

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all. Q. No. 1 is compulsory. In addition to compulsory question, Attempt *four* more questions selecting *one* question from each Unit. All questions carry equal marks.

(Compulsory Question)

1. Answer any *eight* of the following questions in brief :
 - (i) Describe any *two* applications of graphics which you commonly use.
 - (ii) What is the need of interlacing in a CRT monitor ?
 - (iii) Name any *two* widely used graphics softwares.
 - (iv) What will be the x -increment for a line to be draw from (5, 7) to (14, 10).using Bresenham's method ?
 - (v) How is a point on an ellipse represented using polar coordinates ?
 - (vi) Which transformation is used in dragging ?
 - (vii) What is the role of parameter u in Liang-Barsky line clipping algorithm ?

- (viii) What is x-minmax test as used in hidden surface elimination methods ?
- (ix) What data structures are used to model a 3-D object using Boundary-representation ?

Unit I

- 2. What is the importance of using coordinate systems in creating pictures in graphics ? How are pictures created and manipulated ?
- 3. Highlight the importance of the following in graphics :
 - (a) Look up table
 - (b) Image scanner
 - (c) Shadow mask CRT.

Unit II

- 4. Describe the symmetrical DDA algorithms for drawing lines and circles and derive the similarity in procedure of both. Also identify the limitation of symmetrical DDA circle drawing algorithm.
- 5. (a) Describe the procedure and mathematical functions used to draw Bezier curves.
(b) What procedure is followed for filling a polygon using Boundary fill algorithm ?

Unit III

6. Describe the following transformations along with their homogeneous representations :
 - (a) Scaling with respect to a fixed point
 - (b) 2-D viewing transformation.
7. Bring out a distinction between Sutherland-Hodgman polygon clipping and Weiler-Atherton polygon clipping algorithms by describing the clipping procedure followed in each.

Unit IV

8.
 - (a) How is 3-D modelling done using Fractal geometry ?
 - (b) How is a point in screen coordinate system obtained using perspective projection ?
9. How is light intensity modeled for a point using Phong illumination Model ? Describe, how interpolation is used in Gouraud Shading and Phong Shading.