MCA/D08

Computer Graphics and Multimedia

MCA -501

Time : 3 Hours MM:50

Note:- Attempt Five questions in all, selecting one question from each unit. All questions carry equal marks.

UNIT-I

1 Give the general architecture of a raster graphics system highlighting the importance of each component. List the important properties of phosphor being used in raster CRT's. How does phosphor exhibit colors in a shadow mask CRT?

2 Briefly explain the importance of the following in graphics:
   (a) Cattesian and Polar Corrdinates
   (b) Mouse and Touch Panels.

3 Describe the intent of Bresenham's line drawing algorithm. It is desired to draw a line starting at A(3,4) and ending at B(11,6) on a graphics monitor. Use generalized Bresenham's algorithm to determine the pixels that would be put ON.

UNIT-II

4 Bring out the importance of the following in transformation giving suitable examples.
   (a) Homogeneous coordinates
   (b) Transforamtion about a pivot point

5 What is the significance of a composite matrix? Give the explicit form of a composite matrix representing the transformations: Scaling by a factor of 2 in the x-direction and then rotation about a point (2,1) Are the above transformation commutative?

6 Discuss the use of the following in graphics packages:
   (a) Interpolation in tweening
   (b) Translation in dragging

7 How Zoming and Panning can be achieved in agraphics scene? Show how clipping of triangle, whose all vertices are outside the viewport,and the edges of the triangle are intersecting three edges of the viewport, can be done using Sutherland-Hodgman polygon clipping algorithm.

UNIT-III

8 How are parallel and perspective projections distinguished on the basis of applications? Derive the view plane coordinates using perpective projection ifthe view plane has its z value as zero.

9 What is perspective depth? How is it used to determine hidden surface in Z-Bufer algorithm?

10 (a) How are light intensities modeled to give shading effects?
(b) What are the components of a multimedia system?