MCA/D07
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 Describe 'Computer Graphics' in terms of creation and manipulation of pictures. Quote suitable applications of computer graphics wherever needed in the description.

2 How to the following components contribute in an Interactive graphics system:
   - (a) Frame buffer
   - (b) Mouse
   - (c) Display processor

3 How are the terms 'resolution' and 'persistence' defined in the context of CRT monitors? Explain the working of a monochrome and a colored CRT monitor. How is a plasma panel different from a CRT?

4 Compare symmetrical DDA, Simple DDA and Bresenham's line drawing algorithms. Use a line with endpoints (2,8) and (8,10) as an example to make the comparison.

UNIT-II

5(i) Derive the rotation transformation for rotating a point w.r.t. an arbitrary point.

 (ii)   Distinguish between tweening and dragging techniques and describe the computation/transformations used if any in these techniques.

6 Transform a square with vertices A(2,0), B(6,0), C(6,6) and d(2,6) to half its size and placed at location such that the centre of square moves to (0,0). What will be the effect of shearing this transformation?

7   What is the diference between a window and viewport? Derive the window –to-viewport transformation of a point p(4,4) inside a circular window of radius 6 and centre (2,2) transformed onto a circular viewport of radius 3 and centre (-1,-1).

UNIT-III

8   What do you mean by 3D modeling of objects? Show how a 3D cube with each of 4 units will be modeled assuming the centre of the cube as the origin of the coordinate system.

9(i) How is a point defined in eye coordinate system projected on the view plane using perspective projection?

(ii)   Describe the importance of x-, y- and z minmax tests in hidden surface algorithms.

10   What are the various Medias that describe a multimedia application? List any three important applications of multimedia and describe the hardware requirements of these applications giving a brief anatomy of each hardware.