

Computer Graphics

2008 May

Science Information Technology

FYBSc-IT

Semester 2

University Exam

University of Mumbai

- N.B (1) Q.1 is compulsory.  
(2) Attempt any four from Q.2 to Q.7.  
(3) Draw neat diagrams wherever necessary.

1. i) Write Bresenhan's Line Drawing Algorithm 6Mks  
ii) Explain Raster Scan Display with internal operation. 12Mks
2. i) What is computer animation? Explain motion specification and key frame system. 10Mks  
ii) Write note on Bezier Curves. 6Mks  
iii) Explain Beam Penetration Technique. 4Mks
3. i) Explain Sutherland - Hodgeman polygon clipping. Also write Sutherland- Hodgeman clipping algorithm. 12Mks  
ii) What are the different types of physical input devices? Explain any four of them in detail. 8Mks
4. i) Give difference between raster scan and random scan display. 5Mks  
ii) What are the basic approaches to fill the polygon? Explain it with neat diagram. 15Mks
5. i) Consider the line from (0,0) to (6,6) use the DDA algorithm to rasterize the line. 10Mks  
ii) Find the transformation matrix that transform the given square ABCD to half its size with centre still remaining at the same position. The co - ordinates of the square are A(1,1) , B(3,1) , C(3,3) ,(1,3) and Centre at (2,2). Also find the resultant co - ordinates of square. 10mks
6. i) Give a 3x3 homogenous co - ordinate transformation matrix for each of the following transformation. 8Mks  
(a) Shift the image to the right 3 units.  
(b) Shift the image up 2 units.  
(c) Move the image down  $\frac{1}{2}$  unit and right 1 unit.  
(d) Move the image down  $\frac{2}{3}$  unit and left 4 units.  
ii) Find the transformation of triangle A(1,0) , B(0,1) , C(1,1) by 12Mks  
(a) Rotating 45 degree about the origin and then translating one unit in x and y direction.  
(b) Translating one unit in x and y direction and then rotating 45 degree about the origin.
7. i) Write short notes on the following:- 10Mks  
(a) Perspective projection.  
(b) Segmentation.
- ii) Explain the Depth Buffer algorithm. 10Mks