

B. E. 5th Semester (IT) Examination,

December-2010

COMPUTER GRAPHICS

Paper-CSE-303-E

Time allowed : 3 hours]

[Maximum marks : 100

Note : Answer any five questions.

1. (a) Explain the working of LCD with a neat diagram.
(b) Define the term aliasing and antialiasing. What are different techniques for antialiasing ?
2. (a) What different steps are required to plot a line using symmetrical DDA method ?
(b) Differentiate Cohen Sutherland algorithm with Cyrus-Beck algorithm.
3. (a) Find complete viewing transformation that maps window in world coordinates with x-extent 1 to 5 and y-extent 1 to 10 onto :
(i) normalized viewport

- (ii) viewport whose opposite corners are at (1,1) and (4,4).
- (b) Describe flood-fill algorithm and boundary-fill algorithm.
4. (a) Derive transformation matrix to scale a unit cube twice uniformly w.r.t. origin. Find the coordinates of transformed cube.
- (b) Find the standard perspective projection of a point in the plane $z = d$ when centre of projection is at (0,0,0).
5. (a) Explain Z-buffer algorithm, apply it for following :
Rectangle with corner points P1 (10,5,10), P2 (10,25,10), P3 (25, 25, 10) and P4 (25,5,10) and the triangle with corner points P5 (15,15,15), P6 (25, 25, 5) and P7 (30, 10, 5).
- (b) Describe scanline algorithm for hidden line removal.
6. (a) Obtain expressions for Bezier curve and B-spline curve.

- (b) Describe various properties of Bezier curve and B-spline curves.
- 7. (a) Describe Gouraud Shading model and Phong shading model.
- (b) Describe various operations that can be performed on image.
- 8. Write short notes on :
 - (a) Illumination models
 - (b) Applications of computer graphics.