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[4657]-77

S.E. (Computer) (Second Semester) EXAMINATION, 2014

COMPUTER GRAPHICS

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 100

N.B. :— (i) Answers to the two Sections should be written in separate answer-books.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Assume suitable data, if necessary.

SECTION I

1. (a) Using Bresenham's line algorithm, find out which pixel would be turned on for the line with end points (0, 0) to (−8, −4). Also explain error term in Bresenham's line algorithm. [12]

(b) Explain in short : [6]

(i) Resolution

(ii) Aspect Ratio

(iii) Frame Buffer.

P.T.O.

Or

2. (a) Compare random scan display and raster scan display. [6]
(b) Explain character generation methods. [6]
(c) Using DDA line algorithm, find out which pixel would be turned on for the line with end points (0, 0) to (-8, -4). [6]
3. (a) Write and explain Cohen-Sutherland line clipping algorithm with suitable example. [12]
(b) Explain inside test for polygon. [4]

Or

4. (a) Write and explain scan line algorithm for polygon filling. Explain filling with pattern. [12]
(b) Explain the concept of generalized clipping with the help of a suitable example. [4]
5. (a) Magnify the triangle with vertices A(0, 0), B(4, 0), C(2, 2) to thrice its size as well as rotate it by 45° . Derive transformation matrices and give final coordinates after transformation. [8]
(b) Explain 3-D transformation using homogeneous coordinates system using scaling and translation. [8]

Or

6. (a) Explain parallel and perspective projections and give its types. [8]
- (b) Explain rotation about an arbitrary axis in 3-D geometry. Also derive transformation matrix. [8]

SECTION II

7. (a) What is need of segmentation ? Explain segment table and various operations on segment. [12]
- (b) Give basic guidelines of animation. [6]

Or

8. (a) Define animation and explain the methods of controlling the animation. Give different types of animation languages. [12]
- (b) Write algorithm for image transformation using segment. [6]
9. (a) Explain : [12]
- (i) Painters algorithm
 - (ii) Back-face removal
 - (iii) Z-Buffer.
- (b) Explain RGB and CMY color models. [4]

Or

- 10.** (a) Explain diffused and point source illumination. [6]
(b) Explain need of hidden surfaces algorithms. [4]
(c) Explain Warnock algorithm. [6]
- 11.** (a) Explain B-spline techniques for generating curves with an example. [8]
(b) Explain interpolation method with example. [8]

Or

- 12.** (a) Explain Bezier curves with mathematical equations and example. [8]
(b) Explain fractal line and fractal surfaces. Also explain importance of it in practical applications. [8]