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[4757]-188

S.E. (Computer) (Second Semester) EXAMINATION, 2015

COMPUTER GRAPHICS

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 100

N.B. :— (i) Answer any *three* questions from each Section.

(ii) Answers to the two Sections should be written in separate answer-books.

(iii) Neat diagrams must be drawn wherever necessary.

(iv) Figures to the right side indicate full marks.

SECTION I

1. (a) Explain Bresenham's circle drawing algorithm with mathematical derivation. [10]
- (b) Explain Random scan display. [4]
- (c) What is aliasing and antialiasing ? [4]

P.T.O.

Or

2. (a) Explain Bresenham's line drawing algorithm with illustration. [8]
- (b) Explain the features of the following : [6]
- (i) mouse
- (ii) joystick
- (iii) light pen
- (c) Explain Stroke method and Bitmap method of character generation. [4]

3. (a) What are the different methods for testing pixels inside and outside the polygons ? [8]
- (b) Explain Sutherland Hodgeman polygon clipping algorithm with example. [8]

Or

4. (a) What is the need for clipping ? Explain Cohen-Sutherland outcode algorithm. [8]
- (b) Explain any *two* polygon filling algorithms. [8]
5. (a) Explain parallel projection and its types. [8]
- (b) Write a short note on 2-D rotation and 2-D shear transforms. [8]

Or

6. (a) Find the transformation matrix of the triangle A(1, 0), B(0, 1), C(1, 1) by rotating 45° about the origin and then translate 1 unit in x direction and 1 unit in y direction. [8]
- (b) Write the transformation matrix in 3-D for : [8]
- (i) Translation
 - (ii) Scaling
 - (iii) Rotation about x -axis
 - (iv) Rotation about z -axis.

SECTION II

7. (a) Write the algorithm for the following : [8]
- (i) Change of visibility attribute of segments
 - (ii) Delete a segment
 - (iii) Delete all segments.
- (b) Compare conventional and computer based animation. [8]

Or

8. (a) What are the advantages of using segmented display file ? Explain with examples the functions needed to maintain a segmented display file. [8]
- (b) Explain in brief the basic guidelines of animation. [8]

9. (a) Explain Painter's algorithm. [8]
(b) Describe : [8]
(i) Diffused illumination
(ii) Point source illumination.

Or

10. (a) Explain Warnock's algorithm. [8]
(b) Write a short note on Ray-Tracing. [8]

11. Write short notes on any *three* of the following : [18]
(i) Properties of Bezier curve
(ii) Fractal geometry
(iii) True curve generation
(iv) Interpolating algorithm.

Or

12. Write short notes on any *three* of the following : [18]
(i) B-spline curve
(ii) Blending functions
(iii) Fractal lines and surfaces
(iv) Koch curve.