Total No. of Questions—**6**] [Total No. of Printed Pages—**4+2**

[3762]-208

S.E. (Computer Engineering) (II Sem.) EXAMINATION, 2010

COMPUTER GRAPHICS

(2008 COURSE)

Time : Three Hours **Maximum Marks : 100**

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

(*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) Explain with the help of illustration how Bresenham's line drawing algorithm can be used for circle generation. [8]

Or

Explain DDA line drawing algorithm in detail. Can line segment represented by points P1(5, 8) and P2(9, 5) be drawn using DDA algorithm ? Explain. [8]

P.T.O.

(B) With the help of block diagram explain raster scan displays. [8]

Or

Draw a block diagram of computer graphics workstation and explain functioning of scanner or touch screen or digitizer. [8]

2. (A) Explain with example Cohen-Sutherland out-cod algorithm. [8]

Or

Explain scan line algorithm. Compare it with boundary fill algorithm for polygon filling. [8]

(B) (1) Name with example, different types of polygons. [4]

(2) Give at least *two* methods to prove that given point is inside the polygon. [4]

Or

Explain with example seed fill and edge fill algorithm. [8]

3. Fig. 1 and 2 show basic 2D blocks. Apply translation and scaling transformations to get the Fig. 3. Draw diagrams of all intermediate steps. [18]

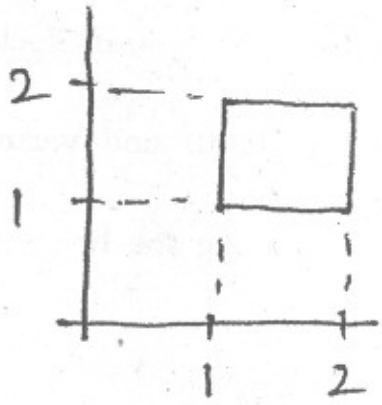

Fig. 1

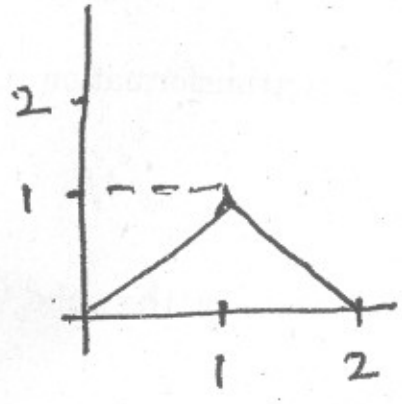

Fig. 2

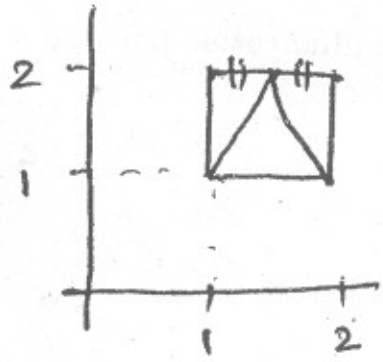

Fig. 3

Or

A 3D cube of dimensions (length, breadth and height) 2 units each is placed in a 3D axis system such that one of its vertex A is at the origin i.e., (0, 0, 0) and vertex F in 3D space. A cube is rotated by 45 degrees along the line segment AF in anti-clockwise direction :

(1) Draw the initial state of the cube.

(2) Perform necessary transformation (translation, scaling, rotation) steps.

(3) Draw the final state of the cube. [18]

SECTION II

4. (A) Explain with illustration how segments are created, renamed and deleted. [10]

Or

Explain with illustration Sutherland-Hodgman algorithm. [10]

(B) Can line clipping algorithm be used for polygon clipping ? Justify. [8]

Or

Discuss various data structures which can be used in image segmentation. [8]

5. (A) Explain how binary space partition algorithm be used for removal of hidden surfaces ? [8]

Or

Explain Z-buffer algorithm and its applications. [8]

(B) Explain Painter's algorithm with the help of diagram and its applications. [8]

Or

Write short notes on :

(1) Diffused illumination, OR RGB and HSI/HSV color models. [4]

(2) Phong shading OR Transparency. [4]

6. (A) Explain the term control points in curve drawing. How blending function is calculated for cubic polynomial curve ? [8]

Or

Write short notes on fractal lines and fractal surfaces. [8]

(B) Write short note on Bazier curve or B-splines. Draw relevant diagrams. [8]

Or

Explain with commands used to generate bouncing ball animation (AVI) using MAYA or 3D studio. (AVI is AVI formatted output presentation) [8]