53 (CS 604) CMGR

2015

COMPUTER GRAPHICS

Paper : CS 604

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer ***any five*** *questions*

1. *(a)* State the Bresenham's line drawing algorithm. Write down the advantages of this algorithm over DDA algorithm. 6+2

   (b) Using above algorithm, find out the pixels on the line *AB* where co-ordinate of *A* is (1, 1) and co-ordinate of *B* is (8, 5) respectively. 6

   (c) Describe the mid-point circle drawing algorithm. 6

2. *(a)* Derive the transformation matrix for reflection of an object about the line $y = mx + c$. 10

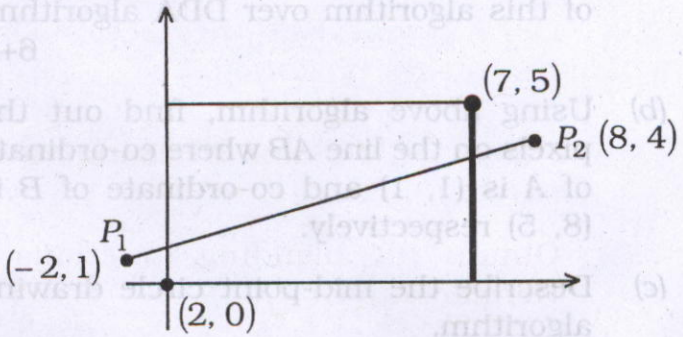
(b) Using above transformation find the reflection matrix with respect to line $y = x$. 3

(c) Describe the rotations in 3-D with rotational matrices. 7

3. *(a)* Describe and formulate the viewing transformation in two dimension. 8

(b) Explain the Cohen-Sutherland clipping algorithm. 7

(c) Using Cyrus-Beck algorithm clip the P_1P_2 in the following diagram 5



4. (a) Scale the triangle with respect to origin with vertices are (10, 20), (10, 10) and (20, 10) respectively by $Sx = 2$, $Sy = 1 \cdot 5$. 7

(b) Find the triangle when the above scaling is to be performed with respect to the point (10, 10). 7

(c) Is the successive shearing operation is commutative? Justify your answer. 6

5. (a) Describe the different types of boundary filling algorithm with pseudo code. Also state their limitations. 10

(b) Explain the inside-outside testing mechanism of a point with respect to a polygon with suitable example. 4

(c) Define parallel projection and perspective projection. 6

6. (a) Describe C^0, C^1 and C^2 continuity of a curve. 3

(b) Obtain the blending functions for Hermite curve. 9

(c) Explain the cubic Bezier curve. 8

7. *(a)* Write a brief note on depth buffer method for elimination of hidden surface in 3-D. 8

(b) Describe the various steps involved in animation sequence. 8

(c) Describe about raster animation. 4
