Total number of printed pages–4

53 (CS 604) CPGR

2021

COMPUTER GRAPHICS

Paper : CS 604

Full Marks : 100

Time : Three hours

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

Answer Question No. **1** *and* ***any four*** *from the rest.*

1. 2×10=20

(a) Define Pixel.

(b) What is resolution ?

(c) What is straight line in Computer Graphics ?

(d) What is rigid body transformation ?

Contd.

(e) The image of the point (5, 0) with respect to the x-axis is .....?..... .

(f) What is symmetry ?

(g) The transformation of point P in *Fig.* 1 .....?..... .

(h) The transformation of point P in *Fig.* 2 .....?..... .

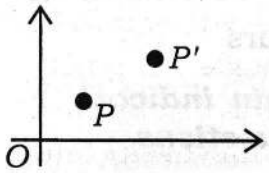

Fig. 1

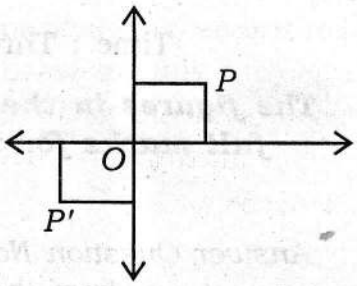

Fig. 2

(i) Three basic colour are .....?..... .

(j) In scaling operation it changes the size as well as .....?..... .

2. Describe the DDA line drawing algorithm. Using the algorithm, draw the line with end points (5, 2) and (13, 4). Write the advantages and disadvantages of the algorithm.

7+8+5=20

3. What do you mean by rotation ? Why the rotation is important in computer graphics ? Derive the rotational matrix. Describe the rotation in 3-D. 5+5+5+5=20

4. Define composite transformation. *Fig.* 4 shows the composite transformation of *Fig.* 3. Derive the transformation matrix of this transformation. 5+15=20

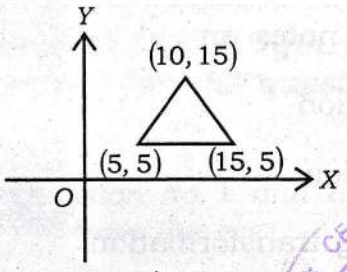

Fig. 3

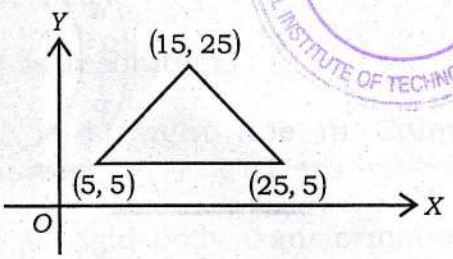

Fig. 4

5. Describe the reflection. Find the reflection matrix with respect to the line $x - y = 0$. Hence find the reflection of the point (5, 3). Prove that reflection of reflection is the original. 5+10+5=20

6. Describe the Bézier curve and obtain the blending function with geometrical representation. Define the curvature continuity. 20

7. Write short notes on : 5×4=20

   (a) Animation

   (b) Projection

   (c) Viewing transformation

   (d) Boundary filling.