53 (IT 602) CGMU

2019

COMPUTER GRAPHICS AND MULTIMEDIA

Paper : IT 602

Full Marks : 100

Time : Three hours

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

*Answer **any five** questions.*

1. *(a)* Define Computer Graphics. Briefly explain few applications of Computer Graphics. 10

   (b) Compute the points on a circle with radius $r = 10$ and centre at (4, 3) using Midpoint Circle Algorithm. 10

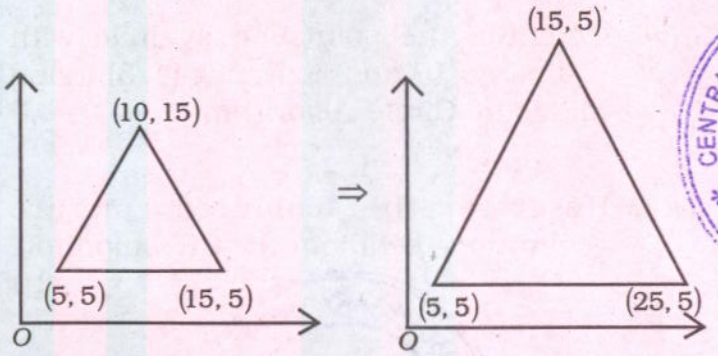
2. *(a)* Describe the coloured picture generation technique in CRT monitor. 10

(b) Describe three-dimensional viewing transformation pipeline with a diagram. 10

3. (a) What is reflection? Find the reflection matrix with respect to the line $y = x + 2$. Hence find the reflection of the point (5, 5) with respect to that line. 10

(b) What do you mean by rotation? Find the rotational matrix $R(\theta)$ (where θ is the rotational angle in anti-clockwise direction in 2D). Using the above matrix with $\theta = 90°$, find the coordinates of the point (5, 5) after rotation. 10

4. In the following diagram it shows that the triangle changes after some transformation. Find the transformation matrix. 20



5. (a) Describe the Cohen-Sutherland line clipping algorithm with advantages and disadvantages. 10

(b) What is Visible Surface Detection? Describe *any two* visible surface detection algorithms. 10

6. (a) Suppose an RGB raster system is to be designed using a 12 inch by 12 inch screen with a resolution of 100 pixels per inch in each direction. If we want to store 24-bits per pixel in the frame buffer, how much storage (in bytes) do we need for the frame buffer? 5

(b) Differentiate between Parallel Projection and Perspective Projection. 5

(c) Write the Boundary Fill Algorithm. 10

7. Write short notes on : ***(any two)*** 10×2=20

(a) Flat Panel Displays

(b) Inside-Outside Test

(c) Raster method for computer animation.