Cluster Innovation Centre, University of Delhi, Delhi-110007

Examination : End Semester Examination – NOV 2021

Name of the Course : B.Tech (Information Technology and Mathematical Innovations)

Name of the Paper : Computer Graphics and Visualization

Paper Code : **32861502**

Semester : **5th**

Duration : **3 Hours**

Maximum Marks : **75**

Instructions: *This question paper contains six questions, out of which any four are to be attempted. Each question carries equal marks.*

Q1) Write the difference between the Vector scan display and Raster scan display with a diagram. Consider three different raster systems with resolutions of 640 by 480, 1280 by 1024, and 2560 by 2048. What size frame buffer (in bytes) is needed for each of these systems to store 12 bits per pixel. How much storage is required for each system if 24 bits per pixel are to be stored.

Q2) Write the difference between LCD vs LED display technology with advantages and disadvantages. A mirror is placed vertically such that it passes through the points (10,0) and (0,10). Find the reflected view of the triangle ABC with coordinates A (5,50), B (20,40), C (10,70).

Q3) Explain Depth Buffer Method and Shading. The pyramid co-ordinate A (0,0,0), B (1,0,0), C (0,1,0) and D (0,0,1) is rotated 45-degree about line L that has the direction V =j +k and passing through the point C (0,1,0) Find the coordinate of rotated figure.

Q4) Write the DDA Line drawing algorithm and Mid-point Ellipse algorithms. Using Midpoint Ellipse Algorithm, plot an ellipse whose radius R_x = 8 units and R_y = 6 units.

Q5) Write the Midpoint circle algorithm and Bresenham's Line Drawing Algorithm. Consider a line from (0,0) to (6,7). Use Bresenham's Line Drawing Algorithm to rasterize the line. Write the Usage of Graphics and their applications.

Q6) Write the difference between RBG vs CMY. List the input-output device used in computer graphics. Perform a 45-degree rotation of triangle A (0,0), B (1,1), C (5,2) about the origin and about the point P (-1, -1).