

School of Computing Science and Engineering

B.Tech CSE
ETE - Jun 2023

Time : 3 Hours

Marks : 100

Sem II - E1UA205B - Multimedia and Computer Graphics

Your answer should be specific to the question asked

Draw neat labeled diagrams wherever necessary

1. What is Computer Graphics? Write the essential application of computer-graphics in real life scenario? K1 CO1 (5)
2. What is Projection? Differentiate between parallel projections from perspective projection with an example. K2 CO2 (5)
3. Given a triangle with points (1, 1), (0, 0) and (1, 0) in a 2D plan. Apply shearing parameter 2 on X axis and 2 on Y axis and find out the new coordinates of the object. K3 CO3 (5)
4. Use the midpoint method to derive and analyze decision parameters for generating points along a straight line path with slope in the range $0 < m < 1$. Show that the midpoint decision parameters are the same as those in the Bresenham's line drawing algorithm. K4 CO4 (10)
5. What is the equation of initial decision parameter in Bresenham's line drawing algorithm? compare it with DDA line drawing algorithm. K1 CO1 (10)
6. What is clipping in computer graphics. Write and explain Cohen-Sutherland line clipping algorithm with example. K2 CO2 (10)
7. What is transformation of an object. Write down 2D rotation matrix. Given a line segment with starting point as (0, 0) and ending point as (4, 4). Analyze this segment after 30 degree rotation anticlockwise direction on the line segment and find out the new coordinates of the line. K4 CO4 (10)

OR

- A Clipping window PQRS has left corner at (3,4) and upper right corner at (10,9). Analyze the working of Cohen Sutherland line clipping algorithm after finding the section of the clipped line AB (2,11), (9,2). Also write down its merits and demerits. K4 CO4 (10)
8. Calculate the points between the starting point (1, 7) and ending point (11, 17) using Digital Differential Analyzer (DDA) Line Drawing Algorithm and also write down its advantages and disadvantages. K3 CO3 (15)
 9. Calculate the points between the starting coordinates (5, 9) and ending coordinates (12, 16) by applying Midpoint line drawing algo. and also write down its advantages and disadvantages. K3 CO3 (15)
 10. How 3-D reflection is different from 2-D reflection transformation distinguish on the basis of matrix equations. Given a 3D triangle with coordinate points P(3, 4, 1), Q(6, 4, 2), R(5, 6, 3). Analyze a 3D the reflection on the XY plane and find out the new graphical coordinates of the object. K4 CO4 (15)

OR

- Given a circle C with radius 10 and center coordinates (1, 4). Analyze the translation with distance 5 towards X axis and 1 towards Y axis. Obtain the new coordinates of C without changing its radius using 2D Translation matrix. K4 CO4 (15)