

B4.4-R4 : COMPUTER GRAPHICS AND MULTIMEDIA**NOTE :**

1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time : 3 Hours**Total Marks : 100**

1. (a) How Color is handled in RGB color model ? Explain the use of indexed color for setting color attribute.
 (b) Explain comparison between emissive and non-emissive display.
 (c) Explain scaling rotation and translation with suitable examples.
 (d) What is pipeline processor architecture ? How does it increase processing speed ?
 (e) Differentiate between window port and view port.
 (f) Describe how parallel projection is different from perspective projection.
 (g) Explain polygon clipping with suitable example. (7x4)

2. (a) What is line clipping ? Explain cohen-Sutherland line clipping algorithm with suitable example.
 (b) Differentiate between Vector scan display and Raster scan display.
 (c) Write procedure to fill polygon using Flood fill. (8+4+6)

3. (a) A point (4, 3) is rotated counter-clockwise by an angle of 45 degree. Find the rotation matrix and the resultant point.
 (b) Use the Cohen Sutherland algorithm to clip two lines P1(40, 15)-P2(75, 45) and P3(70, 20)-P4(100, 10) against a window A(50, 10), B(80, 10), C(80, 40), D(50,40).
 (c) Consider the line from (0, 0) to (4, 6). Use DDA algorithm to rasterize this line. (6+6+6)

4. (a) Derive the expression for decision parameter used in Bresenham's Circle algorithm.
 (b) Apply the Shearing transformation to square with A(0, 0), B(1, 0), C(1, 1) and D(0, 1) as given below :
 (1) Shear parameter value of 0.5 relative to the line Yref = - 1;
 (2) Shear parameter value of 0.5 relative to the line Xref = - 1;
 (c) Find a transformation of triangle A(1, 0),B(0, 1),C(1, 1) by
 (1) Rotating 45 degree about the origin and then translating one unit in X and Y direction.
 (2) Translating one unit in X and Y direction and then rotating 45 degree about the origin. (6+6+6)

5. (a) Why homogeneous coordinates are used for handling geometric transformation ?
(b) What is Transformation ? Explain the steps involved in 3D transformation.
(c) What are the various representation schemes used in three dimensional object ? **(6+6+6)**
6. (a) Consider a quadratic B-spline curve with uniform knot spacing. Consider a segment with control points (1, 0) (1, 1) and (0, 1) in that order. What are the end-points of the curve segment ? What is the mid-point of the curve segment ?
(b) Now repeat the question for a cubic B-spline curve with control points (- 1, - 1), (- 1, 1), (1, 1), and (1, - 1). **(9+9)**
7. Write the short notes on the following : **(any three)**
- (a) Halftone pattern
 - (b) Dithering
 - (c) Subtractive colors
 - (d) Pseudo animation
 - (e) Ray Tracing
 - (f) Koch Curve **(3x6)**

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