(3 Hours)   **Total Marks: 80**

Q1. Answer the following   20M

  a) State the properties of B-Spline Curves.

  b) Differentiate between Raster scan display and Radom scan display.

  c) Write matrix to perform 3D reflection about xy,yz and xz planes

  d) Explain Homogenous co-ordinate system.

Q2 a) Explain drawback of the Sutherland Hodgman polygon clipping algorithm with   10M
      example.

  b) (i) Derive the steps required to perform 2-Dimension fixed point scaling with   10M
      the example.

      (ii) Derive the matrix in 2D for reflection of an object about a line y= mx+c

Q3 a) Explain Flood fill algorithm using 8 connected method. What is its advantage   (4M)10M
      over boundary fill algorithm?

  b) Explain Cohen Sutherland line clipping algorithm.Apply the algorithm to clip   (8M)10M
      the line segment A(120,70) and B(190,80) against the window Co-ordiante
      Xwmin = 80 , Xwmax = 180, Ywmin = 50 and Ywmax= 120.

Q4 a) Construct the Bezier curve of order 3 and with 4 polygon vertices 10M
      A(1,1),B(2,3),C(4,3) and D(6,4).

  b) Explain scan line hidden surface algorithm in detail.   10M

Q5 a) Derive the 3-D transformation for the rotation about an arbitrary axis.   10M

  b) Explain Parallel and Perspective projection? Derive the matrix for perspective   10M
      projection.

Q6 a) Write and explain the depth buffer algorithm for detecting visible surface.   10M

  b) Write short note on any two: 10M

  (i) Scan line polygon filling algorithm.

  (ii) Phong Shading algorithm.

  (iii) Viewing Transformation

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