Mid-II - Computer Graphics

Scheme

unit-3

1a. Window-to - Viewpoint.   (5m)

    i) find relative position equation.   1 m

    ii) Solve view port position. X_v, Y_v 1 m

    iii) Scaling factors.   1m

    iv) matrixes of including sequence   2 m
        of transformation

  b) Define sutherland polygon alg.   1m (5m)

    4 cases   1m
      first vertx inside second outside   1m
      Both inside   1m
      first outside & second inside   1m
      Both outside

(or)   5m

2a) Algorithm steps.

    Problem solving, find $X_{min}, X_{max}, Y_{min}, Y_{max}$ 1m
        $\Delta x, \Delta y$

    — find P_k, P_2, P_3, P_4, q_k 1m

    — find $h = m \times (0, \frac{q_u}{P_k})$ 1m

    — find $t = min (1, \frac{q_u}{P_u}$ 1m

    — Solution   1m

2b) All the function related to primitives.
   - line   5m
   - fill area
   - Text
   - Marker.

Unit-IV

3a) Types of 3-D. rep. - Boundary rep.   2m
                        - Space partitioning

   i. Polygon surface   1m
   ii. Polygon table   2m
   iii. Plane Equation   2m

3b) Calculation of centroid   1m
   Translation, Rotation, Reverse Translation   3m
        matrix
                                                                    3m.
        Calculation

                        (or)

4a)) i) Sphere with diagram, equation, parametric equation.   2m
   ii) Ellipsoids   2m
4b iii) Torus   2m
   iv) Super Quadics   2m
                                                                    1m

4b) Define Interpolation method   1m
   explain Hermite & Interpolation   4m.
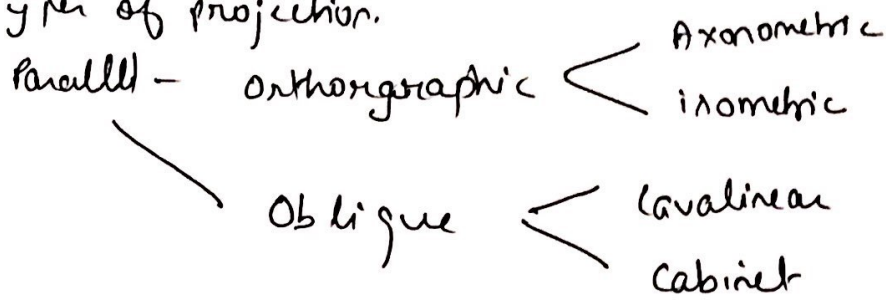   Derivation of Hermite   1m

        Graph

Unit -V

5a) Types of projection.   7m
   Parallel — orthographic < Axonometric
                             isometric

              Oblique < Cavaliear
                        cabinet

   Perspective — one point vanishing
                — 2 point vanishing

b). Object space alg define.
   Back face detection.   2m
      conditions i)left hand   2m
             ii)Right hand   2m
         diagram   - 1m
            N.V.- equation.   1 m.

                        or.

5a)   Clipping alg. -Cohen sutherland.   - 2m
      — 6 bit representation   2m
      — Parametric Equation.   1m
      — Diagram   1 m.

6b)   Depth buffer. explain.   2m
         diagram   1m
         alg   5m