Q.P.Code: 21848

[3 Hours]   [Total Marks: 80]

Please check whether you have got the right question paper.

N.B: (1) Question No.1 is compulsory
        (2) Attempt any three of remaining five questions
        (3) Assume any suitable data if necessary and justify the same

Q 1   a)   Explain CSG method for solid modeling.   5
      b)   What is aliasing and Explain any one antialiasing method.   5
      c)   Compare Raster Scan and Random Scan displays.   5
      d)   Prove that two successive rotations are additive i.e. $R1(\theta_1) * R2(\theta_2) = R(\theta_1 + \theta_2)$ 5

Q 2   a)   Explain Bresenham line drawing algorithm with proper mathematical analysis
           and identify the pixel positions along a line between A(10,10) and B(18,16) using   10
           it.
      b)   Explain the steps for 2D rotation about arbitrary point and provide a composite
           transformation for the same.   10

Q 3   a)   Explain Liang Barsky line clipping algorithm. Apply the algorithm to clip the
           line with coordinates (30,60) and (60,20) against window(xmin,ymin)=(10,10)   10
           and (xmax,ymax)=(50,50).
      b)   Explain Sutherland Hodgman polygon clipping algorithm with suitable
           example and comment on its shortcoming.   10

Q 4   a)   What is window and viewport? Derive the window to viewport transformation
           and also identify the geometric transformation involved.   10
      b)   Explain what is meant by Bezier curve? State the various properties of Bezier
           curve.   10

Q 5   a)   What is meant by parallel and perspective projection? Derive matrix for
           oblique projection.   10
      b)   Explain Z Buffer algorithm for hidden surface removal.   10

Q 6   Write short notes on(any two)
      a)   Koch curve
      b)   Sweep representation and Octree representation   20
      c)   Gouraud and phong shading
      d)   Halftoning and Dithering.

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