2022

(November)

COMPUTER SCIENCE

(Honours)

(CS–502 AT)

(Computer Graphics)

Marks : 38

Time : 2 hours

The figures in the margin indicate full marks for the questions

Answer **one** question from each Unit

UNIT—I

1. Explain the working principles of virtual-reality systems. 8

2. Write a short note on four output devices. 8

UNIT—II

3. Give two uses of area-filling algorithms. Explain the scan-line fill algorithm. 2+6=8

4. Use mid-point circle algorithm to find co-ordinate points on the circle with radius 10 and center at (10,10) for the first octant. 8

UNIT—III

5. Find the 2-D transformation matrix for rotation of a point $p(x,y)$ about the point (a,b) by an angle ϕ in the anti-clockwise direction. 8

6. Define scaling. Consider a triangle with the vertices at A (5, 5), B (20, 5) and C (15, 30). The triangle undergoes the following sequences of 2-D transformation :

   (a) Rotation of 90° anti-clockwise

   (b) Translation of (10, 20)

   (c) Scaling of (2, 3)

   (d) Rotation of 90° clockwise

   Find vertex coordinates of the final position of the triangle. 2+6=8

UNIT—IV

7. Explain the Cohen-Sutherland line clipping algorithm. 5

8. What is clipping? Bring the difference between point clipping and line clipping. 2+3=5

UNIT—V

9. Use Hermite spline algorithm to calculate 2-D coordinate points to draw a curve passing through (5, 5), (10, 10) and (20, 5). 9

10. Write short notes on the following: 4½+4½=9

    (a) Depth cueing

    (b) Perspective projection

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