22318

24225

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following : **10**

(a) Give two applications of Computer Graphics.

(b) Explain basic graphic pipeline.

(c) Explain Raster Scan.

(d) State any two polygon filling algorithms.

(e) List various Character Generation methods.

(f) Define :

(i) Scaling

(ii) Reflection

(g) Give matrix representation for 2D scaling.

2. Attempt any THREE of the following : **12**

(a) Describe any two display devices.

(b) Write procedure to fill polygon using Flood Fill.

(c) List out basic transformation techniques. Explain scaling transformation with respect to 2D.

(d) Explain different types of Text Clipping in brief.

3. Attempt any THREE of the following : **12**

(a) Explain Sutherland – Hodgeman Polygon clipping algorithm.

(b) Explain types of parallel projection with example.

(c) Write procedure for midpoint subdivision algorithm.

(d) Explain Koch Curve with diagram.

4. Attempt any THREE of the following : **12**

(a) Explain Virtual Reality.

(b) Consider line from (4, 4) to (12, 9). Use Bresenham's algorithm to rasterize this line.

(c) Explain :

(i) Translation

(ii) Rotation

(d) Consider the square A (1, 0), B (0, 0), C (0, 1), D (1, 1). Rotate the square by 45° anticlockwise direction and get final coordinates.

(e) Explain curve generation algorithm using Interpolation Technique.

5. Attempt any TWO of the following : **12**

(a) Use DDA line drawing algorithm to rasterize line from (0, 0) to (5, 6).

(b) Find the transformation of triangle A (1, 0), B (0, 1), C (1, 1) by :

(i) Rotating 30° about the origin

(ii) Translating one unit x and y direction and then rotate 45° about origin.

(c) Write a C program for Hilbert's Curve.

6. Attempt any TWO of the following : **12**

(a) Write a procedure to fill polygon using seed fill algorithm.

(b) Rotate a triangle defined by A (0, 0), B (8, 0) and C (4, 4) by 45° about origin in anticlockwise direction.

(c) Explain Liang Barsky line clipping algorithm.
