



- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Due credit will be given to neatness and adequate dimensions.
 9. Assume suitable data whenever necessary.
 10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain different display devices in detail. **9**
b) Explain various methods of antialiasing in detail. **5**

OR

2. a) Generate a line $y = 2x + 10$ using Bresenham's line generation algorithm. **6**
b) Write the significance of error term in Bresenham's algorithm. **4**
c) Describe the frame buffer architecture. **4**
3. a) Explain different Scan conversion technique. **4**
b) Explain fence fill algorithm. **4**
c) Fill a polygon defined by the vertices A (3, 2) B (7, 2) C (9, 5) D (9, 7) E (5, 9) F (1, 7) G (1, 5) by using simple ordered edge list algorithm. **5**

OR

4. a) Write short note on NDC. **3**
b) Explain the algorithm of Edge list and Edge fill algorithm Also fill a polygon A (4, 2) B (9, 2) C (9, 8) D (1,8) E (1,5) F (4, 5) using the algorithms. **10**
5. a) Explain the concept of segment and operations performed on segments. **6**
b) A window is defined by vertices A (0, 0) B (30,0) C (30, 30) and D (0, 30). Clip a line from P₁ (-10, 10) to P₂ (40, 20) using midpoint subdivision algorithm. **4**
c) Compare & contrast between window and viewport. **4**

OR

6. a) Clip a line from P₁ (1, 8) to P₂ (8, 2) about a window defined by coordinates A (3, 3) B (8,5), C (6, 8) and D (1, 6) using Cyrus Beck algorithms **8**
b) What is viewing transformation? obtain the matrix for viewing transformation. **6**

7. a) Explain parallel projection in detail with transformation matrix. 6
b) Perform a 45° rotation of triangle A (0, 0) B (1, 1) and C (5, 2) 7
a) About the origin and
b) About the point P (-1, -1).

OR

8. a) Derive a rotation transformation about an arbitrary axis in 3-D. 6
b) Explain different types of projections. Obtain perspective projection matrix. 7
9. a) List the properties of B-spline curves. 6
b) Explain painter's algorithm in detail to remove hidden surfaces. 7

OR

10. a) Explain Z-buffer algorithm in detail. 5
b) Explain different surface rendering methods in brief. 8
11. a) Explain different color models in detail. 9
b) Write a note on design of Animation Sequences. 4

OR

12. Write short notes on **any three**. 13
i) Raster Animation.
ii) Key frame system.
iii) Chromaticity diagram.
iv) Properties of light.
