

QP Code : 25270

(3 Hours)

Total Marks 80

- N.B.** (1) Question 1 is compulsory
 (2) Attempt any four questions from question 2 to 7
 (3) Use of Scientific calculator is not allowed.
 (4) Use of simple calculator is allowed.
 (5) Figures to right indicate full marks.
- Q.1(a) Explain DDA Line Drawing Algorithm and Rasterize the line whose end points are A (1, 6) and B (9,12) using DDA line drawing algorithm. (10)
- (b) Explain in brief the process of Bit Plane Slicing. (5)
- (c) Explain Z Buffer algorithm for Hidden Surface Removal. (5)
- Q.2. (a) Find the transformation matrix that transform the given square ABCD to half its size with center still remaining at the same position. The coordinates of the square are A(10,10), B(30,10), C(30,30), D(10,30) and center at (20,20), Also find the resultant coordinates of the square. (8)
- (b) Explain with example Cohen Sutherland technique for line clipping. (7)
- Q.3. (a) Find the clipping coordinates for line P_1P_2 where $P_1 = (-1, 7)$ and $P_2 = (11, 1)$ against window with $(X_{wmin}, Y_{wmin}) = (1, 2)$ and $(X_{wmax}, Y_{wmax}) = (9, 8)$ using Liang Barsky algorithm. (8)
- (b) Discuss any two spatial domain filter approaches for image enhancement. (7)
- Q.4. (a) Derive a single 4 X 4 matrix for the following transformation
 I. Rotate by 180 around y axis
 II. Translate by 3 units in x axis and 4 units in z axis
 III. Scale by 4 units in y axis (8)
- (b) Compare Boundary fill and Flood fill algorithm. Write a procedure to fill region bounded by different color used 4 connected approach. (7)
- Q.5 (a) Equalized the given Histogram. (8)
- | Gray Level | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------------|-----|------|-----|-----|-----|-----|-----|----|
| Number of Pixel | 790 | 1023 | 850 | 656 | 329 | 245 | 122 | 81 |
- (b) Explain Half toning and Dithering techniques. (7)
- Q 6 (a) Construct the Bezier curve of order 3 with 4 polygon vertices
 A(1,1) B(2,3) C(4,3) D(3,1) (8)
- (b) Explain with algorithm Bresenham's circle drawing algorithm. (7)
- Q.7 Write a short note on (any Three) (15)
- (a) Difference between Random Scan and Raster Scan
 (b) Inside Outside test & Winding number method
 (c) Image Digitizer
 (d) 2D rotation about arbitrary point

Course : M.C.A. (CBSGS) SEM - III (Prog T8623)

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Correction:

Q.4. (a) Derive a single 4×4 matrix for the following transformation

II. Translate by 3 units in x axis and 4 units in z axis

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