

Q.P. Code: 16435

Duration: 3 Hours

Total Marks assigned: 80

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.

1. (a) Compare Raster and Random Scan Techniques [05]
- (b) What are the disadvantages of DDA algorithm? [05]
- (c) Derive the matrix for 2D rotation about an arbitrary point. [05]
- (d) Write a boundary fill procedure to fill 8-connected region. [05]

2. (a) Explain Bresenham's Circle drawing algorithm in detail. [10]
- (b) Derive the transformation matrix to magnify the triangle with vertices A(0,0), B(1,2), C(3,2) to twice its size so that the point C(3,2) remain fixed. [10]

3. (a) Explain Cohen-Sutherland clipping algorithm for line with suitable example. [10]
- (b) Explain Weiler-Atherton algorithm for polygon clipping. What are the advantages over the other polygon clipping algorithm. Explain its working with an example. [10]

4. (a) Define window, viewport and derive window to viewport transformation. [10]
- (b) Differentiate between parallel and perspective projection. Explain with the help of examples. [10]

5. (a) Explain Back Surface Detection method in detail with an example. [10]
- (b) Discuss Halftoning and Dithering techniques. [10]

6. Write a short note on any **two** of the following [20]
 - (a) B-Spline curves.
 - (b) 3-D rotation.
 - (c) Fractals.

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