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Roll No. : .....

**C033611(033)**

**B. Tech. (Sixth Semester) Examination**

**April-May 2022**

**(AICTE Scheme)**

**(IT Engg. Branch)**

**COMPUTER GRAPHICS and DATA  
VISUALIZATION**

**(BT3033)**

*Time Allowed : Three hours*

*Maximum Marks : 100*

*Minimum Pass Marks : 35*

*Note : Attempt all questions. Part (a) from each question is compulsory and answers any two of the remaining (b), (c) and (d).*

**Unit-I**

1. (a) Define aspect ratio and screen resolution. 4
- (b) Explain with suitable examples the term flood fill and boundary fill algorithm as used in graphics. 8

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- (c) Using midpoint circle algorithm plot a circle whose centre is (5, 5) and radius is 12 units. 8
- (d) Consider a line from (0, 0) to (4, 6), use the simple DDA algorithm to rasterize this line. 8

**Unit-II**

2. (a) Discuss two-dimensional transformation in detail. 4
- (b) Define the following terms : 8
- (i) World Coordinate system
  - (ii) Viewing Coordinate system
  - (iii) Normalized device coordinate system
  - (iv) Device Coordinate system
- (c) Rotate a triangle A (0, 0), B (2, 2), C (4, 2) about the origin and about P (-2, -2) by an angle of 45°. 8
- (d) By using Cohen-Sutherland Algorithm, clip the line segments in fig. (a). 8

[ 3 ]

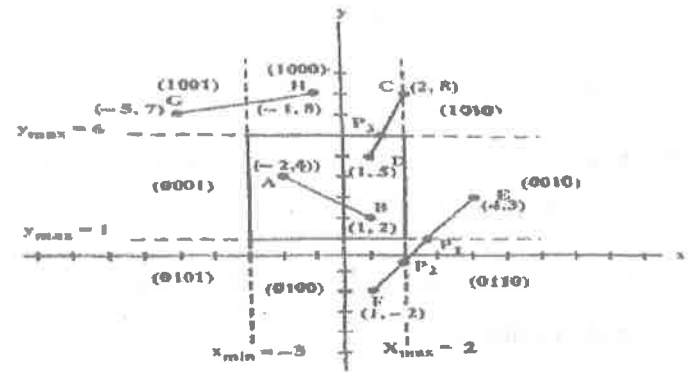


Fig. (a)

**Unit-III**

3. (a) What are the difference between diffusely reflecting surface and a specular reflector. 4
- (b) Write short note on Phong shading and Gouraud shading method. 8
- (c) What do you mean by visible surface detection? Give the classification of visible surface detection algorithms. 8
- (d) A Bezier curve passes through the point (1, 1) and (3, 1) and control by the points (2, 3) and (4, 3). Find the equation of Bezier curve and find mid point in it. Also draw its rough sketch. 8

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**Unit-IV**

4. (a) Explain color theory in detail. 4
- (b) Define color maps. Explain categorical, ordered and Bivariate color maps. 8
- (c) What is Data Abstraction? Write down the four level of validation. 8
- (d) Describe vector visualization. Illustrate vector Glyphs and vector color coding. 8

**Unit-V**

5. (a) What is data visualization? 4
- (b) Describe the various data visualization tools. 8
- (c) Explain different data visualization techniques in details. 8
- (d) Write short notes on following : 8
- (i) Data visualization using R
- (ii) Tableau