

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1073

Roll No.

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B.Tech.

FIFTH SEMESTER EXAMINATION, 2006-07

COMPUTER GRAPHICS

Time : 3 Hours

Total Marks : 100

- Note :**
- (i) Attempt **ALL** questions.
 - (ii) All questions carry equal marks.
 - (iii) In case of numerical problems assume data wherever not provided.
 - (iv) Be precise in your answer.

1. Attempt **any two** parts of the following : (10x2=20)

- (a) Discuss the criteria that should be satisfied by a good line drawing algorithm to have computer generated line.
- (b) Explain symmetrical DDA with suitable example.
- (c) Describe the construction and functioning of Beam Penetration CRT. Discuss its merits and demerits.

2. Attempt **any two** parts of the following : (10x2=20)

- (a) What is Scan Conversion ? Write (YX) algorithm for scan converting polygons and explain how to process "Singularities" in it.

- (b) Discuss with suitable examples the various methods for sampling pixels to calculate fractional coverage at the polygon's edge and explain the fraction algorithm for scan converting polygons.
- (c) Why display files are segmented ? Explain the segment creating, deleting and appending schemes to have a convenient manipulation of display files.

3. Attempt *any two* parts of the following : (10x2=20)

- (a) What are homogeneous co-ordinates? If a line whose end points are (x_1, y_1) and (x_2, y_2) exists in 2 D space, then write the concatenation of matrices that will rotate the mirror image of the line about mid point of the line by an angle 60° counterclockwise. Each of the transformations has to be in homogenous coordinate system.
- (b) What do you understand by the term "Clipping and Windowing" ? Explain the Cohen-Sutherland algorithm for clipping a line and discuss how the mid-point subdivision algorithm makes an improvement over it.
- (c) Do you think that the line clipping algorithm will do for polygon clipping too ? Justify your answer and explain Sutherland-Hodgman algorithm for polygon clipping.

4. Attempt *any two* parts of the following : (10x2=20)

- (a) Differentiate between :
 - (i) Pointing and Positing
 - (ii) Inking and Painting
 - (iii) Dragging and fixing

- (b) Describe the construction and functioning of Light Pen.
- (c) Explain the term "Polling" related to input handling and discuss the handling of event queue with a special reference to repetitive events.

5. Attempt *any two* parts of the following : (10x2=20)

- (a) What do you understand by the term "Back-Face Removal" ? Explain a Back-Face removal algorithm, you find convenient to implement. Justify your answer.
- (b) Explain Painter's algorithm.
- (c) Explain the difference between :
 - (i) B-spline and Bezier curves
 - (ii) Bezier and Hermite curves.