

Computer Graphics

2010 June

Science Information Technology

FYBSc-IT

Semester 2

University Exam

University of Mumbai

Con. 82-10.

NR-855

(3 Hours)

[Total Marks : 100

- N.B. (1) Question No. 1 is compulsory.
 (2) Attempt any four questions from remaining.

- | | | |
|----|--|----|
| 1. | (a) Write short notes on Input devices. | 5 |
| | (b) Briefly explain 2D coordinate system. | 5 |
| | (c) Define Clipping. What is polygon clipping ? | 5 |
| | (d) Differentiate between Random scan and Raster scan display devices. | 5 |
| 2. | (a) Write the algorithm for line drawing using DDA. | 8 |
| | (b) Using the above algorithm find all the coordinates while plotting line segment (4, 8) to (9, 13). | 8 |
| | (c) Write about combined matrix transformation. | 4 |
| 3. | (a) Derive Bresenham's line algorithm. | 8 |
| | (b) Describe and derive Bresenham's circle algorithm. | 8 |
| | (c) Plot the points using Bresenham's line algorithm for the end points A(-4, -2) to B(2, 4). | 4 |
| 4. | (a) Explain polygon clipping algorithm. | 8 |
| | (b) Derive 3d-transformation of translation and scaling. | 8 |
| | (c) Develop the transformation for finding the reflection of a point w.r.t. the line $ax + by + c = 0$. | 4 |
| 5. | (a) Explain the operations on segments. | 8 |
| | (b) Describe Bezier curves and surfaces. | 8 |
| | (c) What are important properties required for designing curves and surfaces ? | 4 |
| 6. | (a) Describe Seed Fill — Polygon Filling algorithm. | 8 |
| | (b) Describe an algorithm for segment creation. | 8 |
| | (c) Derive with a neat sketch various steps needed for reflection about the line $Px + Qy + r = 0$. | 4 |
| 7. | Write short notes on the following :— | 20 |
| | (a) Joy-stick | |
| | (b) Event handling | |
| | (c) Input device handling | |
| | (d) Sutherland-Hodgeman Polygon Clipping. | |