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NEW SCHEME

MCA31

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Third Semester M.C.A Degree Examination, January/February 2005
Master of Computer Applications
Computer Graphics

Time: 3 hrs.]   [Max.Marks : 100

Note: *Answer any FIVE full questions.*

1. (a) Explain the different types of input devices used in graphics workstations.
   (10 Marks)

   (b) With figure, explain the principle of interlace scanning.   **(10 Marks)**

2. (a) Explain Bresenham's line-drawing algorithm. Illustrate the algorithm with end points (20,10) and (30,18) and slope of 0.8.   **(10 Marks)**

   (b) Explain midpoint circle algorithm. Illustrate the algorithm for $r = 10$. Plot the generated pixel positions.   **(10 Marks)**

3. (a) Explain Boundary-Fill algorithm with example.   **(7 Marks)**

   (b) Develop and implement a flood fill algorithm to fill the interior of any specified area.   **(6 Marks)**

   (c) Write a procedure to implement a soft fill algorithm.   **(7 Marks)**

4. (a) What is homogeneous coordinate system? Discuss the representation of all 2D transformations using homogeneous coordinate system.   **(10 Marks)**

   (b) With figure explain reflections of the object about different axis.   **(10 Marks)**

5. (a) Explain window-to-Viewport co-ordinate transformation.   **(10 Marks)**

   (b) What are different clipping operations? Implement the Cohen-Sutherland line clipping algorithm.   **(10 Marks)**

6. (a) Discuss the different techniques used to achieve realism of 3-D objects.
   (10 Marks)

   (b) Explain 3-D transformation functions.   **(10 Marks)**

7. (a) Illustrate the types of parallel projections with figure.   **(10 Marks)**

   (b) Write a program to display the visible surfaces of a convex polyhedron using the scanline method.   **(10 Marks)**

8.   Write short notes on any FOUR :   **(5×4=20 Marks)**
   i)   OCTREES
   ii)   Virtual reality environments
   iii) Software standards
   iv)   Voice systems
   v)   Gray scale.

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