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Total No. of Pages : 02

Total No. of Questions : 09

M.Sc. (IT) (Sem.-3)
COMPUTER GRAPHICS
Subject Code : PGCA-1919
M. Code : 78395

Date of Examination : 29-05-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

- a. Ambient Reflection
- b. Depth based sorting of surfaces
- c. Types of Parallel Transformations
- d. Point Clipping
- e. Viewing Coordinates vs. World Coordinates.
- f. Shear Transformation
- g. Video Controller vs. Graphic Processor
- h. Types of Retracing in CRT
- i. List of various input devices for graphical input
- j. Scan Conversion.

SECTION-B

2. Illustrate the working of different types of Raster Scan Display Systems with suitable diagram. Explain the need of dedicated processor for graphics related operation.
3. What are the various steps for drawing a circle using Bresenham's Circle Drawing Algorithm? How it is different from Mid-Point Circle Drawing algorithm? Calculate coordinate points for a circle having center at (40, 30) and radius 15, using Bresenham's algorithm.
4. What can be the application of composite transformations in computer graphics? Write down step by step process to rotate a triangle having coordinates (4, 2), (8, 2) and (5, 7) around a fixed point (1,2) on an angle of 60 degree in anti-clock wise direction.
5. What are the different I/O devices for computer graphics? Explain with suitable diagrams.

SECTION-C

6. How do we clip polygons? Explain different steps and illustrate Cohn Sutherland algorithm of clipping. Apply the Cohen-Sutherland line-clipping algorithm to a viewport having its dimensions from (2,3) to (9,8) with lines A1(-2,4) to A2(10,8), B1(3,7) to B2(5,2) and C1(-2,10) to C2(6,9) with labeled diagrams.
7. How an object will transform from real life 3D space to 2D screen? Discuss the process. What are the various types of Perspective transformation? Explain.
8. **Write short note on :**
 - a. Shading Models for Polygons
 - b. Types of Reflections.
9. Suppose you have 4 layers in an object with 40% transparency. Which algorithm(s) can you use to detect multiple surfaces in this scenario? Elaborate various attributes of layer that are needed to be processed in this case. Compare the working of Area Sub-division and Scan Line Method for surface detection.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.