1483/IV

B.C.A. (Part-II) Examination, 2022

(Fourth Semester)

Paper : III

(BCA 403 : Computer Graphics)

Time : Three Hours] [Maximum Marks : 70

Note: (i) Answer ***five*** questions in all.

(ii) Question No. **1** is **compulsory**.

(iii) Answer remaining **four** question selecting two questions form each Sections **A** and **B**.

(iv) All questions carry equal marks.

1. Answer all parts of the following.

(a) Explain concave and convex polygons with proper example.

(b) Generate shearing matrices along with x-axis, y-axis & z-axis in 3-D

(c) Write advantage and disadvantage of the DDA algorithm.

(d) Explain Right-Handed System.

SECTION-A

2. Define Computer Graphics. Explain types of Computer Graphics. Write the application of Computer Graphics.

3. Write all the steps of mid-point circle generation algorithm. Given centre point co-ordinate at origin (0,0) and radius as 10. Generate all the points to form a circle using mid-point circle drawing algorithm.

4. Write Liang Barsky line clipping algorithm. Apply Liang Barsky line clipping algorithm for calculating the saved portion of line from (2,7) to (8,12) in a window (x w min = y w min = 5 and x w max = y w max = 10).

5. Explain Translation, Scaling and Rotation with example. Compute a transformation of triangle A(1,0), B(0,1) and C(1,1) by rotating 450 about the origin and then translating one unit in X and Y direction.

SECTION-B

6. (a) Describe Cathode Ray Tube. Also discuss about its component.

(b) Apply Cohen-Sutherland algorithm to clip line P1 (40,15), P2 (75,45) against a window A (50,10), B(80,10), C(80,40), D(50,40).

7. (a) Given centre point co-ordinate at origin (0,0) and radius as 10. Generate all the points to form a circle using Bresenham's circle drawing algorithm.

(b) Differentiate between DDA line drawing algorithm and Bresenham's line drawing algorithm. Take two points $P_1(3,4)$ and $P_2(7,7)$. Apply Bresenham's line drawing algorithm.

8. (a) Define projection with example. Also explain the types of projection in detail.

(b) Write Sutherland Hodgman polygon clipping algorithm and take an example to explain it.

9. Write notes on any two of the following:

(a) Polygon Filling

(b) Simple Raster Graphic Package

(c) 3D display devices

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