311502

December 2023

BCA – V SEMESTER

Computer Graphics (BCA–17–302)

Time : 3 Hours]   [Maximum Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*

2. *Answer any **four** questions from Part-B in detail.*

3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART–A

1. (a) Differentiate between LCD and Plasma displays.   (1.5)

    (b) Define Aspect Ratio.   (1.5)

    (c) What do you mean by 2D line clipping?   (1.5)

    (d) Explain Refresh Rate.   (1.5)

    (e) Define World coordinate system.   (1.5)

    (f) What is coherence? How it is useful?   (1.5)

    (g) What is a flood fill algorithm?   (1.5)

    (h) Give matrix for shearing transformation.   (1.5)

(i) What do you mean by parallel projection? (1.5)

(j) Why is Bresenhem's algorithm better than DDA?
(1.5)

PART–B

2. (a) Differentiate between Raster Scan and Random Scan display. Explain advantages and disadvantages of each of them. (10)

(b) A system with 24 bits per pixel and resolution of 102 by 1024. Calculate the size of the frame buffer (in Megabytes). (2)

(c) Discuss the working CRT. (3)

3. (a) What do you mean by transformation? Describe the transformations used in magnification and reduction with respect to the origin. Find the new coordinates of the triangle A(0, 0), B(1, 1), C(5, 2) after it has been:

Magnified to twice its size and

Reduced to half its size. (5)

(b) Discuss Sutherland Hodgeman polygon clipping with example. (5)

(c) Discuss Cyrus-beck line clipping algorithm. (5)

4. (a) What are Bezier curves? State the mathematical expression of the Bezier curve. (10)

(b) What are Polygon-rendering methods? Which method is most popular? (5)

5. (a) Define Projection. Discuss various types of perspective projection in detail. (5)

(b) What is 3D transformation? Illustrate its significance. (10)

6. (a) Discuss midpoint circle algorithm with examples. (8)

(b) Explain B-Spline curve. (7)

7. Write short notes on any **three** :

(a) Data Gloves.

(b) Flatbed Scanner.

(c) Digitizer.

(d) Line Clipping. (5×3)

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