

Professional Course (Odd) Examination, 2024

(CBCS)

(5th Semester)

BACHELOR OF COMPUTER APPLICATIONS

(Computer Graphics)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(PART : A—OBJECTIVE)

(Marks : 25)

SECTION—I

(Marks : 15)

I. Tick (✓) the correct answer in the brackets provided : 1×10=10

1. Which of the following is not an input device?

(a) Touchscreen ()

(b) Plotter ()

(c) Mouse ()

(d) Keyboard ()

2. Refresh CRT consists of
- (a) glass wrapper ()
 - (b) phosphor ()
 - (c) electron gun ()
 - (d) All of the above ()
3. Which of the following algorithms is used to draw line between two end-points?
- (a) DDA algorithm ()
 - (b) Cohen-Sutherland algorithm ()
 - (c) Midpoint algorithm ()
 - (d) Nicholl-Lee-Nicholl algorithm ()
4. DDA stands for
- (a) Direct Differential Analyzer ()
 - (b) Digital Differential Analyzer ()
 - (c) Data Difference Analyzer ()
 - (d) Direct Difference Analyzer ()
5. Clipping in computer graphics is primarily used for
- (a) zooming ()
 - (b) copying ()
 - (c) removing objects and lines ()
 - (d) saving window image ()

6. For 2D transformation, the value of third coordinate is
- (a) 1 ()
 - (b) 0 ()
 - (c) -1 ()
 - (d) infinity ()
7. A positive value of the rotation angle
- (a) rotates an object in the upward direction ()
 - (b) rotates an object in the downward direction ()
 - (c) rotates an object in the clockwise direction ()
 - (d) rotates an object in the counter-clockwise direction ()
8. Which of the following transformations is used for altering the object's size?
- (a) Translation ()
 - (b) Scaling ()
 - (c) Rotation ()
 - (d) None of the above ()
9. TIFF (tagged image file format) is used for
- (a) bitmap ()
 - (b) vector graphics ()
 - (c) temporary files ()
 - (d) None of the above ()

10. _____ is used to reduce the size of multimedia files.

- (a) Data handling ()
- (b) Data coupling ()
- (c) Data compression ()
- (d) Data dependency ()

II. State whether the following are *True (T)* or *False (F)* by putting a Tick (✓) mark in the brackets provided : 1×5=5

1. Beam penetration method of CRT is used for z-production of realistic image.

(T / F)

2. Flood fill algorithm is used to fill the interior of polygon.

(T / F)

3. Line clipping can be used for polygon clipping.

(T / F)

4. The process of shearing is applied on a 3D object to move along any axis from its original position.

(T / F)

5. Multimedia database is designed to store and manage multimedia content.

(T / F)

SECTION—II

(Marks : 10)

III. Answer the following questions (short answer-type) :

2×5=10

1. What is computer graphics?
2. What is flood-fill algorithm?
3. A point (4, 3) is rotated counter-clockwise by an angle of 45 degree. Find the rotation matrix and the resultant point.
4. Define shear transformation for three dimensions.
5. What are the elements of multimedia system?

(PART : B—DESCRIPTIVE)

(Marks : 50)

IV. Answer the following questions :

10×5=50

1. (a) Demonstrate the function of cathode-ray tube with a suitable diagram. Differentiate between raster scan and random scan systems.

OR

- (b) Write a brief description on computer graphics. Explain the different types of computer graphics.

2. (a) Explain the following algorithms :
 - (i) Bresenham's line drawing algorithm
 - (ii) Midpoint circle drawing algorithm

OR

- (b) Explain the following algorithms :
 - (i) Scan-line polygon fill algorithm
 - (ii) Boundary-fill algorithm

3. (a) Describe the working details of viewing transformation in 2D viewing and clipping.

OR

- (b) Demonstrate Cohen-Sutherland line clipping algorithm. Explain using suitable example.
4. (a) Describe the three-dimensional transformation matrix for scaling, translation and rotation.

OR

- (b) Describe the different types of projections for three-dimensional viewing in detail.
5. (a) Describe the evolving technologies of multimedia systems. Explain the needs for data compression.

OR

- (b) Explain the various types of file format standard in computer system.

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