Roll No. ……..

BCA–C501

Bachelor of Computer Applications
(Fifth Semester)
EXAMINATION, 2023-24

COMPUTER GRAPHICS AND ANIMATION

Time : $2\frac{1}{2}$ Hours

Maximum Marks : 60

Note : All questions have to be attempted.

Section—A

1. Multiple choice questions : 1 each

   (a) If lighting is disabled which function specifies the color of the vertex : (CO1, BL-2)

   (i) glclearcolor()

   (ii) glDisplayfunc()

   (iii) glcolor()

   (iv) None of the above

   (b) In which system, the shadow mask methods are commonly used ? (CO1, BL-2)

   (i) Raster-scan system

   (ii) Random-scan system

   (iii) Only (i)

   (iv) Both (i) and (ii)

(c) Which algorithm is a faster method for calculating pixel positions ? (CO2, BL-2)

(i) DDA line algorithm

(ii) Mid-point algorithm

(iii) Parallel line algorithm

(iv) Bresenham's line algorithm

(d) The clipping algorithm is used for polygon clipping : (CO3, BL-1)

(i) Liang-Barsky

(ii) Sutherland-Hodgeman

(iii) Both (i) and (ii)

(iv) Nicholl-Lee-Nicholl

(e) 3D Animation is done using ..... . (CO5, BL-2)

(i) Flash

(ii) Page Maker

(iii) Maya

(iv) None of the above

(f) In the scaling process, you ..... the dimension of the object. (CO4, BL-3)

(i) Expand

(ii) Compress

(iii) Expand or Compress

(iv) All of the above

(g) Which of the following properties is followed by the Bresenham's algorithm ? (CO2, BL2)

(i) It is an incremental method.

(ii) It chooses points randomly.

(iii) It uses floating point operations.

(iv) All of the above

(h) Which of these algorithm is used to color a pixel if it is not colored and leaves if it is already filled ? (CO3, BL-4)

(i) Boundaryfill algorithm

(ii) Scan line polygon fill algorithm

(iii) Floodfill algorithm

(iv) All of the above

(i) The transformation that produces a mirror image of an object relative to an axis is called :

(CO4, BL-4)

(i) Rotation

(ii) Translation

(iii) Reflection

(iv) All of the above

(j) Which type of animation uses stop motion techniques ? (CO5, BL-2)

(i) Production

(ii) HTML

(iii) Frame-based animation

(iv) None of the above

(k) Aspect Ratio can be defined as : (CO1, BL-2)

(i) The ratio of the vertical points to horizontal points

(ii) Number of Pixels

(iii) Both (i) and (ii)

(iv) None of the above

(l) The rotation axis that is perpendicular to the *xy*-plane and passes through the pivot point is known as : (CO4, BL-2)

(i) Rotation

(ii) Translation

(iii) Scaling

(iv) Shearing

2. Attempt any *four* of the following (short answer type questions) : 3 each

(a) Define vector representation. (CO2, BL-1)

(b) Explain the concept of 2D transformation about an arbitrarily point. (CO4, BL-2)

(c) Explain the principles of Animation. (CO5, BL-2)

(d) Write a program to draw a rectangle using open GL. (CO1, BL-3)

(e) Define point clipping. (CO3, BL-1)

Section—B

3. Attempt any *two* of the following questions : 6 each

(a) Explain the working of LCD in detail.

(CO1, BL-2)

(b) Write a program to draw a line using DDA algorithm. (CO2, BL-3)

(c) What is Animation ? Explain scripting and procedural animation system in detail.

(CO5, BL-1)

4. Attempt any *two* of the following questions : 6 each

(a) Draw a circle using Mid-point circle drawing algorithm with a radius of 10 and centre of circle at (0, 0). (CO2, BL-6)

(b) Explain the Floodfill Algorithm with suitable example. (CO3, BL-2)

(c) Differentiate between Random Scan display and Raster Scan display. (CO1, BL-4)

5. Attempt any *two* of the following questions : 6 each

(a) Use Cohen-Sutherland algorithm to clip two lines $P_1(40, 15) – P_2(75, 45)$ and $P_3(70, 20) – P_4(100, 10)$ against a window A (50, 10), B (80, 10) , C (80, 40) and D (50, 40).

(CO3, BL-5)

(b) Rotate a triangle placed at A (0, 0), B (1, 1) and C (5, 2) by an angle 45° with respect to origin.

(CO4, BL-5)

(c) Explain the role of Computer Graphics in today's life. (CO1, BL-2)