Roll No. ……..

# BCA–C-501

## B. C. A. (Fifth Semester)

## EXAMINATION, 2022-23

COMPUTER GRAPHICS AND ANIMATION

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

*Maximum Marks : 60*

**Note :** Attempt all questions.

**Section—A**

**(Multiple Choice Questions)**

1. Choose the correct option : 1 each

   (i) The maximum number of points that can be displayed without overlap on a CRT : (CO1, BL-1)

   (a) Aspect Ratio

   (b) Resolution

   (c) Brightness

   (d) Pixel

(ii) An accurate and efficient raster line-generating algorithm is : (CO1, BL-2)

(a) DDA algorithm

(b) Mid-point algorithm

(c) Parallel line algorithm

(d) Bresenham's line algorithm

(iii) In 2D-translation, a point $(x, y)$ can move to the new position $(x', y')$ by using the equation :

(CO2, BL-2)

(a) $x' = x + dx$ and $y' = y + dx$

(b) $x' = x + dx$ and $y' = y + dy$

(c) $X' = x + dy$ and $Y' = y + dx$

(d) $X' = x - dx$ and $y' = y - dy$

(iv) To generate a rotation, we must specify :

(CO2, BL-1)

(a) Rotation angle $\Theta$

(b) Distances $dx$ and $dy$

(c) Rotation distance

(d) All of the mentioned

(v) Identify the features of DVST from the following : (CO1, BL-1)

(a) Monochromatic, Flicker free, Low resolution

(b) Monochromatic, Flicker free

(c) Color screens, Refresh monitors, High resolution

(d) Expensive, Low resolution

(vi) Which type of animations uses stop motion techniques ? (CO4, BL-1)

(a) Production

(b) HTML

(c) Frame-based animation

(d) All of the mentioned

(vii) In Bresenham's line algorithm, if the distances $d_1 < d_2$, then decision parameter P$k$ is _____. (CO1, BL-1)

(a) Positive

(b) Equal

(c) Negative

(d) None of these

(viii) _____ is the number of points per centimeter that can be plotted horizontally and vertically.

(CO1, BL-1)

(a) Aspect Ratio

(b) Pixel Depth

(c) Resolution

(d) Dot Pitch

(ix) The rectangle portion of the interface window that defines where the image will actually appear is called : (CO3, BL-1)

(a) Transformation viewing

(b) View port

(c) Clipping window

(d) Screen coordinate system

(x) The region code of a point within the window is _____ . (CO3, BL-2)

(a) 1111

(b) 0000

(c) 1000

(d) 0001

(xi) A method used to test lines for total clipping is equivalent to the _____ . (CO3, BL-4)

(a) Logical XOR

(b) Logical OR

(c) Logical AND

(d) Both (a) and (b)

(xii) Which function call sets up the size of the output area ? (CO5, BL-1)

(a) glViewport()

(b) gluPerspective()

(c) None of These

(d) glDisplayfunc()

**(Short Answer Type Questions)**

2. Attempt any *four* questions : 3 each

(a) Demonstrate plasma display in detail. (CO1, BL-1)

(b) Explain down the 2 disadvantages of DDA Line Drawing Algorithm over the Bresenham's. (CO1, BL-1)

(c) Differentiate Inkjet printer and Laser Printer. (CO1, BL-4)

(d) Define Scripting (CO4, BL-1)

(e) Design square using OpenGL. (CO5, BL-6)

## Section—B

## (Long Answer Type Questions)

3. Attempt any *two* questions : 6 each

   (a) Input the coordinate of starting and ending point of a line as (200, 250) and (300, 450) and create a line using Bresenham Line Drawing Algorithm in between them using C Programming.

   (CO1, BL-6)

   (b) Design and implement a color cube and spin it using OpenGL transformation matrices.

   (CO5, BL-6)

   (c) Differentiate 2D Translation and 2D scaling by using their transformation matrix. (CO2, BL-4)

4. Attempt any *two* questions : 6 each

   (a) Design a program to fill a polygon using Flood filling algorithm. (CO3, BL-6)

   (b) Defend that 2D scaling transformations are commute i.e $S_1S_2 = S_2S_1$. (CO2, BL-5)

   (c) Define 2D Transformation in Detail. Evaluate the coordinates after shearing transformation on the square A (0, 0), B (2, 0), C (2, 2) and D (0, 2) when the shearing factor are 2 and 4.(CO2, BL-6)

5. Attempt any *two* questions : 6 each

(a) Define types of Animation Systems. (CO4, BL-1)

(b) Design a Rocket and put it into the Bottle and show Animation in C Programming. (CO4, BL-6)

(c) Define the role of Computer Graphics in today's life. (CO4, BL-1)