S-816 Roll No. ……..

BCA–17

Interactive Computer Graphics

Bachelor of Computer Application
(BCA–11/16/17)

Fifth Semester, Examination, 2018

Time : 3 Hours **Max. Marks : 80**

Note : This paper is of **eighty (80)** marks containing **three (03)** sections A, B and C. Learners are required to attempt the questions contained in these sections according to the detailed instructions given therein.

Section–A

(Long Answer Type Questions)

Note : Section 'A' contains four (04) long answer type questions of nineteen (19) marks each. Learners are required to answer *two* (02) questions only.

1. What do you mean by projection ? How many types of projection ? Derivate the matrices for all the types of perspective projection.
2. (a) Draw the block diagram of CRT and explain the working of CRT display devices.
   (b) Discuss about the color models in detail.
3. What do you mean by flat panel display devices ? Explain about all its types.
4. Derivate any *one* circle and ellipse drawing algorithm separately.

Section–B
(Short Answer Type Questions)

Note : Section 'B' contains eight (08) short answer type questions of eight (08) marks each. Learners are required to answer *four* (04) questions only.

1. Derivate any *one* Polygon Filling algorithm.
2. Derivate the matrices for all the types of 3D transformation.
3. Find the transformation matrix that transform a given square ABCD to half its size with center still remaining at the same position. The co-ordinates of the square are A (1, 1), B (3, 1), C (3, 3) and D (1, 3) at center (2, 2).
4. Write short notes on the following :
   (i) Raster scan display
   (ii) Inking and painting
   (iii) Online character recognition
   (iv) DVST
5. Prove that :
   (i) $R^{-1} Q = R_{-Q}$
   (ii) $S^{-1}_{a,b} = S_{1/a,1/b}$
6. Derivate the Bresenham's line generation algorithm.
7. Discuss about types of Animation.
8. Derivate the matrices for all the types of 2D transformation.

Section–C
(Objective Type Questions)

Note : Section 'C' contains ten (10) objective type questions of one (01) mark each. All the questions of this Section are compulsory.

Choose the correct alternative :

1. Raster graphics is composed of :
   (a) Pixel
   (b) Palatte
   (c) Line
   (d) None of these
2. TIFF are used for :
   (a) Bitmap
   (b) Vector graphics
   (c) Both (a) and (b)
   (d) None of these
3. CMYK model is used for :
   (a) Painting
   (b) Printing
   (c) Computer display
   (d) None of these
4. A bitmap is ..... bit(s) per pixel.
   (a) 0
   (b) 2
   (c) 1
   (d) 4
5. Two consecutive scaling transformations S_1 and S_2 are :
   (a) Multiplicative
   (b) Subtractive
   (c) Additive
   (d) None of these

6. Why a circle drawn on the screen appears to be elliptical ?
   (a) Due to the aspect ratio of monitor
   (b) Our eyes are not at the level on screen
   (c) Screen has rectangular shape
   (d) None of these

7. A line with end point codes as 0000 and 0100 is :
   (a) Completely visible
   (b) Completely invisible
   (c) Partially visible
   (d) None of these

8. The point at which a set of projected parallel lines appear to converge is called as a :
   (a) Point of illusion
   (b) Vanishing point
   (c) Convergence point
   (d) None of these

9. A, circle, if scaled only in one direction becomes a :
   (a) Hyperbola
   (b) Parabola
   (c) Ellipse
   (d) None of these

10. Co-ordinate of window are known as :
   (a) World co-ordinate
   (b) Device co-ordinate
   (c) Screen co-ordinate
   (d) None of these