 BC — 402

2019

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

*Answer any **five** questions.*

1. (a) Define types of computer graphics. Explain advantages of computer graphics with uses.

   (b) What are the raster and vector graphics.

2. What is Scaling in Computer graphics ? What are the hardware devices used for computer graphics.

3. What is meant by Scan Codes ? Define Random and Raster Scan Diaplays.

4. What do you mean by video display devices ? Explain Aspect Ratio and Refresh Rate.

5. Differentiate between flat panel display and plasma panel display and also define the important properties of each panel display.

6. Explain Cathode ray tube in details. Discuss resolution and pixel in Computer Graphics.

7. What is line drawing algorithm ? Discuss DDA algorithm and Bresenham's line drawing algorithm.

8. Write short notes on the following :
   (a) Affline transformation
   (b) Composite transformation
   (c) Raster methods for transformation

9. What do you mean by polynomials and spline curve. Explain pixel addressing.

10. (a) Explain and differentiate line drawing and point drawing with example.
    (b) Explain 2D transformation with example.

2018

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

*Answer any **five** questions.*

1. (a) What do you mean by Computer Graphics ? Discuss its types and applications in detail with suitable example. 8

   (b) Define display devices. Discuss its types in detail. 8

2. (a) What do you mean by flat panel display ? Discuss its types in brief. 8

   (b) Explain the types of input devices used in computer graphics workstations. 8

3. What do you mean by Aspect Ratio ? How much time is spent in scanning across each row of

pixel during screen refresh on a Raster System with a resolution 1280 × 1024 refresh rate of 60 fbs.

4. Derive and explain Bresenham's line algor and make a proper difference with D algorithm with suitable example.

5. What do you mean by 2D transformatio Discuss its all parts in detail with suitab example.

6. Write short notes on the following : 1

(a) Plasma Panel Display

(b) Raster Scan Display

(c) CRT

(d) Vector Scan Display

7. (a) Consider a square A(0, 0), B(4, 0), C(0, 4) and D(4, 4). Perform the rotation by 30° of the square ABCD by fixing D(4, 4). 8

(b) Discuss about hard copy devices and their types, in brief. 8

8. (a) Define image, they useful in tation ?

(b) Discuss ab Graphics

9. (a) What i Show

(b) If a tra s

10. W

8. (a) Define image, object and pixel ? How are they useful in Computer Graphics representation ? 8

(b) Discuss about basic elements for drawing in Graphics. 8

9. (a) What is point drawing and line drawing ? Show with suitable explanation ? 8

(b) If a unit square matrix goes with a transformation and new co-ordinate of square of A(0, 0), B(2, 3), C(4, 6) and D(5, 6), then what is the transformatrix. 8

10. Write short notes on any two of the following : 8×2 = 16

(a) Fill area function

(b) Shear transformation

(c) Spline curves

(d) Conic section

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2017

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

*Answer any **five** questions.*

1. (a) Explain the basic features of Computer Graphics. 8

   (b) Explain the difference between Random scan and Raster scan displays. 8

2. (a) Discuss about emissive and non-emissive displays. 8

   (b) Explain flat panel displays. What are the merits and demerits related with flat panel displays ? 8

3. Explain the different types of input devices in Computer Graphics workstations.

4. Implement the DDA algorithm to draw a line (0, 0) to (6, 6). Explain vector generation of

5. (a) What is aspect ratio ? Find out the asp ratio of the raster system using 8 × inches screen and 100 pixel / inch.

(b) What do you understand by projection Explain paralliel and perspective projectio

6. (a) Derive and explain Bresenham's line algorithm for a line with slope $0 < m < 1$. 8

(b) For a line with two end points (25, 14) and (30, 18) determine successive pixel position along the path. 8

7. (a) Draw a circle using mid-point algorithm. 8

(b) Develop and implement a flood fill algorithm to fill the interior position of any specified area. 8

8. What are the various tr two-dimension ? Exp

9. (a) Show that the is additive representati $R(\theta_1), R($

(b) Derive reflecti

10. Write sh

(a) C

(b)

(c)

(

8. What are the various transformations possible in two-dimension ? Explain. 16

9. (a) Show that the composition of two rotations is additive by concatenating the matrix representation for $R(\theta_1)$ and $R(\theta_2)$ to obtain $R(\theta_1), R(\theta_2) = R(\theta_1 + \theta_2)$. 8

(b) Derive the transformation matrix for reflection about the diagonal $y = -x$. 8

10. Write short notes on any **two** of the following : $8 \times 2 = 16$

(a) Color CRT monitor

(b) Composite matrix

(c) Fill area function

(d) Spline curves

2016

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

*Answer any **five** questions.*

1. (a) Explain the properties of video display devices. 8

   (b) What is the difference between Vector graphics and Raster graphics. 8

2. (a) What is refresh cathode ray tube ? Explain its working 8

   (b) Describe the characteristics of Cathode-Ray Tube. 8

3. Write down the steps of DDA line draw algorithm. What is the difference between D line drawing algorithm and Bresenham's drawing algorithm.

4. (a) What is a Conic Section ? Explain.

(b) Explain an ellipse generating algorithm.

5. (a) Explain the basic geometric transformation 8

(b) What is the difference between reflection and shear. 8

6. Translate a triangle with vertices at original coordinates (10, 25), (5, 10), (20, 10) by $t_x = 15$, $t_y = 5$. Plot the original and the resultant triangles. 16

7. What are Composite Matrix ? Discuss the concatenation properties of composite matrix. 16

8 (a) What are Spline Curves ? Explain with suitable example. 8

(b) What are the p transformations?

9. A unit square is t transformation matr vector are :

$$\begin{bmatrix} 0 & 2 & 8 & 6 \\ 0 & 3 & 4 & 1 \end{bmatrix}$$, what

10. Write short note

(a) Input dev

(b) Flat par

(c) Graph

(d) Pixel

(e) Tran

IS–

(b) What are the properties of ofline transformations? 8

9. A unit square is transformed by 2 × 2 transformation matrix. The resulting positive vector are : 16

$$\begin{bmatrix} 0 & 2 & 8 & 6 \\ 0 & 3 & 4 & 1 \end{bmatrix}$$, what is the transformation matrix?

10. Write short notes on any **two** of the following : $8 \times 2 = 16$

(a) Input devices

(b) Flat panel displays

(c) Graphics software

(d) Pixel addressing

(e) Translation

...what are the properties of offline ... 8

...transformations?

...ir square is transformed by 2 × 2 ...formation matrix. The resulting positive ... 16

...r are:-

$\begin{bmatrix} 8 & 6 \\ 4 & 1 \end{bmatrix}$, what is the transformation matrix?

...e short notes on any two of the following :- 8 × 2 = 16

Input devices

Flat panel displays

...s software

...addressing

Translation

 BC — 402

2015

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

*Answer any **five** questions.*

1. (a) Explain various display technologies in brief. 10

   (b) What is graphic software ? 6

2. (a) What are direct view storage tubes ? 6

   (b) Explain the principles of raster scan and adverse effects of raster scan. 10

3. Why Bresenham's algorithm for line drawing preferred over DDA algorithm ? Explain the steps of Bresenham's line drawing algorithm. 16

4. (a) Explain the features of pixel addressing. 6

(b) What do you understand by filled primitives and fill area functions ?

5. Explain a circle drawing algorithm. Draw the octant of a circle with radius γ.

6. (a) What is the use of spline curve in Compu Graphics ?

(b) Prove that midpoint of a line after t transformation [T] is that midpoint transformed line $[T] = \begin{bmatrix} A & B \\ C & D \end{bmatrix}$. 1

7. (a) Explain the concept of 2D graphics. 8

(b) Explain types of transformation. 8

8. Show that reflection about the line y = x is attained by reversing coordinates i.e. $M_L(x, y) = (y, x)$. 16

9. (a) What do you understand by martix representation of composite transformation ? 8

(b) Discuss the Raster method for transformation. 8

10. Write short notes on any

(a) Randon Scan S

(b) Hard Copy D

(c) Scaling

(d) Rotation

(e) Shearin

10. Write short notes on any two of the following : 8×2 = 16

(a) Randon Scan System

(b) Hard Copy Devices

(c) Scaling

(d) Rotation

(e) Shearing