

2014

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 from both the Groups as directed.

**Group – A**

**(Objective Type Questions)**

Answer all questions of the following :

1. Choose the correct answer of the following :

2x10 = 20

(a) Consider line (5, 5) to (13,9) use Bresenham and give the value of full item :

(i) Tradition

- (ii) Modern
  - (iii) Factual
  - (iv) None of the above
- (b) The orthographic projection that can display more than one face of object is called \_\_\_\_\_ and most commonly used is the \_\_\_\_\_ program.
- (i) Cabinet, Cavalier
  - (ii) Axonometric, Isometric
  - (iii) Oblique, Perspective
  - (iv) One point, Two Point
- (c) The process of selecting and viewing the picture with different views is called \_\_\_\_\_ and a process which divides each element of the picture into its visible and invisible position is called \_\_\_\_\_.
- (i) Anchoring, Cartography
  - (ii) Anchoring, Filling
- (iii) Windowing, Clipping
  - (iv) All of the above
- (d) Inside the frame buffer the image is stored as a pattern of \_\_\_\_\_ digital numbers.
- (i) Binary
  - (ii) Octal
  - (iii) Decimal
  - (iv) Hexadecimal
- (e) The \_\_\_\_\_ line is straight but it \_\_\_\_\_ is not constant.
- (i) Boundary fill, Edge fill
  - (ii) Flood fill, Edge fill
  - (iii) Flood fill, Boundary fill
  - (iv) Both (ii) and (iii)
- (f) MICR stands for :
- (i) Magnetic Ink Case Reader
  - (ii) Magnetic Ink Code Reader

(iii) Magnetic Ink Character Reader

(iv) None of the above

(g) The standard colour diagram for studying

is :

(i) HSV diagram

(ii) Colour Plette

(iii) Chromaticity diagram

(iv) None of the above

(h) Which of the following format is used to store digital images in multimedia application ?

(i) MIDI

(ii) WAVE

(iii) PICT

(iv) None of the above

(i) Which of the following devices can be used to directly image printed text ?

(i) OCR

(ii) OMR

(iii) MICR

(iv) All of the above

(j) \_\_\_\_\_ give the colour of specified pixel and \_\_\_\_\_ draws the pixel with specified colour.

(i) Getpixel(), Putpixel()

(ii) Putpixel(), Getpixel()

(iii) Both (i) and (ii)

(iv) None of the above

**Group – B**

**(Long-answer Type Questions)**

Answer any four questions of the following :

15x4 = 60

2. Explain the diffuse reflection in 3-D computer graphics. What is homogeneous and Cartesian coordinate system ?

3. What do you mean by visible-surface detection algorithm ? Discuss the Z-buffer and subdivision method algorithms of visible surface detection.

NR – 29/1

( 4 )

Contd.

NR – 29/1

( 5 )

( Turn over )

Explain different parallel projection technique along with the necessary derivation of matrices in 3-D object.

4. Discuss the Cohen-Sutherland line clipping algorithm with a suitable example. Explain the boundary filling and flood filling algorithm.

5. Differentiate between raster and vector graphics. Explain, with diagram, the Shadow-Mask method for producing color display.

6. Discuss the mid-point ellipse algorithm along with example. Derive the matrix for Perspective Projection with centre of projection at origin and projection plane Z.

7. What are the different line attributes ? Also, explain shear transformation and exterior clipping.

8. Write the Bresenham's line algorithm for a line with end point (20, 5) and (30, 13) and also discuss the area filling techniques.

NR - 29/1

(6)

Contd.

9. Write short notes on the following :

(a) Phong Shading

(b) Voice System

(c) Joy Stick

(d) LCD Device

10. Describe a scheme to combine ray tracing technique and phong illumination model. Assume that the scene consist of a sphere and a planar object and there is a single point light source.



NR - 29/1 (800)

(7)

BCA(III)/18/14