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:

   \[ 2 \times 10 = 20 \]

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

      (i) Tradition

NR - 29/1 (Turn over)
(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.
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.

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 consists of a sphere and a planar object and there is a single point light source.