Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/BCA/SEM-3/BCA-303/2009-10

2009
GRAPHICS AND INTERNET

Time Allotted : 3 Hours Full Marks : 70

The figures in the margin indicate full marks.

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

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

   i) Which is a perspective anomaly ?

      a) cavalier b) vanishing point

      c) oblique d) none of these.

   ii) In homogenous coordinate representation [4, 2, 0] represents a point

      a) lying at infinity

      b) at (4, 2)

      c) at (4, 2) and at (2, 1)

      d) none of these.

iii) If P_0, P_1, P_2 be the control points (in sequential ordering) then the Bezier curve must pass through

a) P_0 and P_1

b) P_1 and P_2

c) P_2 and P_0

d) points close to P_0, P_1 and P_2.

iv) The total no. of pixels put "ON" for the line starting at (1, 1) and ending at (12, 7) would be

a) 7 b) 11

c) 12 d) more than 12.

v) Two successive reflections of a point equals

a) clockwise rotation by 180°

b) clockwise rotation by 90°

c) clockwise rotation by 270°

d) none of these.

vi) DDA stands for

a) Digital Diffential Analyzer

b) Digital Distributed Analyzer

c) Digital Data Analyzer

d) None of these.

vii) A rotation matrix is any matrix that acts as a rotation of Euclidean space, represented as

a) $\begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$

b) $\begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$

c) $\begin{bmatrix} \cos\theta & \sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$

d) $\begin{bmatrix} -\cos\theta & \sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$.

viii) Dragging in computer graphics is achieved through which of the following transformation ?

a) translation b) scaling

c) rotation d) none of these.

ix) The reflection matrix of a point P (x, y) about the straight line $y = -x$ is $\begin{bmatrix} 0 & ? \\ -1 & 0 \end{bmatrix}$. Fill the matrix.

a) 0 b) 1

c) – 1 d) none of these.

x) In 2D graphics, if S_1 and S_2 are two scaling matrices and T_1 and T_2 are two translation matrices then

a) $S_1 \cdot S_2 = S_2 \cdot S_1$ b) $S_1 \cdot T_1 = S_2 \cdot T_2$

c) $T_2 \cdot S_1 = T_1 \cdot S_2$ d) none of these.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Describe Java Applet. 5

3. Explain the following tags in HTML : 5

   i) <frameset>

   ii) <h1>

   iii) <table>

4. Define the following terms : 5

   i) Resolution

   ii) Aspect ratio

   iii) Refresh rate

   iv) Interlacing

   v) Bit plane.

5. Consider the three different raster system, systems with resolution of 640 × 480, 1280 × 1024 and 2560 × 2048. What size of the frame buffers is needed for each of these systems to store 12-bits per pixel ? How much storage is required for each system if 24-bits per pixel are to be stored ? 5

6. a) How many layers are there in TCP/IP model ? 2

   b) Describe connection-oriented and connectionless services provided by the transport layer. 3

GROUP – C
(Long Answer Type Questions)
Answer any *three* of the following. 3 × 15 = 45

7. a) Find the points required to plot to draw the circle with centre as (100, 90) and radius 10 using Bresenham's circle drawing algorithm.

   b) Briefly describe the main functional components and its functions of a CRT terminal with a proper diagram.

7 + 8

8. a) How can we include an image in HTML and how can we resize that image ?

   b) Distinguish between classless and classful addressing.

   c) Describe briefly the different methods used for electronic payments. 5 + 5 + 5

9. a) Why are homogeneous coordinates used for transformation computations in computer graphics ? 3

   b) Discuss with example Cohen-Sutherland clipping algorithm. 7

   c) Draw the Bezier curve defined by the control points (2, 1), (3, 2), (5, 0) and (6, 2). 5

10. a) Derive composite transformation matrix for

      i) two successive translation

      ii) two successive scaling and

      iii) general pivot point rotation. 3 + 3 + 4

   b) What is understood by Z-buffer algorithm ? 5

11. Write short notes on any *three* of the following : 3 × 5

a) Raster scanning display system

b) SMTP

c) Composite transformation using homogeneous coordinates

d) Server side programming

e) FTP.