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 : $10 \times 1 = 10$

   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.

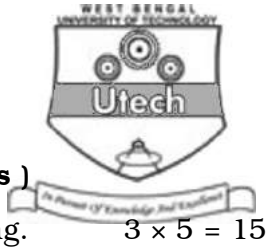
a) 0 b) 1

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.

Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS / BCA / SEM-3 / BCA-303 / 2010-11

2010-11

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 : $10 \times 1 = 10$

i) The path taken by the electron beam when returning to the left side of the CRT screen will be

a) horizontal retrace b) vertical retrace

c) diagonal retrace d) none of these.

ii) ..... is a cryptographic protocol, which provide secure communications on the internet.

a) UDP b) TCP

c) SSL d) SMTP.

iii) ..... is an extension of HTML file.

a) htm b) html

c) http d) both (a) and (b).

iv) ..... refers to the light given off by a phosphor while it is being exposed to electron beam.

a) Persistence b) Fluorescence

c) Phosphorescence d) None of these.

v) When the point (3, 2) is reflected in y-axis, then the coordinate of the reflected point will be

a) (–3, 2) b) (3, –2)

c) (–3, –2) d) None of these.

vi) ..... is connectionless transport layer protocol in the TCP/IP protocol stack.

a) TCP b) IP

c) UDP d) None of these.

vii) In Cohen-Sutherland algorithm, ... region bit code is assigned to each end point of the line.

a) 2 b) 3

c) 4 d) 5.

viii) Find the class of the following IP address : 193.171.21.23

a) CLASS A b) CLASS B

c) CLASS C d) CLASS D.

ix) ..... is the decision variable in Bresenham's circle drawing algorithm.

a) $d = 2 - 3r$ b) $d = 3 - 2r$

c) $d = 4r - 5$ d) None of these.

x) ..... display was used to primary draw line segments.

a) Raster scan b) Random scan

c) LCD d) None of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Write the general form of a scaling with respect to a fixed point P (h, k).
3. What is aspect ratio ? What do you mean by a resolution of a screen ?
4. Define the difference between classful & classless addressing system.
5. Define the difference between IPv4 and IPv6. What is address space ?
6. Find the transformation matrix for reflection of the point $P(x, y)$ about the line $y = x$.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) An organization is granted the block 205.16.37.39/28. The administrator wants to create 32 subnets.
   i) Find the subnet mark
   ii) Find the number of addresses in each subnet
   iii) Find the first and last addresses in subnet 1
   iv) Find the first and last addresses in subnet 32

   $2 \times 4 = 8$

   b) Suppose an organization is given the block 17.12.04.0/26 which contains 64 addresses. The organization has 3 offices & needs to divide the addresses into 3 sub-blocks of 32, 16 & 16 addresses. Design the network of that building. 7

8. a) Write Cohen – Sutherland Algorithm. 6

b) Draw the Beizer curve defined by the control points $B_0(2, 1)$, $B_1(3, 2)$, $B_3(5, 0)$, $B_4(6, 2)$. 6

c) Define the difference between raster scan and random scan displays. 3

9. a) What is the difference between Parallel Projection and Perspective Projection ? 4

b) Write and explain Bresenham's algorithm for drawing a straight line. How does it remove the drawbacks of 'DDA' algorithm ? 6

c) What are the vertical retrace and horizontal retrace ? 2

d) Define condition about a point clipping. 3

10. a) Magnify the triangle with vertices A (0, 0), B (1, 1) and C (5, 2) to twice its size while keeping C (5, 2) fixed. 6

b) Prove that the inverse of the rotation matrix is its transpose. 6

c) Define frame buffer. 2

d) Define the difference between pixmap and bitmap. 1

11. Write a short notes (any *three*) : $3 \times 5 = 15$

a) Shadow masking

b) Orthographic and oblique projection of an object

c) SMTP

d) DNS

e) FTP.

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Invigilator's Signature : .....

2011
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 : $10 \times 1 = 10$

   i) In homogeneous coordinate representation [4, 2, 0] represents a point

      a) lying at infinity b) at (4, 2)

      c) at (2, 0) d) none of these.

   ii) If P_0 , P_1, P_2 be the control points (in sequential ordering) then the Bezier curve must passes 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.

   iii) 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.

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

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

a) 0 b) 1

c) -1 d) none of these.

vi) The class of the following IP address : 163.121.20.2 is

a) CLSSS A b) CLASS B

c) CLASS C d) CLASS D.

vii) TCP is a/an

a) Reliable connection oriented protocol

b) Unreliable connection oriented protocol

c) Reliable connectionless protocol

d) Unreliable connectionless protocol.

viii) ..... is a cryptographic protocol which provide secure communications on the internet.

a) UDP b) TCP

c) SSL d) SMTP.

ix) Socket address is

a) Port address

b) IP address

c) Combination of (a) and (b)

d) None of these.

x) Which of the following is a class B host address ?

a) 130.4.5.6 b) 127.0.0.1

c) 192.0.12.100 d) None of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Describe Java Applet.

3. Consider the three different master 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 ?

4. Write short notes on SMTP and POP3 Protocols. $2\frac{1}{2} + 2\frac{1}{2}$

5. Write the tags for the following settings in HTML :

   a) Background image

   b) Table

   c) Image insertion with height and width specification

   d) Text hyperlink. $1 + 1 + 2 + 1$

6. What is an IP address ? State different IP address classes. $1 + 4$

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

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. i) Derive composite transformation matrix for

   a) two successive translation

   b) two successive scaling and

   c) general pivot point rotation.

   ii) What is understood by z-buffer algorithm ? (3 + 3 +4) + 5

9. a) Differentiate two basic types of network security.

   b) What do you mean by E-commerce ? What are electronic payment standards and methods ?

   c) What is the need of Internet security ? 6 + 2 + 4 +3

10. a) Define class A, B, C, D, E Networks.

    b) What is cookie ? Write stages of database connection using ASP.

    c) Write a short note on FTP. 5 + 5 + 5

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

    b) Discuss briefly about Cohen-Sutherland line clipping algorithm with suitable example.

    c) Write down the Mid-point sub-division algorithm.

5 + 5 + 5

Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/BCA/SEM-3/BCA-303/2012-13

2012

GRAPHICS & 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 : $10 \times 1 = 10$

i) Aspect ratio is

a) the ratio of image's width to its height

b) the ratio of window to viewport height

c) the ratio of image's intensity levels

d) the ratio of image's height to its width.

ii) The Cohen-Sutherland line clipping algorithm divides the entire region into ..... numbers of sub-regions.

a) 4 b) 8

c) 9 d) 10.

iii) Sutherland-Hodgemann algorithm is used for

a) Line clipping

b) Point clipping

c) Polygon clipping

d) Hybrid clipping.

iv) Z-buffer algorithm is used for

a) Frame buffer removal

b) Hidden line removal

c) Rendering

d) Animation.

v) The blending functions of Bezier curves are

a) Splines

b) Bernstein polynomials

c) Lagrangian polynomials

d) Newton polynomials.

vi) Oblique projection is

a) an orthographic projection

b) a perspective projection

c) a parallel projection

d) axonometric projection.

vii) What will be the value of starting decision parameter if we intend to draw a line between *A* (3, 6) and *B* (4, 9) using Bresenham's algorithm ?

a) 6 b) 5

c) 3 d) none of these.

viii) The 2D transformation, where the shape of an object is always distorted is

a) Translation

b) Scaling

c) Shearing

d) Both (b) and (c).

ix) HTTP stands for

a) Hyper Text Transfer Protocol

b) Hyper Text Transition Protocol

c) Hyper Text Transaction Protocol

d) none of these.

x) 'METHOD' and 'ACTION' are attributes of

a) <FORM> tag

b) <FRAME> tag

c) <INPUT> tag

d) <FRAMESET> tag.

GROUP – B
(Short Answer Type Questions)

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

2. Define the following terms : 1 + 1 + 1 + 1 + 1

a) Triad

b) Aspect Ratio

c) Refresh Rate

d) Interlacing

e) Bit Plane.

3. Consider the two different raster systems with resolutions of 800 × 600 and 2560 × 2048. What size of the frame buffers is needed for each of these systems to store 24 bits per pixel ? How much storage is required for each system if 16 bits per pixel are to be stored ?

4. a) What are the different layers in the OSI network model ? 2

   b) Describe TCP and UDP services provided by the transport layer. 3

5. Write the tags for the following settings in HTML :

   1 + 1 + 1 + 1 + 1

   a) Background image

   b) Font colour, size and face

   c) Image insertion with height and width specification

   d) Text hyperlink

   e) Background colour.

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

6. a) Write mid-point circle drawing algorithm and generate coordinates for a circle of radius 12 cm with the centre located at (0, 0). 4 + 6

   b) Explain in brief different categories of parallel and perspective projection in 2D. 5

7. a) What do you mean by clipping ? Name different types of clipping. 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

8. a) Derive composite transformation matrix for

      i) two successive rotations

      ii) two successive scalings

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

   b) Briefly explain class-full static IP addressing systems. 5

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

a) Raster scanning display system

b) Parametric method of circle drawing

c) SMTP

d) E-commerce

e) FTP.

Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/BCA/SEM-3/BCA-303/2013-14

2013

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 : $10 \times 1 = 10$

   i) If your mail address is s@x.y.z.com then the domain name is

   a) com b) x.y.z.com

   c) w d) none of these.

   ii) One common format for saving images is

   a) .jpeg b) .mp3

   c) .wav d) none of these.

   iii) The protocol used in conjunction with SMTP to hold mail for host is

   a) POP b) PPP

   c) FTP d) both (a) & (b).

   iv) Which is perspective anomaly ?

   a) Cavalier b) Vanishing point

   c) Oblique d) None of these.

v) In homogeneous 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.

vi) 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.

vii) 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.

viii) If we want to triple the size of an object twice in succession, the final size would be ..... times that of the original.

a) 3 b) 6

c) 9 d) none of these.

ix) One browser to execute Java servelet is

a) access navigator b) solaris

c) posix d) none of these.

x) Two successive reflections of a point equal

a) clockwise rotation by 180°

b) clockwise rotation by 90°

c) clockwise rotation by 270°

d) none of these.

GROUP – B

(Short Answer Type Questions)

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

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

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

3. Define the difference between IPv4 and IPv6. What is address space ? 4 + 1

4. Prove that the inverse of the rotation matrix is its transpose.

5. Write the tags for the following settings in HTML :

   a) Image tag

   b) Table

   c) Text Hyperlink.

6. Write the general form of a scaling with respect to a fixed point $P(h, k)$.

7. What is aspect ratio ? What do you mean by a resolution of a screen ? 2 + 3

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

8. a) Define the difference between Classful and Classless addressing. 5

   b) What is protocol ? Describe Java applet. 2 + 5

   c) Write a short note on SMTP protocol. 3

9. a) What is an IP address ? State different IP address classes. 1 + 4

   b) What is cookie ? What do you mean by e-commerce ? How many types of e-commerce are there ? 2 + 3 + 2

   c) What are the differences between traditional business and e-business ? 3

10. a) Write and explain Bresenham's algorithm for drawing a straight line. How does it remove the drawbacks of 'DDA' algorithm ? 3 + 3

    b) What is the difference between parallel projection and perspective projection ? 4

    c) Why are homogeneous coordinates used for transformation computations in computer graphics ? 5

11. Write short notes on the following : 5 × 3

    a) Raster scanning display

    b) FTP

    c) Server side programming

    d) DNS

    e) Shadow masking.

BCA-303

GRAPHICS AND INTERNET

Time Allotted: 3 Hours | Full Marks: 70

The questions are of equal value.
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. Answer all questions. $10 \times 1 = 10$

(i) State whether the statement is true or false :

(A) light pen does not work in liquid crystal display

(ii) State whether the statement is true or false

(A) refresh rate of Raster Scan System is more than the Random Scan System

(iii) In 2D transformation, if R_{e1} and R_{e2} are two rotation matrix in same direction, then

(A) $R_{e1} R_{e2} \neq R_{e2} R_{e1}$ (B) $R_{e1} R_{e2} = R_{e2} R_{e1}$

(C) $R_{e1} R_{e2} \neq R_{e1+e2}$ (D) $R_{e1} R_{e2} = (R_{e2} R_{e1})^{-1}$

(iv) If the resolution of the screen is 1280 by 800 pixels, then aspect ratio is

(A) 8/5 (B) 5/8

(C) 4/3 (D) 3/4

(v) For Quadratic Bezier Curve there are

(A) two control points P_0 and P_1

(B) three control points P_0, P_1 and P_2

(C) four control points P_0, P_1, P_2 and P_3

(D) none of these

(vi) TCP / IP consists of

(A) 6 layers (B) 7 layers
(C) 8 layers (D) 5 layers

(vii) Generic domain labels info stands for

(A) international organizations
(B) information service providers
(C) information technology
(D) none of these

(viii) Bluetooth technology uses

(A) wireless LAN technology (B) wireless MAN technology
(C) wireless WAN technology (D) none of the above

(ix) Signals that involve human communication are generally

(A) digital (B) analog
(C) either analog or digital (D) none of these

(x) Signals that involve human communication are generally

(A) digital (B) analog
(C) either analog or digital (D) none of these

GROUP B
(Short Answer Type Questions)

Answer any *three* questions. 3×5 = 15

2. Differentiate between passive computer graphics and interactive computer graphics. Give example.

3. Compare and contrast DDA and Bresenham's line drawing algorithm

4. Find the equation of the line $y' = mx'$ in the xy – coordinate system if the $x'y'$ coordinate system is resulted from 90° rotation of the xy – coordinate system.

5. What is e-mail? Write down its usage. What are the different protocols about it.

6. What is Topology? What are the different topologies used in our daily life. Among different types of topologies which is more economic and write down its advantages and disadvantages.

GROUP C
(Long Answer Type Questions)

Answer any *three* questions. 3×15 = 45

7. (a) A mirror is placed in such a way that its x-intercept is 10 units and its y-intercept is 5 units from the origin. Find reflection of the vertices of the square whose coordinates are A (0, 0); B (5, 0); C (5, 5) and D (0, 5) in the mirror. 9+6
   (b) Write the Bresenham's line drawing algorithm.

8. (a) Explain Bezier curves and give the equation of the curve of degree n and the equation of the polynomial. 7+8
   (b) Find the coordinates of the point X (3,3) after it is rotated twice, first about a point A (1,2) by 45° anticlockwise direction and then about a point B (2,1) by 45° anticlockwise direction.

9. (a) Describe how the Cohen-Sutherland line clipping algorithm works with binary code. 9+6
   (b) Calculate the points using DDA Algorithm that would be plotted for a line whose end points are A (6, 5) and B (10, 10).

10. What is SMTP? Write down its usage along with pictorial representation. 15

11. Write short notes on any *three* of the following: 3×5
   (a) Shadow masking
   (b) Orthographic and oblique projection of an object
   (c) DNS
   (d) FTP
   (e) Graphical input devices

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

BCA-303

GRAPHICS AND INTERNET

Time Allotted: 3 Hours | Full Marks: 70

The questions are of equal value.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable. All symbols are of usual significance.

GROUP A
(Multiple Choice Type Questions)

1. Answer any *ten* questions. $10 \times 1 = 10$

(i) The init method of Applet is called

(A) only once
(B) each time an applet's HTML document is displayed
(C) both (A) and (B)
(D) none of these

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

(A) 0 (B) 1
(C) –1 (D) none of these

(iii) To rotate an object about an arbitrary point, how many transformation matrices are needed?

(A) Three (B) Two
(C) One (D) Four

(iv) Size of an object may change in which transformation?

(A) Scaling (B) Rotation
(C) Translation (D) Sharing

(v) The total number of pixels put "ON" for the starting at (1, 1) and ending at (12, 7) would be

(A) 7 (B) 11
(C) 12 (D) more

(vi) How many blocks are reserved for private addressing in Class B?

(A) 16 (B) 25
(C) 28 (D) 21

(vii) 255.255.0.0 is the default mask for

(A) Class A (B) Class B
(C) Class D (D) Class C

(viii) The protocol use in conjunction with SMTP to hold mail for host is

(A) POP (B) PPP
(C) FTP (D) Both (A) and (B)

(ix) Graphics Driver is a type of

(A) Memory unit (B) Device driver
(C) VDU software (D) None of these

(x) Aspect ratio is the ratio of

(A) image's width to its height (B) window to viewport height
(C) image's intensity levels (D) image's height to its width

GROUP B
(Short Answer Type Questions)

Answer any *three* questions. 3×5 = 15

2. Define the following terms : 5×1
(i) Triad (ii) Aspect ratio (iii) Refresh rate
(iv) Interlacing (v) Bit plane

3. Describe the functionality of CRT system with the help of a suitable diagram. 5

4. What is Java Script? Describe its advantages. 1+4

5. What is an IP address? State different IP address classes. 5

6. Write the tags for the following settings in HTML : 1+1+2+1
(a) Background image
(b) Table
(c) Image insertion with height and width specification
(d) Text hyperlink.

GROUP C
(Long Answer Type Questions)

Answer any *three* questions. 3×15 = 45

7. (a) Briefly describe the main functional components and its functions of a CRT terminal with a proper diagram. 7
(b) Discuss briefly about Cohen-Sutherland line clipping algorithm with suitable example. 8

8. (a) Derive composite transformation matrices for 3+3+4
(i) two successive rotations
(ii) two successive scaling
(iii) general pivot point rotation

(b) Obtain the transformed co-ordinates of vertices of triangle ABC, with A(0, 0), B(1, 1) and C(5, 2) after rotation about the point (−1, −1). 5

9. (a) Write mid-point circle drawing algorithm and generate coordinates for a circle of radius 12 cm with the centre located at (0, 0). 10

(b) What is aspect ratio? What do you mean by a resolution of a screen? 2.5 + 2.5

10. (a) Write the tags for the following settings in HTML : 3×2
(i) Image tag
(ii) Table
(iii) Text hyperlink.

(b) What is cookie? What do you mean by e-commerce? How many types of e-commerce are there? 2+3+2

(c) What are the differences between traditional business and e-business? 2

11. (a) How many layers are there in TCP/IP model? Describe connection-oriented and connectionless services provided by the transport layer. 2+3

(b) Define the following terms : 2×5
(i) Resolution
(ii) Aspect ratio
(iii) Refresh rate
(iv) Interlacing
(v) Bit Plane

12. Write short notes on *any three* of the following : 3×5
(a) Raster scanning display system
(b) Shadow masking
(c) DNS
(d) FTP
(e) TCP / IP model
(f) Internet Security.

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : BCA-303

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 any *ten* of the following : $10 \times 1 = 10$

   i) Aspect ratio is

      a) the ratio of image's width to its height

      b) the ratio of window to viewport height

      c) the ratio of image's intensity levels

      d) the ratio of image's height to its width.

   ii) The sub-categories of orthographic projection are

      a) cavalier, cabinet, isometric

      b) cavalier, cabinet

      c) isometric, dimetric, trimetric

      d) isometric, cavalier, trimetric.

iii) Z-buffer algorithm is used for

a) Frame buffer removal

b) Hidden line removal

c) Rendering

d) Animation.

iv) Refresh rate is

a) the rate at which the number of bit planes are accessed at a given time

b) the rate at which the picture is redrawn

c) the frequency at which the aliasing takes place

d) the frequency at which the contents of the frame buffer is sent to the display monitor.

v) The blending functions of Bezier curves are

a) Splines

b) Bernstein polynomials

c) Lagrangian polynomials

d) Newtonian polynomials.

vi) Oblique projection is

a) an orthographic projection

b) a perspective projection

c) a parallel projection

d) axonometric projection.

vii) What will be the value of starting decision parameter if we intend to draw a line between $A(3, 6)$ and $B(4, 9)$ using Bresenham's algorithm ?

a) 6 b) 5

c) 3 d) none of these.

viii) How long is an IPv6 address ?

a) 32 bits b) 128 bytes

c) 64 bits d) 128 bits.

ix) 'METHOD' and ACTION' are attributes of

a) <FORM>tag b) <FRAME>tag

c) <INPUT> tag d) <FRAMESET>tag.

x) What layer in the TCP/IP stack is equivalent to the Transport layer of the OSI model ?

a) Application b) Host-to-Host

c) Internet d) Network Access.

xi) If P0, P1, P2 be the control points, then the curve must pas through

a) P0 and P1

b) P1 and P2

c) P2 and P0

d) points closed to P0, P1 and P2.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Consider the two different raster systems with resolutions of 800 × 600 and 2560 × 2048. What size of the frame buffers is needed for each of these systems to store 24 bits per pixel ? How much storage is required for each system if 16 bits per pixel are to be stored ?

3. Write the tags for the following settings in HTML : 1 + 1 + 1 + 1 + 1

   a) Background image

   b) Font colour, size and face

   c) Image insertion with height and width specification

   d) Text hyperlink

   e) Background colour.

4. Define the following terms : 1 + 1 + 1 + 1 + 1

   a) Morphing

   b) Aspect Ratio

   c) Resolution

   d) Persistence

   e) Animation.

5. What is *e*-commerce ? Write down the different types of *e*-commerce with suitable example. 2 + 3

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

   b) Describe the difference between connection-oriented and connectionless services provided by the transport layer. 2 + 3

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Write mid-point circle drawing algorithm and generate coordinates for a circle of radius 12 cm with the centre located at (0, 0) 4 + 6

   b) Perform a 45° rotation of triangle *ABC* where *A* (0, 0), *B* (1, 1), *C* (5, 2)

      i) about the origin

      ii) about the point *P* (–2, –2). 2 + 3

8. a) A clipping window *ABCD* is specified as *A* (0, 0), *B* (40, 0), *C* (40, 40) and *D* (0, 40). Using mid-point subdivision algorithm find the visible portion, if any, of the line segment joining the points *P* (– 10, 20) and *Q* (50, 10).

b) Draw a straight line segment in between (0, 0) and (5, 4) using Bresenham's Algorithm. Find the intermediate points. 8 + 7

9. a) What is projection ? How many projections are there ? Differentiate between oblique projection and orthographic projection. 2 + 2 + 4

b) Find the normalization transformation for windows to viewport which uses the rectangle whose lower left corner (2, 2) and upper right corner (6, 10) as a window and the viewport that has lower left corner at (0, 0) and upper right corner at (1, 1). 7

10. a) What is cookie ? Write stages of database connection using ASP.

b) Define class *A*, *B*, *C*, *D* and *E* networks.

c) What is on-line payment ? What are the electronic payment standard and methods ? 5 + 5 + 5

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

a) z-buffer algorithm

b) Network security

c) Java Applet and its applications

d) SMTP

e) DNS.

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : BCA-303

GRAPHICS AND INTERNET

Time Allotted: 3 Hours | *Full Marks*: 70

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Group – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for *any ten* of the following: 1×10=10

(i) DDA stands for

(a) Digital Differential Analyzer
(b) Digital Distributed Analyzer
(c) Digital Data Analyzer
(d) Digital Database Analyzer

(ii) Which of the following is a class B host address?

(a) 130.4.5.6
(b) 127.0.0.1
(c) 192.0.12.100
(d) None of these

(iii) Which is a perspective anomaly?

(a) Cavalier
(b) Vanishing point
(c) Oblique
(d) None of these

(iv) An orthographic projection is

(a) a parallel projection
(b) either parallel or perspective projection
(c) a perspective projection
(d) All of these

(v) If the resolution of the screen is 1280 by 800 pixels, then aspect ratio is

(a) 8/5
(b) 5/8
(c) 4/3
(d) 3/4

(vi) In homogeneous co-ordinate representation [4, 2, 0] represent a point

(a) lying at infinity (b) at (4, 2)

(c) at (4, 2) and at (2, 1) (d) None of these

(vii) The total number 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

(viii) Which of the following is not a hidden surface removal algorithm?

(a) Depth sort (b) Painter's algorithm

(c) Z-buffer (d) None of these

(ix) TCP is a/an

(a) reliable connection oriented protocol. (b) unreliable connection oriented protocol.

(c) reliable connectionless protocol. (d) unreliable connectionless protocol.

(x) A line with end point codes as 0000 and 0100 is

(a) partially invisible (b) completely visible

(c) trivially invisible (d) completely invisible

(xi) Which of the following techniques is used in Midpoint subdivision algorithm?

(a) Binary Search (b) Bubble Sort

(c) Linear Search (d) Sequential Search

Group – B

(Short Answer Type Questions)

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

2. What is an IP address? State different IP address classes. 1+4=5

3. What is web portal? State the difference between Server side and Client side programming. 2+3=5

4. Draw a line using DDA having co-ordinate as (–1, – 4) and (5, 6).

5. Define the following terms:

(i) Resolution (ii) Aspect ratio (iii) Refresh rate (iv) Bit map and Pix map (v) Frame buffer

6. Write the condition for smooth joining of two Bezier curve segment of degree three.

Group – C

(Long Answer Type Questions)

Answer *any three* of the following. 15×3=45

7. (a) Briefly explain the Bresenham's line drawing Algorithm.

(b) Draw a straight line segment in between (0, 0) and (5, 4) using Bresenham's Algorithm. Find the intermediate points. 9+6=15

8. (a) Reflect the triangle whose vertices are A (3, 1), B (1, 3) and C (3, 3) about the line $y = x + 4$.

(b) Using Mid-Point Circle Algorithm, find out the screen co-ordinates of the circumference of a circle whose centre is (0, 0) and radius is 10 units.

(c) Prove that the inverse of the rotation matrix is its transpose. 7+5+3=15

9. (a) What is the purpose of using <Frameset> tag in html?

(b) Write a Java Script for checking the blank text validation.

(c) What do you mean by Domain Name System? Explain about DNS Server.

(d) What is the importance of SMTP? 2+2+(4+5)+2=15

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

(b) Discuss briefly about Cohen-Sutherland line clipping algorithm with suitable example.

(c) Write down the Z-Buffer algorithm. 5+5+5=15

11. Write short notes on (*any three*): 5×3=15

(a) Internet Security

(b) Homogeneous Co-ordinate System

(c) Cathode Ray Tube

(d) E-Commerce

(e) Orthographic and Oblique projection