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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.

33825

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- 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  $90^{\circ}$
  - c) clockwise rotation by  $270^{\circ}$
  - d) none of these.
- vi) DDA stands for
  - a) Digital Diffential Analyzer
  - b) Digital Distributed Analyzer
  - c) Digital Data Analyzer
  - d) None of these.

33825

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

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.

33825

3

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	(Short Answer Type Questions)	A Amage (V Example of Sol Explored
	Answer any <i>three</i> of the following.	3 × 5 = 15
2. Des	scribe Java Applet.	5
3. Exp	blain the following tags in HTML :	5
i)	<frameset></frameset>	
ii)	<h1></h1>	
iii)		
4. Def	ine the following terms :	5
i)	Resolution	
ii)	Aspect ratio	
iii)	Refresh rate	
iv)	Interlacing	
v)	Bit plane.	
33825	4	

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- 5. Consider the three different raster system, systems with resolution of  $640 \times 480$ ,  $1280 \times 1024$  and  $2560 \times 2048$ . 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. $3 \times 15 = 45$

- 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.

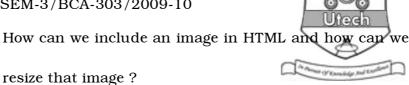
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8.

a)



- Distinguish between classless and classful addressing. b)
- c) Describe briefly the different methods used for electronic payments. 5 + 5 + 5
- 9. Why homogeneous coordinates a) are used for transformation computations in computer graphics? 3
  - Discuss with example Cohen-Sutherland b) clipping algorithm. 7
  - Draw the Bezier curve defined by the control points c) (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)	Wha	at is understood by Z-buffer algorithm ?	5
33825		6	

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- a) Raster scanning display system
- b) SMTP
- c) Composite transformation using homogeneous coordinates
- d) Server side programming
- e) FTP.