7/30/12 Code: A-20

AMIETE - CS/IT (NEW SCHEME) - Code: AC60 / AT60

Subject: COMPUTER GRAPHICS

Time: 3 Hours

DECEMBER 2009

Max. Marks: 100

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.

(Choose the correct or the best alternative in the following:		(2×10)			
a	a. The basic objects out of which computer-drawn pictures are composed are called as					
	(A) polylines(C) images	(B) output primitives(D) pixels				
b	. In a gray-scale image, eight bits per pixel produce gray levels					
	(A) 8	(B) 16				
	(C) 256	(D) 1024				
c	c. A plasma panel display has a	at each pixel location				
	(A) tiny transistor	(B) tiny neon bulb				
	(C) liquid crystal	(D) phosphor dot				
d	Laying lots of copies of the same thing side by side to cover the entire screen window is called the window					
	(A) zooming in	(B) tiling				
	(C) zooming out	(D) covering				
e	Cohen-Sutherland algorithm is used for					
	(A) line drawing	(B) curve drawing				
	(C) polygon filling	(D) line clipping				
f.	The most common transformations used in computer graphics are					
	(A) viewport transformations	(B) window transformations				
	(C) affine transformations	(D) arbitrary transformations				
g	g. The face list contains infor	rmation				
	(A) locational	(B) geometric				
	(C) orientation	(D) connectivity				
h	n. Greater realism can be achieved by	shading				
	(A) Flat	(B) Phong				
	(C) Gouraud	(D) Real				

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	i.	Flood-fill algorithm is				
		· , e ;	ot recursive flicient			
	j. Bezier curves exhibit property					
			oncave concave-hull			
Answer any FIVE Questions out of EIGHT Questions. Each question carries 16 marks.						
Q.2	a.	Distinguish Computer Graphics and Image Pr	rocessing.	(4)		
	b.	. Explain the three principal sources of how raster images are created.		(6)		
	c. Calculate the amount of memory required for the frame buffer and colour lookup table (CLUT) in the following systems:					
		 (i) The system 1 has 1024×1280 pixel disp (ii) The system 2 has 1024×1280 pixel disp CLUT has 256 entries. Each entry consists 	-	buffer and no CLUT buffer along with CLUT. The (6)		
Q.3	a.	Explain OpenGL Data Types.		(8)		
	b. Write a routine drawArc(), that draws an arc of a circle, given the start angle and the sweep in degrees. (8)					
Q.4	a. What are the advantages and disadvantages of the Cohen-Sutherland line clipping algorithm? (4)			ing algorithm? (4)		
	b. Consider a ray (described parametrically) that is hitting a line and a plane. Find points"		the location of the "hit (6)			
	c.	Write the pseudocode for the Cyrus-Beck al	gorithm.	(6)		
Q.5	 a. Magnify the triangle with vertices A(0, 0), B(1, 1) and C(5, 2) to twice its size while keeping the vertex C(5, fixed. 		while keeping the vertex $C(5, 2)$			
	b.	Write the matrices for the elementary 3D tran	nsformations.	(8)		
Q.6	a.	What is a polygonal mesh? Explain with an estore information about a mesh in a file.	example the various ways to	(10)		
	b.	Distinguish cavalier projection and cabinet pr	ojection.	(6)		
Q. 7	a.	How do you create light sources in OpenGL	?	(6)		
	b.	Explain Phong Shading.		(10)		
Q.8	a.	Explain how you can copy a pixmap from on another.	e section of memory to	(8)		

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- b. Explain how polygon-defined region is filled using scan line method. (8)
- Q.9 a. Explain how curves are described by means of polynomials. Obtain the implicit functions for an ellipse, a parabola and a hyperbola. (10)

b. Write the parametric form of Bezier curve based on four points. Also list the four cubic Bernstein polynomials. **(6)**