B. Tech Degree VI Semester Examination, April 2009

CS 603 COMPUTER GRAPHICS

(2002 Scheme)

Time : 3 Hours | Maximum Marks : 100

I.	(a)	Write an algorithm to draw a line using Bresenham's line drawing algorithm. Explain it with an example.	(12)
	(b)	Explain Random scan and Raster scan display systems. What are the main differences between them?	(8)
		OR	
II.	(a)	Develop an algorithm to draw a circle using midpoint circle drawing algorithm.	(10)
	(b)	Explain any two polygon filling algorithms.	(10)
III.	(a)	What are the basic 2D geometric transformations? Explain each with its matrix representation.	(10)
	(b)	Explain Cohen – Sutherland line clipping algorithms.	(10)
		OR	
IV.	(a)	Show that the composition of two rotations is additive by concatenating the matrix representations for $R(\theta_1)$ and $R(\theta_2)$ to obtain $R(\theta_1).\ R(\theta_2) = R(\theta_1 + \theta_2)$.	(6)
	(b)	Develop an algorithm to clip a polygon against a regular window. Explain it with an example.	(14)
V.	(a)	What is Hermite polynomial? Explain.	(10)
	(b)	Explain B – spline curves with an example. What are advantages of B – spline curves over Bezier curves?	(10)
		OR	
VI.	(a)	Explain octree and quadtree representations for performing constructive solid – geometry modelling.	(10)
	(b)	What are the different basic projection methods? Explain.	(10)
VII.		Explain scan – line and depth buffer algorithms for visible surface detection in 3D graphics.	(20)
		OR	
VIII.		Explain Ray – Casting and Area subdivision methods for visible surface detection in 3D graphics.	(20)
IX.	(a)	Describe any two polygon rendering techniques.	(10)
	(b)	Explain RGB and HSV color modelling.	(10)
		OR	
X.		Write short notes on : (i) Morphing (ii) Raster animation (iii) Illumination models (iv) VRML.	(20)

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