BTS(C) – VII- (S) – 09 – 038 – U

B. Tech Degree VII Semester (Supplementary) Examination July 2009

IT/CS/EC/EB 705 (A) DIGITAL IMAGE PROCESSING

(1999 Scheme)

Time : 3 Hours Maximum Marks : 100

I.	(a)	Explain the basic image processing operations.	(12)
	(b)	Define Kronecker product. List its important properties.	(8)
		OR	
II.	(a)	Define the following with respect to random signals. (i) Covariance (ii) Variance (iii) Autocorrelation	(12)
	(b)	Explain the following terms. (i) Toeplitz matrix (ii) Circulant matrix (iii) Block Toeplitz matrix (iv) Block Circulant matrix	(8)
III.	(a)	Explain the temporal properties of vision.	(10)
	(b)	What are the different colour vision models? Briefly describe them.	(10)
		OR	
IV.	(a)	Explain sampling of images. What do you mean by non rectangular sampling?	(12)
	(b)	What are the practical limits in sampling reconstruction?	(8)
V.	(a)	What do you mean by unitary transforms? What are its properties?	(10)
	(b)	List four properties of two dimensional Discrete Fourier Transformation.	(10)
		OR	
VI.	(a)	Show that the two dimensional DCT may be computed by a Row pass followed by Column pass.	(12)
	(b)	List the properties of Hadamard Transform.	(8)
VII.	(a)	Explain the point operations of image enhancement.	(12)
	(b)	Explain the process of Histogram equalization.	(8)
		OR	
VIII.	(a)	Explain the spatial averaging and median filtering operations with suitable masks. Compare their performances.	(12)
	(b)	Explain the principle of bit extraction and bit removal.	(8)
IX.	(a)	What are the different transform and spatial features used for image analysis?	(12)
	(b)	Explain any one type of gradient operator. When is it used?	(8)
		OR	
X.	(a)	Explain the principle of edge detection in Images. Why are second derivatives not used directly for computing edges?	(12)
	(b)	Explain the principle of compass operators.	(8)

***