BTS (C) – VII – 08 – 054 – U

B. Tech Degree VII Semester Examination, November 2008

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

(1999 Scheme)

Time : 3 Hours Maximum Marks : 100

I.	(a)	What is a digital image? How is a digital image represented?	(10)
	(b)	Differentiate between image restoration and image enhancement.	(5)
	(c)	Write a short note on Markovian processes.	(5)
		OR	
II.	(a)	Define Kronecker product of two matrices.	(5)
	(b)	Mention four properties of Kronecker products.	(5)
	(c)	Define : (i) Block matrices (ii) Toeplitz matrices (iii) Circulant matrices (iv) Block Toeplitz and Block Circulant matrices. What is the significance of block matrices in Digital Image Processing?	(10)
III.	(a)	Explain the following : (i) Luminance (ii) Contrast (iii) Modulation Transfer Function.	(10)
	(b)	State and explain 2 – D sampling theorem.	(10)
		OR	
IV.	(a)	Describe monochrome vision model.	(10)
	(b)	What is colour matching? Explain four laws of colour matching.	(10)
V.	(a)	Explain the properties of a unitary transform.	(10)
	(b)	Define 2 – D DCT. Show that it is separable.	(10)
		OR	
VI.	(a)	Generate the Hadamard transform matrix of order 3.	(10)
	(b)	Define Haar transform. What are its properties?	(10)
VII.	(a)	Explain the following : (i) Contrast stretching (ii) Intensity level slicing (iii) Bit extraction.	(10)
	(b)	Explain the principle of Histogram equalization.	(10)
		OR	
VIII.	(a)	Explain the principle of homomorphic filtering.	(10)
	(b)	Explain colour image enhancement principles.	(10)
IX.	(a)	Explain different types of gradient operators.	(12)
	(b)	Explain the principle of computer vision.	(8)
		OR	
X.	(a)	Explain the principle of stochastic gradient.	(10)
	(b)	Write spatial masks for detecting (i) horizontal line (ii) vertical line (iii) diagonal line at 45°	(10)

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