B. Tech Degree VII Semester (Supplementary) Examination, June 2008

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

(1999 Scheme)

Time : 3 Hours Maximum Marks : 100

I. (a) Explain the terms :
(i) Image enhancement (ii) Image Restoration (10)

(b) State the following properties of 2D-Fourier Transform
(i) Linearity (ii) Conjugation
(iii) Scaling (iv) Separability
(v) Shifting. (10)

OR

II. (a) Define the following terms :
(i) Gaussian Random Process (ii) Markov process
(iii) Block Matrix (iii) Orthogonality (10)

(b) State the following properties of the 2D-Z tranform
(i) Rotation (ii) Linearity
(iii) Conjugation (iv) Separability
(v) Shifting (10)

III. (a) Define Luminance. Distinguish between luminance and brightness. (6)

(b) Explain Mach band effect with necessary graphs. (4)

(c) With a block diagram explain the features of a monochrome vision model. (10)

OR

IV. (a) State the laws of color matching. (8)

(b) State the 2D sampling theorem. Explain the terms Nyquist Rate, Aliasing and Foldover Frequencies. (12)

V. (a) Define (i) Basis Images (ii) Separable Unitary transform (10)

(b) Explain the properties of Energy Compaction and Energy Conservation of Unitary Transforms. (10)

OR

VI. (a) Define 1-D DFT (2)

(b) State any 4 properties of 1-D DFT (8)

(c) Define Cosine Transform (2)

(d) State any 4 properties of Cosine Transform. (8)

VII (a) Explain the various process involved in image enhancement. (12)

(b) Define (i) Point Operation (ii) Contrast Stretching (4)

(c) Represent clipping and thresholding transformations graphically. (4)

OR

VIII. (a) Explain the terms Histogram Equalization, Histogram Modification and Histogram Specification. (12)

(b) Briefly explain Directional Smoothing. (8)

IX. (a) List the various image analysis techniques. (8)

(b) Explain any two edge detection techniques. (12)

OR

X. (a) Explain what is meant by stochastic gradients. (8)

(b) Compare the various edge detection operators. (12)

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