Code: 13A04704 **R13**

B.Tech IV Year I Semester (R13) Supplementary Examinations June 2017

DIGITAL IMAGE PROCESSING

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) Distinguish between binary images and grey scale Images.
(b) What is the function of image sensor?
(c) State all possible ways of 2D DFT frequency domain shift property of N X N image.
(d) Find Hadamard transformation matrix for N = 2.
(e) Draw the transfer curve to obtain Image negatives.
(f) Distinguish between spatial domain filtering and frequency domain filtering.
(g) Distinguish between image enhancement and restoration.
(h) State the applications of image segmentation.
(i) Name the transforms used in JPEG and JPEG 2000 standards.
(j) Lossless Image compression is used in medical imaging applications, Justify it.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) Discuss the need for non uniform sampling.
(b) Explain the following relationship between pixels: (i) Distance measures. (ii) Connectivity.

OR

3 Derive transformation matrices for:
(a) Translation.
(b) Scaling.
(c) Rotation.

UNIT – II

4 Explain the implementation fast Walsh transform. How it is different from FFT?

OR

5 State and prove following 2D DFT properties:
(a) Translation in spatial domain.
(b) Scaling.
(c) Average value.

UNIT – III

6 Explain following image enhancement techniques:
(a) Bit plane slicing.
(b) Grey level slicing.

OR

7 How image smoothing is done in frequency domain?

UNIT – IV

8 Explain the concept of inverse filtering. What are the limitations of it?

OR

9 Discuss about region based Image segmentation.

UNIT – V

10 Discuss the loss less predictive coding with the help of block diagram.

OR

11 Discuss about subjective and objective Image Fidelity criterions.

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