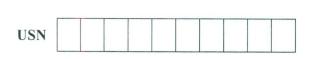
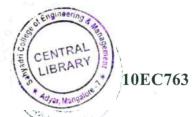
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important Note: 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.





Seventh Semester B.E. Degree Examination, June/July 2018 Image Processing

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART - A

- a. With neat block diagram, explain the components of general purpose Image processing system.

 (12 Marks)
 - b. Explain with neat diagram, the structure of human eye.

(08 Marks)

2 a. Explain image acquisition using sensor arrays.

(08 Marks)

b. Explain with neat diagrams the basic concepts of image sampling and quantization.

(12 Marks)

- 3 a. Staring from two dimensional discrete Fourier transform expressions deduce two dimensional unitary discrete Fourier transforms. (06 Marks)
 - b. List any five properties of unitary discrete Fourier transforms.

(05 Marks)

c. If $A = \frac{1}{\sqrt{2}} \begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix}$ is unitary matrix, $U = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ an image, determine the unitary

transformed Image and find the basis image of 'A'.

(09 Marks)

- 4 a. Define discrete sine transform? List any five properties of it. (08 Marks)
 - b. Define Hadamard transform. Generate 4×4 hadamard matrix.

(08 Marks)

c. List any four properties of hadamard transforms.

(04 Marks)

PART - B

- 5 a. Explain contrast stretching and bit plane slicing piecewise linear transformation techniques.
 (10 Marks)
 - b. Explain histogram equalization technique.

(10 Marks)

- a. List the frequency domain filtering steps with relevant mathematical expressions and Block diagram. (10 Marks)
 - b. Explain any two filtering techniques used in image smoothing.

(10 Marks)

- 7 a. What is image Restoration? Explain with neat block diagram image degradation restoration process. (06 Marks)
 - b. Explain the following with neat plots and mathematical models: i) Uniform noise ii) Impulse noise. (06 Marks)
 - Explain with relevant mathematical models Band reject filters and Band pass filters used in periodic noise reduction.

 (08 Marks)
- 8 a. Explain RGB colour model

(08 Marks)

- b. Explain intensity slicing with reference to pseudo colour image processing. (07 Marks)
- c. Explain the terms with reference to colour image processing hue, saturation and intensity.

(05 Marks)

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