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NEC - 032

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2289468

Roll No.

B.TECH

Regular Theory Examination (Odd Sem - VII), 2016 - 17
DIGITAL IMAGE PROCESSING

Time : 3 Hours

Max. Marks : 100

SECTION - A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (10×2=20)

- Define an image with spatial coordinates.
- Name some types of Image file formats.
- Generate hadamard matrix of 2nd order by Kronecker product.
- List the drawbacks of wiener Filter
- Mention some of the filters to reduce various noises in an Image.
- Compare Noisy image and Blurred image.
- Differentiate Reversible compression and irreversible compression.

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(1)

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- h) Give the operating modes of JPEG format.
- i) Identify the problems in region based segmentation.
- j) How to determine the number of clusters in k-means segmentation algorithm?

SECTION - B

2. **Note: Attempt any five questions from this section**
(5×10=50)

- a) Summarize the concept of image processing components with simple block diagram.
- b) Write a technical note on image analysis with an example.
- c) State the convolution and correlation properties of 2D Fourier transform.
- d) Design a filter to avoid Speckle noise with an example.
- e) Compare RGB image, Gray scale image and Binary image.
- f) Classify the segmentation process with an example.
- g) Draw a neat block diagram for JPEG compression.
- h) How to detect a lines using Hough transform.

SECTION - C

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- Note: Attempt any two Questions from this section.**
(2×15=30)

- 3. Compute the Haar basis for $N = 4$ and interpret the reason for multiplied power of $\sqrt{2}$
- 4. a) Derive the expression for inverse filtering. (8)
b) How to avoid aliasing effect in an image. (7)
- 5. Explain the concepts behind data hierarchy, frame construction, Motion Estimation, and audio compression in MPEG Standard in detail with necessary expression and diagrams.
