Code :R7321904 1

III B.Tech II Semester(R07) Regular & Supplementary Examinations, April/May 2011
DIGITAL IMAGE PROCESSING
(Electronics & Computer Engineering)

Time: 3 hours Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

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1. (a) Discuss about image model
   (b) Explain the following relationship between pixels
      i. Connectivity
      ii. Distance measures
2. (a) Discuss the utility of DCT
   (b) Discuss the implementation fast Walsh transform. How it is different from FFT
3. (a) Explain following Image enhancement techniques.
      i. Grey level slicing
      ii. Bit plane slicing.
   (b) Discuss the following spatial filtering techniques.
      i. High pass filtering
      ii. High boost filtering
4. (a) Explain how image enhancement is done in frequency domain.
   (b) How image sharpening is done in frequency domain.
5. Discuss in detail the concept of Full-color image processing
6. (a) Discuss the algebraic approach of constrained restoration.
   (b) Explain the concept of inverse filtering and what the limitations of it.
7. (a) What are the applications of image segmentation.
   (b) Explain about edge detection.
8. (a) How image redundancies can be eliminated.
   (b) Explain the need for channel encoder and decoder.

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Code :R7321904 2

III B.Tech II Semester(R07) Regular & Supplementary Examinations, April/May 2011
DIGITAL IMAGE PROCESSING
(Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Discuss about image sampling and quantization.
   (b) Explain the fundamental steps involved in digital image processing.
2. State and prove following 2D DFT properties
   (a) Periodicity
   (b) Separability
   (c) Rotation
3. (a) Explain following Image enhancement techniques
      i. Contrast stretching
      ii. Bit plane slicing.
   (b) Discuss the following spatial filtering techniques.
      i. Derivative filters
      ii. High boost filtering
4. (a) Distinguish between enhancement in spatial domain and frequency domain.
   (b) How image smoothing is done in frequency domain.
5. (a) Differentiate Pseudo-color image processing and full color image processing.
   (b) What is the need for color model conversion?
6. (a) With the help of block diagram explain about degradation model.
   (b) Discuss about algebraic restoration.
7. (a) Explain the concept of edge linking and boundary detection.
   (b) Explain the different thresholding operations used in image segmentation.
8. (a) What is the need for image compression.
   (b) Discuss the transform domain compression with the help of block diagram.

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Code :R7321904 **3**

III B.Tech II Semester(R07) Regular & Supplementary Examinations, April/May 2011
DIGITAL IMAGE PROCESSING
(Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) What is non uniform sampling and how it is different from uniform sampling
   (b) Explain the following relationship between pixels
      i. Labelling Connected components
      ii. Transitive closure
2. State and prove following 2D DFT properties
   (a) Translation in frequency domain
   (b) Scaling
   (c) Rotation
3. (a) Discuss about image enhancement using histogram processing.
   (b) Sketch and explain histograms of Dark image, Bright image, Low contrast image and High contrast image.
4. (a) Distinguish between enhancement in spatial domain and frequency domain.
   (b) How high pass filtering is used in frequency domain for image enhancement.
5. Explain about different color models used in color image processing.
6. (a) Explain the need for image restoration.
   (b) Explain about Wiener filtering.
   (c) Explain about interactive restoration.
7. (a) Explain about region based segmentation.
   (b) Discuss about edge formulation and its detection.
8. (a) Explain about objective and subjective image Fidelity Criterion.
   (b) How psycho visual redundancy is different from other redundancies.

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Code :R7321904 4

III B.Tech II Semester(R07) Regular & Supplementary Examinations, April/May 2011
DIGITAL IMAGE PROCESSING
(Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Explain arithmetic and logic operations that can be performed on images.
   (b) List the applications of image processing.
2. State and prove following 2D DFT properties
   (a) Translation in spatial domain
   (b) Scaling
   (c) Average value
3. Discuss following techniques for image enhancement.
   (a) Median filtering
   (b) Image subtraction
   (c) Derivative filters
4. (a) Explain how image enhancement is done in frequency domain.
   (b) How low pass filtering is used in frequency domain for image enhancement.
5. With the help of block diagram explain about Full-color image processing.
6. (a) Explain about inverse filtering.
   (b) Compute circulate matrix when length f(x) is '4' and h(x) is '3'.
7. Explain the detection of discontinuities in detail.
8. (a) Discuss the loss less predictive coding with the help of block diagram.
   (b) Discuss about image compression standards.

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