Code No. M0424 **R07** **Set No.1**

IV B.Tech I Semester Supplementary Examinations, February/March, 2012

DIGITAL IMAGE PROCESSING

(Electronics and Communication Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. a) What is meant by binary image, color image, grey-scale image? [8]
   b) Explain about various methods of image acquisition and explain about Quantization. [8]

2. Discuss the basics separable transforms. Also give example for it. [16]

3. a) Discuss Image sharpening with high pass masks.
   b) Discuss Image sharpening with high boost filtering. [8+8]

4. Distinguish between spatial domain techniques and frequency domain techniques of Image enhancement. [16]

5. What is pseudo color image processing? Discuss various pseudo color techniques [16]

6. Discuss the following filters in detail
   a) Arithmetic mean filter
   b) Geometric mean filter
   c) Harmonic mean filter
   d) Contra harmonic mean filter [4+4+4+4]

7. Discuss edge detection algorithms in detail [16]

8. Explain the following
   a) One-dimensional run-lengths coding
   b) Two- dimensional run-lengths coding
   c) Counter predictive coding
   d) Loss less predictive coding [4+4+4+4]

Code No. M0424 **R07** **Set No.2**

IV B.Tech I Semester Supplementary Examinations, February/March, 2012

DIGITAL IMAGE PROCESSING

(Electronics and Communication Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. a) What is Image processing and explain the components of it? [8]
   b) What is Spatial and Gray level resolution? [8]

2. With mathematical expressions discuss Hotelling transform and explain how it is useful in Image processing. How it is different from other transforms. [16]

3. a) What is meant by image enhancement by point processing? Discuss about gray-level slicing. [10]
   b) State and explain any two of Image sharpening filters [6]

4. Sketch perspective plot of a 2-D Ideal Low pass filter transfer function and filter cross section and explain its usefulness in Image enhancement. [16]

5. Explain various color segmentation techniques in detail [16]

6. Explain various image restore filters in detail. [16]

7. a) Develop a general procedure for obtain the normal representation of a line from its scope intercept equation y = ax + b
   b) Find the normal representation of the line y = -2x + 1. [16]

8. Write about the following:
   a) Interpixel Redundancy [8]
   b) Psychovisual Redundancy. [8]

Code No. M0424 **R07** **Set No.3**

IV B.Tech I Semester Supplementary Examinations, February/March, 2012

DIGITAL IMAGE PROCESSING

(Electronics and Communication Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. a) Explain nearest neighbor interpolation and bilinear interpolation. [8]
   b) Explain these following briefly.
      i) Image acquisition
      ii) Image compression [4+4]

2. a) Explain walsh transform in detail [8]
   b) Explain about convolution and correlation properties of the 2 D FFT [8]

3. a) Prove that for continuous signal Histogram equalization results in flat histogram. [8]
   b) Explain how Histogram statistics helps in Image Enhancement. [8]

4. Give the expression for 2-D Butterworth Low pass filter transfer function and Sketch it. Explain its usefulness in Image enhancement. [16]

5. Describe the gray level transformations of color image. [16]

6. Explain about Adaptive median filter. [16]

7. What is Sparse Matrix? How it is used by Hough Transform? Explain. [16]

8. a) Draw and explain a general compression system model. [8]
   b) Draw the relevant diagram for source encoder and source decoder. [8]

Code No. M0424 **R07** **Set No.4**

IV B.Tech I Semester Supplementary Examinations, February/March, 2012

DIGITAL IMAGE PROCESSING

(Electronics and Communication Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. a) Write a brief notes on various components of digital image processing System? [10]
   b) Explain the formation of a simple image? [6]

2. With mathematical expressions discuss Haar transform and explain how it is useful in Image processing. [16]

3. a) Explain the need for Image enhancement. [8]
   b) Explain Gray level transformation functions for contrast enhancement. [8]

4. a) Explain any two low pass frequency domain filters. [10]
   b) Explain how the butter worth filters can be converted to ideal or Gaussian LPF [6]

5. Derive the Laplacian coefficients for 3*3 mask? Explain how the Laplacian operator improves the quality of image. [16]

6. Explain about Iterative Nonlinear Restoration Using the Lucy-Richardson algorithm. [16]

7. Explain about Line detection using the Hough Transform. [16]

8. Explain the following
   a) Coding redundancy
   b) Inter pixel redundancy
   c) Psycho visual redundancy on the frame [5+5+6]