

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**

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. [8+8]
b) Discuss Image sharpening with high boost filtering.
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 [4+4+4+4]
 - a) Arithmetic mean filter
 - b) Geometric mean filter
 - c) Harmonic mean filter
 - d) Contra harmonic mean filter
7. Discuss edge detection algorithms in detail [16]
8. Explain the following [4+4+4+4]
 - a) One-dimensional run-lengths coding
 - b) Two- dimensional run-lengths coding
 - c) Counter predictive coding
 - d) Loss less predictive coding

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

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 slope 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**

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

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]