

Code No: R05410408

R05**Set No. 2**

IV B.Tech I Semester Examinations, November 2010

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 Image Filtering and Restoration?
 (b) Draw the appropriate Digital image restoration system. [8+8]
2. Develop an algorithm for converting a one pixel thick, 8-connected path to 4-connected path. [16]
3. A binary erasure channel is one in which there is a finite probability β that a transmitted symbol will not be received. The channel has three possible outputs: a0, an erasure (no received symbol), and a1. These three outcomes form the three rows of the binary erasure channel matrix.

$$Q = \begin{bmatrix} 1-\beta & 0 \\ \beta & \beta \\ 0 & 1-\beta \end{bmatrix}$$
 - (a) Find the capacity of the channel.
 - (b) Would you prefer a binary symmetric channel with a 0.125 probability of error or an erasure channel with probability of erasure $\beta = 0.5$? [16]
4. Explain in detail about the CMY and HIS color spaces. [16]
5. What is Thresholding? Explain about Local Thresholding. [16]
6. Give the expression for 2-D Butterworth High pass filter transfer function and sketch it. Explain its usefulness in Image enhancement. [16]
7. What is histogram of an Image? Sketch histograms of basic Image types. Discuss how histogram is useful for Image enhancement. [16]
8. Discuss following terms with respect to 2D-DFT
 - (a) Laplacian
 - (b) Convolution
 - (c) Correlation
 - (d) Scaling. [16]

Code No: R05410408

R05**Set No. 4****IV B.Tech I Semester Examinations, November 2010****DIGITAL IMAGE PROCESSING****Electronics And Communication Engineering****Time: 3 hours****Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. What is Thresholding? Explain about Local Thresholding. [16]
2. Give the expression for 2-D Butterworth High pass filter transfer function and sketch it. Explain its usefulness in Image enhancement. [16]
3. Discuss following terms with respect to 2D-DFT
 - (a) Laplacian
 - (b) Convolution
 - (c) Correlation
 - (d) Scaling. [16]
4. A binary erasure channel is one in which there is a finite probability β that a transmitted symbol will not be received. The channel has three possible outputs: a_0 , an erasure (no received symbol), and a_1 . These three outcomes form the three rows of the binary erasure channel matrix.

$$Q = \begin{bmatrix} 1-\beta & 0 \\ \beta & \beta \\ 0 & 1-\beta \end{bmatrix}$$
 - (a) Find the capacity of the channel.
 - (b) Would you prefer a binary symmetric channel with a 0.125 probability of error or an erasure channel with probability of erasure $\beta = 0.5$? [16]
5. What is histogram of an Image? Sketch histograms of basic Image types. Discuss how histogram is useful for Image enhancement. [16]
6. Explain in detail about the CMY and HIS color spaces. [16]
7. (a) What is meant by Image Filtering and Restoration?
 (b) Draw the appropriate Digital image restoration system. [8+8]
8. Develop an algorithm for converting a one pixel thick, 8-connected path to 4-connected path. [16]

Code No: R05410408

R05**Set No. 1****IV B.Tech I Semester Examinations, November 2010****DIGITAL IMAGE PROCESSING****Electronics And Communication Engineering****Time: 3 hours****Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. Explain in detail about the CMY and HIS color spaces. [16]
2. (a) What is meant by Image Filtering and Restoration?
 (b) Draw the appropriate Digital image restoration system. [8+8]
3. What is histogram of an Image? Sketch histograms of basic Image types. Discuss how histogram is useful for Image enhancement. [16]
4. Discuss following terms with respect to 2D-DFT
 - (a) Laplacian
 - (b) Convolution
 - (c) Correlation
 - (d) Scaling. [16]
5. Give the expression for 2-D Butterworth High pass filter transfer function and sketch it. Explain its usefulness in Image enhancement. [16]
6. A binary erasure channel is one in which there is a finite probability β that a transmitted symbol will not be received. The channel has three possible outputs: a_0 , an erasure (no received symbol), and a_1 . These three outcomes form the three rows of the binary erasure channel matrix.

$$Q = \begin{bmatrix} 1-\beta & 0 \\ \beta & \beta \\ 0 & 1-\beta \end{bmatrix}$$
 - (a) Find the capacity of the channel.
 - (b) Would you prefer a binary symmetric channel with a 0.125 probability of error or an erasure channel with probability of erasure $\beta = 0.5$? [16]
7. What is Thresholding? Explain about Local Thresholding. [16]
8. Develop an algorithm for converting a one pixel thick, 8-connected path to 4-connected path. [16]

Code No: R05410408

R05**Set No. 3****IV B.Tech I Semester Examinations, November 2010****DIGITAL IMAGE PROCESSING****Electronics And Communication Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

1. Develop an algorithm for converting a one pixel thick, 8-connected path to 4-connected path. [16]
2. What is histogram of an Image? Sketch histograms of basic Image types. Discuss how histogram is useful for Image enhancement. [16]
3. What is Thresholding? Explain about Local Thresholding. [16]
4. (a) What is meant by Image Filtering and Restoration?
(b) Draw the appropriate Digital image restoration system. [8+8]
5. A binary erasure channel is one in which there is a finite probability β that a transmitted symbol will not be received. The channel has three possible outputs: a_0 , an erasure (no received symbol), and a_1 . These three outcomes form the three rows of the binary erasure channel matrix.

$$Q = \begin{bmatrix} 1-\beta & 0 \\ \beta & \beta \\ 0 & 1-\beta \end{bmatrix}$$
 - (a) Find the capacity of the channel.
 - (b) Would you prefer a binary symmetric channel with a 0.125 probability of error or an erasure channel with probability of erasure $\beta = 0.5$? [16]
6. Discuss following terms with respect to 2D-DFT
 - (a) Laplacian
 - (b) Convolution
 - (c) Correlation
 - (d) Scaling. [16]
7. Explain in detail about the CMY and HIS color spaces. [16]
8. Give the expression for 2-D Butterworth High pass filter transfer function and sketch it. Explain its usefulness in Image enhancement. [16]
