Code No: RR422202 **Set No.1**

IV B.Tech. II Semester Supplementary Examinations, June -2007
DIGITAL IMAGE PROCESSING
(Instrumentation & Control Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. With a neat diagram discuss clearly the fundamental steps in Digital Image Processing. [16]

2. (a) Discuss a simple image formation model. [8]
   (b) What is meant by sampling and quantization? [8]

3. (a) Discuss the one dimensional Fourier Transform and its Inverse. [8]
   (b) Discuss the convolution and correlation theorems. [8]

4. (a) What is meant by Histogram of an image? Give one example. [6]
   (b) Write an algorithm for histogram equalization. [10]

5. (a) State and explain any two smoothing linear filters. [8]
   (b) Discuss the conversion of colors from HSI to RGB. [8]

6. (a) What is meant by Noise in an image? Discuss the mean Filters for restoration in the presence of noise. [8]
   (b) Discuss about constrained least squares restoration. [8]

7. (a) What is meant by image segmentation? Discuss about edge linking and boundary extraction. [8]
   (b) Explain clearly the region splitting and merging. [8]

8. (a) What is meant by Error-free compression? Discuss about variable-length coding and Huffman coding. [8]
   (b) With a neat diagram explain the lossy predictive coding model. [8]

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Code No: RR422202 **Set No.2**

IV B.Tech. II Semester Supplementary Examinations, June -2007
DIGITAL IMAGE PROCESSING
(Instrumentation & Control Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. What is meant by a Digital Image? With a neat diagram discuss various components of an Image Processing System. [16]
2. (a) Discuss clearly the spatial and Gray level resolution. [8]
   (b) What are Moire Patterns? Discuss their effect. [8]
3. (a) Discuss the Two-Dimentional Fourier Transform and its inverse. [8]
   (b) Discuss about Fast Fourier Transform and its significance. [8]
4. What is meant by image enhancement? Discuss the various methods of image enhancement by point processing. [16]
5. (a) What is meant by Histogram of an image? Discuss the significance of Histogram equalization. [8]
   (b) Discuss about Image subtraction and averaging. [8]
6. (a) What is meant by Noise in an image? Discuss some important Probability density functions. [8]
   (b) State and explain various order statistics filters. [8]
7. (a) What is meant by thresholding? Discuss about basic adaptive thresholding. [8]
   (b) Discuss various edge detection techniques. [8]
8. (a) With a neat diagram, discuss the general compression system model. [8]
   (b) What is meant by lossy compression? Discuss about transform coding? [8]

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Code No: RR422202 **Set No.3**

IV B.Tech. II Semester Supplementary Examinations, June -2007
DIGITAL IMAGE PROCESSING
(Instrumentation & Control Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Distinguish between Binary Image, Gray scale Image and Digital Image. [8]
   (b) With a neat diagram explain the structure of the Human eye. [8]
2. (a) Discuss clearly with suitable examples, how digital images are represented. [8]
   (b) What is meant by Adjacency, connectivity, Regions and Boundaries? [8]
3. (a) Discuss about Fast Fourier Transform and its significance. [8]
   (b) State and explain the properties of the 2-D Fourier Transform. [8]
4. (a) Discuss about order-Statistics Filters. [8]
   (b) Discuss the use of second derivative for enhancement. [8]
5. (a) What is meant by Histogram of an image? Discuss about Histogram specification. [8]
   (b) Discuss about the RGB color model. [8]
6. (a) Explain clearly about least mean square filtering. [8]
   (b) Discuss about Interactive restoration. [8]
7. (a) Discuss about point detection and line detection. [8]
   (b) What is meant by region based segmentation? Discuss about region growing. [8]
8. (a) Discuss the Fidelity criteria and error free encoding. [8]
   (b) Explain the channel encoder and decoders. [8]

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Code No: RR422202 **Set No.4**

IV B.Tech. II Semester Supplementary Examinations, June -2007
DIGITAL IMAGE PROCESSING
(Instrumentation & Control Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) With a neat diagram, discuss the rods and cones in the retina. [8]
   (b) Explain about brightness adaptation and discrimination. [8]
2. (a) What is meant by sampling & quantization? [8]
   (b) Discuss in brief some basic relationships between pixels. [8]
3. (a) Discuss about Hadamard transform, and its, significance in image processing. [8]
   (b) Distinguish between Discrete Fourier Transform and Discrete Cosine Transform. [8]
4. (a) Discuss the use of first derivatives in Image enhancement. [8]
   (b) State and explain any two point processing techniques. [8]
5. Discuss various color models. [16]
6. (a) What is meant by noise in an image? Discuss the spatial and frequency properties of noise. [8]
   (b) Discuss the mean filters for noise removal in an image. [8]
7. (a) What is meant by image segmentation? Discuss about edge detection. [8]
   (b) What is meant by Region-Based segmentation? Discuss about region splitting and merging. [8]
8. (a) What is meant by image compression? Explain the channel encoder and decoder. [8]
   (b) Discuss clearly the Huffman coding and variable length coding. [8]

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