

22/12/2011

BE ETRX Sem-VII (REV)

Digital Image Processing
Design
MP-5593

PR-Oct. (I) 178

Con.6842-11.

(REVISED COURSE)

(3 Hours)

[Total Marks : 100]

- N.B. :** (1) Question No. 1 is compulsory.
 (2) Attempt any four questions out of remaining six questions.
 (3) Assume any suitable data if necessary.

1. State whether the following statements are true or false. Justify your answer— 20
- Low pass filter is smoothing filter.
 - Huffman coding is a lossless data compression technique.
 - Median filter is used to remove salt and pepper noise.
 - Quality of picture does not depend on the number of pixels and gray levels that represent the image.

2. (a) An image segment of 4×4 size with 3 bits per pixel is shown below. Perform 10 the following operations—
- Image Negative
 - Bit plane slicing—

0	7	1	2
2	5	3	2
1	4	5	6
3	2	5	2

- (b) What do you understand by sampling and quantization with respect to digital image processing? How will you convert an analog image into a digital image. 10
3. (a) Discuss advantages of homomorphic filtering. Also explain the steps of homomorphic filtering with the help of a neat block diagram. 10
- (b) Name different types of image segmentation techniques. Explain the splitting and merging technique with the help of an example. 10
4. (a) Compare between contract stretching and histogram equalization. 10
- (b) What do you understand by Hadamard Transform? Write a 4×4 Hadamard Matrix. Discuss application of Hadamard Transform. 10
5. (a) Name and explain different types of redundancies in digital image. 10
- (b) Explain image compression model with the help of a neat block diagram. 10

6. (a) How will you detect following in a digital image ? 10
- (i) Point
 - (ii) Line
 - (iii) Edge.
- (b) Define two dimensional Discrete Fourier Transform (2D - DFT). Explain the 10
properties of 2D - DFT in detail.

7. Write short notes on the following :- 20

- (a) Biometric Authentication
 - (b) Dilation and Erosion
 - (c) Digital Watermarking
 - (d) Lossless Compression.
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