

2056
B.E. (Computer Science and Engineering)
Sixth Semester
CS-603: Digital Image Processing

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 (Section-A) which is compulsory and selecting two questions each from Section B-C.

x-x-x

Section-A
(Compulsory Question)

1. (a) A digital image is composed of:
- (i) Pixels
 - (ii) Vectors
 - (iii) Signals
 - (iv) Waves
- (b) A gray scale image normally contains:
- (i) 2 levels
 - (ii) 16 levels
 - (iii) 256 levels
 - (iv) 1024 levels
- (c) Smoothing filters are used to:
- (i) Enhance edges
 - (ii) Reduce noise
 - (iii) Increase contrast
 - (iv) Segment objects
- (d) Image restoration deals with:
- (i) Improving visual appearance only
 - (ii) Recovering the original image from degraded image
 - (iii) Compressing the image
 - (iv) Converting color images
- (e) Salt and pepper noise is also called:
- (i) Impulse noise
 - (ii) Gaussian noise
 - (iii) Periodic noise
 - (iv) Speckle noise

(2)

- (f) Data compression reduces:
- (i) Image quality always
 - (ii) Redundant data
 - (iii) Image brightness
 - (iv) Image resolution
- (g) Which compression technique is lossless?
- (i) JPEG
 - (ii) Huffman coding
 - (iii) Transform coding
 - (iv) Quantization
- (h) JPEG compression mainly uses:
- (i) Fourier Transform
 - (ii) Discrete Cosine Transform (DCT)
 - (iii) Laplace Transform
 - (iv) Wavelet Transform
- (i) Which operator is commonly used for edge detection?
- (i) Sobel operator
 - (ii) Mean filter
 - (iii) Gaussian filter
 - (iv) Median filter
- (j) Erosion operation in morphology:
- (i) Expands object boundaries
 - (ii) Shrinks object boundaries
 - (iii) Enhances edges
 - (iv) Adds noise

(10 X 1 = 10)

Section-B

2. What is image acquisition? Explain the components and process involved in image acquisition. (10)
3. Explain frequency domain filtering with the help of Fourier Transform. (10)
4. Explain the causes of image degradation and methods used for image restoration. (10)

Section-C

5. What is image compression? Explain the different types of redundancies present in images. (10)
6. Explain boundary representation techniques used in image processing. (10)
7. What is thresholding in image processing? Explain global and local thresholding techniques. (10)