R16

Code No: 136BD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, May - 2019
DIGITAL IMAGE PROCESSING
(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Compare and contrast digital image and binary image.	[2]
b)	Define spatial and gray level resolution.	[3]
c)	List the various areas of application of image subtraction	[2]
d)	Explain about median filtering.	[3]
e)	Explain about alpha-trimmed mean filter?	[2]
f)	Write short notes on Max and Min filters.	[3]
g)	What is meant by edge in a digital image?	[2]
h)	What is meant by optimal Thresholding?	[3]
i)	Write short notes on spatial redundancy.	[2]
j)	Explain the Fidelity criteria.	[3]

PART - B

(50 Marks)

2.a) State and prove separability property of 2D-DFT.
b) Explain the role of Discrete Cosine transform in image processing. [5+5]

OR

3.a) Obtain the slant transforms matrix For N=8.
b) Develop an FFT algorithm using successive doubling method. [5+5]

4. Sketch perspective plot of an 2-D Ideal Low pass filter transfer function and filter cross section and explain its usefulness in Image enhancement. [10]

OR

5.a) What is meant by Histogram of an image. Write and explain with an example an algorithm for histogram equalization.
b) What is meant by the Gradient and the Laplacian? Discuss their role in image enhancement. [5+5]

6.a) Illustrate the use of adaptive median filter for noise reduction in an image.
b) Outline the different approaches to estimate the noise parameters in an image. [5+5]

OR

7.a) What are the different ways to estimate the degradation function? Explain.
b) Explain about noise reduction in an image using band reject and band pass filters. [5+5]

8.a) Explain about Global Processing by making use of Hough Transform?
b) Explain the following morphological algorithms [4+6]
i) Boundary extraction ii) Hole filling

OR

9.a) With necessary figures, explain the opening and closing operations.
b) Describe the procedure for image segmentation based on region growing with relevant examples. [5+5]

10.a) Consider an 8- pixel line of gray-scale data, {12,12,13,13,10,13,57,54}, which has been uniformly quantized with 6-bit accuracy. Construct its 3-bit IGS code.
b) What is bit-plane slicing? How it is used for achieving compression? [5+5]

OR

11.a) With the help of a block diagram explain about transform coding system.
b) Summarize the various types of data redundancies? [5+5]

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