Code No: 117CJ **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

DIGITAL IMAGE PROCESSING

(Common to ECE, ETM)

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)	Define Sampling and Quantization.	[2]
b)	List the properties of Walsh Transform.	[3]
c)	Define histogram.	[2]
d)	What is the need of image enhancement?	[3]
e)	What is the difference between image restoration and image enhancement?	[2]
f)	Draw the model of Image Restoration process.	[3]
g)	List different types of discontinuities in digital image.	[2]
h)	What is global, Local and dynamic threshold?	[3]
i)	What is the need of image compression?	[2]
j)	Give the characteristics of lossless compression.	[3]

Part-B

(50 Marks)

2. With mathematical expressions explain the Slant transform and explain how it is useful in Image processing. [10]

OR

3.a) List and explain the fundamental steps in digital image processing.

b) Discuss briefly the following:
i) Neighbours of pixels ii) connectivity. [5+5]

4.a) Explain the use of histogram statistics for image enhancement.

b) How Gray level transformation helps in contrast enhancement? Discuss. [5+5]

OR

5.a) Compare and contrast spatial domain and frequency domain techniques of Image enhancement.

b) Discuss any one frequency domain technique of Image smoothing. [5+5]

6. What is meant by image restoration? Explain the image degradation model. [10]

OR

7. Discuss in detail the image restoration using inverse filtering. [10]

8.a) Explain the basics of intensity thresholding in image segmentation.
b) Explain about morphological hit-or-miss transform. [5+5]

OR

9.a) Discuss in detail the edge linking using local processing.
b) Discuss briefly the region based segmentation. [6+4]

10.a) Discuss briefly the Image compression using Huffman coding.
b) What is the importance of compression in Image processing? [7+3]

OR

11.a) Draw and explain the image compression model.
b) List and explain the steps involved in JPEG compression. [6+4]

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