

Code No: 117CJ

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]

--ooOoo--