

R15

Code No: 127CJ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2018

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) What is Digital Image Processing? [2]
- b) Define Walsh Transform. [3]
- c) What is the objective of image enhancement technique? [2]
- d) List the steps involved in frequency domain filtering. [3]
- e) Compare Image enhancement and Restoration techniques. [2]
- f) Write the drawbacks of image restoration using inverse filtering. [3]
- g) List the applications of segmentation. [2]
- h) What is global, Local and dynamic or adaptive threshold? [3]
- i) What is image compression? [2]
- j) List out the JPEG 2000 standards. [3]

PART-B

(50 Marks)

- 2.a) Explain the basic concepts of sampling and quantization in the generation of digital image. [5+5]
- b) Explain the following terms:
i) Adjacency ii) Connectivity iii) Regions iv) Boundaries.

OR

- 3.a) Compare and contrast different image transform techniques. [5+5]
- b) Find out the Slant transform matrix for $N=8$.
- 4.a) Illustrate the histograms of basic Image types. [4+6]
- b) Discuss any one method of an image enhancement through point operation.

OR

- 5.a) Explain image smoothing using ideal lowpass filters. [5+5]
- b) List various approaches used in Image enhancement and then discuss any one method of it.

6. Discuss in detail the image restoration using minimum mean square error filtering. [10]

OR

- 7.a) How degradation function is estimated? Explain. [5+5]
- b) Briefly explain the interactive image restoration.

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- 8.a) Explain briefly the segmentation based on thresholding.
b) Discuss briefly the region based segmentation.

[5+5]

OR

9. Discuss in detail the following morphological operations:

- a) Erosion
b) Dilation

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[5+5]

- 10.a) What is Error Free Compression? Explain.
b) Discuss briefly the Image compression using Arithmetic coding.

[5+5]

OR

11. Draw the functional block diagram of image compression system and explain the purpose of each block.

[10]

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