Code No: 117CJ **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, January/February - 2023
DIGITAL IMAGE PROCESSING
(Electronics and Communication Engineering)

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

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A
(25 Marks)

1.a)	How to represent an Image?	[2]
b)	What is the need of sampling and quantization?	[3]
c)	Define median filter.	[2]
d)	Compare spatial domain and frequency domain image enhancement.	[3]
e)	Draw the degradation model of Image Processing.	[2]
f)	Why the restoration is called as unconstrained restoration?	[3]
g)	Write about linking edge points.	[2]
h)	Write the applications of segmentation.	[3]
i)	Define compression ratio.	[2]
j)	What are two main types of Data compression?	[3]

PART – B
(50 Marks)

2.a) Define Haar transform and Write the properties of Haar transform.
b) Discuss the Relationship between Pixels in detail. [5+5]

OR

3.a) Define the 2-D FFT and Write its properties.
b) Find out the Slant transform matrix for N=8. [5+5]

4.a) Explain the use of histogram statistics for image enhancement.
b) What is point processing? Explain how it improves image enhancement? [5+5]

OR

5.a) Write short note on spatial domain high-pass filtering.
b) Explain the role of Filtering in frequency domain. [5+5]

6.a) Discuss the concept of algebraic image restoration.
b) Explain the model of image degradation process. [5+5]

OR

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

8.a) What is difference between thresholding based and region based segmentation.

b) Describe the region splitting and merging algorithm. [5+5]

OR

9.a) Write about region oriented segmentation.

b) Explain the role of Hit or Miss transformation in morphological image processing. [5+5]

10. What are the redundancies and explain their removal methods. [10]

OR

11. Explain Loss less and lossy predictive coding with necessary equations and diagrams. [10]

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