R13

Code No: 117CJ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, March - 2017
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)	Define image resolution.	[2]
b)	What are the steps involved in DIP?	[3]
c)	Specify the objective of image enhancement techniques.	[2]
d)	Differentiate between linear spatial filter and non-linear spatial filter.	[3]
e)	What is meant by image restoration?	[2]
f)	What is inverse filtering?	[3]
g)	Define region growing.	[2]
h)	What are the three types of discontinuity in digital image?	[3]
i)	Define huffman coding.	[2]
j)	What are different compression methods?	

Part-B (50 Marks)

2.a) What is meant by digital image processing? What are the applications of it? How an image is represented digitally?
b) Non uniform sampling is useful for what type of images. Give reasons. [5+5]

OR

3.a) Is fast algorithm applicable for computation of Hadamard transform, if so what are the problems encountered in implementation.
b) Explain Discrete Cosine Transform and specify its properties. [5+5]

4.a) What is a histogram of an image? Sketch histograms of basic image types.
b) Discuss how histogram is useful for image enhancement. [5+5]

OR

5. What are the techniques used for image smoothing? Explain any one spatial and one frequency techniques used for image smoothing. [10]

6. Describe constrained least square filtering technique for image restoration and derive its transfer function. [10]

OR

7. Describe with mathematical model, both constrained and unconstrained restoration. [10]

8.a) Explain the segmentation techniques that are based on finding the regions.
b) Write the applications of segmentation. [7+3]

OR

9.a) Explain any two methods for linking the edge pixels to form a boundary of an object.
b) Explain with examples morphological operations dilation and erosion. [7+3]

10.a) Explain the schematics of image compression standard JPEG.
b) Draw and explain a general compression system model. [5+5]

OR

11.a) Describe in detail the lossless predictive coding error free compression.
b) Explain briefly the transform based compression. [5+5]

---ooOoo---