

Exam.Code:0920
Sub. Code: 7021

1019
B.E. (Computer Science and Engineering)
Eighth Semester
CSE-812: Digital Image Processing

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) What is the purpose of quantization?
- b) Why do we use intensity based color models?
- c) Why do we process images in frequency domain?
- d) What is pseudo coloring?
- e) What is the use of wavelet transform?
- f) What is psychovisual redundancy?
- g) List the different Noise models.
- h) List different boundary linking techniques.
- i) What is thresholding?
- j) List any two regional descriptors.

(10x1)

UNIT – I

- II. a) Consider an image acquisition device with resolution 4 megapixel and 128 quantization levels in each of RGB plane. What will be the size of the raw image taken using this device. What are the different factors that affect the acquisition? Can we reduce the size of image by changing the color model of image?
 - b) Prove that brightness is not a simple function of intensity but contrast can be measured from the intensity.
- III. a) What is the advantage of using frequency domain filters? Explain how low pass, band pass and high pass filter can be applied?
 - b) What is median filtering? How can it be used to remove salt and pepper noise?

(7,3)

(5,5)

P.T.O.

(2)

- IV. a) What is homomorphic filtering? Explain the process in detail.
b) How degraded images are restored? Explain different mechanisms? (5,5)

UNIT – II

- V. What is the use of Quantization matrix in JPEG compression? How do we control quality using quantization matrix? Explain the JPEG compression in detail. (10)
- VI. a) Consider an image with 5 different types of pixel value with probability of occurrence as (0.2, 0.1, 0.4, 0.2, 0.1). Explain Arithmetic coding using this data.
b) Describe the various boundary representation techniques. (5,5)
- VII. a) Explain the different edge detection techniques? How their performance can be compared?
b) How region of interest is segmented from images? Explain the different region representation techniques. (5,5)

x-x-x