Exam.Code:0970
Sub. Code: 34552

2055

M.E. Electronics and Communication Engineering
Second Semester
ECE-1202: Digital Image Processing

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. 1 (Section-A) which is compulsory and selecting two questions each from Section B-C.

x-x-x

Section -A

Q 1(a) What will be the size of the raw image taken using this device with resolution 4 megapixel and 512 quantization levels in each of RGB plane? (10)

(b) What is Gaussian noise? How can it be represented using mean and standard deviation?

(c) What do you mean by color gamut of any color model?

(d) What is the use of Fourier descriptors?

(e) Can we compress images without any loss?

Section -B

Q2 (a) What affects the quality of an image during acquisition? How brightness and contrast of an image is defined and managed? (5)

(b) What is the purpose of the histogram of an image? How image gets improved after histogram equalization. Explain the process of histogram equalization (5)

Q3 (a) What is the advantage of using spatial domain filters? Explain the following filter mask and their advantages (i) Averaging Filter (ii) High Boost Filter (iii) Gradient Filters (5)

(b) Describe the different image smoothening functions using spatial and frequency domain filters. (5)

Q 4 (a) What are common Nosie and degradations found in images transformed using Fax? (5)

(b) What are different ways to restore degraded image? How would you differentiate image noise from degradation? (5)

Section -C

Q5 Describe the basis functions in time frequency plane. Describe the use of Haar transforms and its use for scaling. (10)

Q6 (a) What is pyschovisual redundancy? How is it exploited in JPEG Compression? Explain the JPEG compression algorithm in detail. (5)

(b) List the different region segmentation techniques. Explain the Region Splitting and Merging by taking an example. (5)

Q7 (a) What are the different edge detection techniques. Explain the hough transformation boundary linking technique (5)

(b) Consider an image with 5 different types of pixel value with probability of occurrence as (0.2, 0.2, 0.4, 0.1, 0.1). Explain Huffman coding using this data. (5)

x-x-x