008602

May 2023

B.Tech. (ECE) VI Semester
Digital Image and Video Processing (ECEL 606)

Time: 3 Hours   Max. Marks:75

Instructions:
1. *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART -A

Q1 (a) Differentiate between spatial and temporal video segmentation. (1.5)

(b) What are the various video coding standards? (1.5)

(c) What are the various relationships between pixels? (1.5)

(d) What do you mean by gray level transformation? (1.5)

(e) What is image compression? Why is it needed? (1.5)

(f) What is contrast stretching? (1.5)

(g) Define Gradient Operator? (1.5)

(h) Specify the properties of 2D Fourier Transform. (1.5)

(i) Define multiresolution process. (1.5)

(j) What is histogram equalization? (1.5)

PART -B

Q2 (a) What is image sampling and quantization? What are the different types of sampling in image processing? Explain. (9)

(b) Distinguish between smoothing and sharpening filters. (6)

Q3 (a) What is data redundancy? Explain three basic data redundancy? (7)

(b) What is global, local and dynamic or adaptive threshold? (8)

Q4 (a) With the help of a block diagram explain the various elements of a video (9)
encoder decoder.

(b) What is the difference between I P and B frames? (6)

Q5 (a) Apply Huffman Coding for the following information and calculate the average (6)
pixel length.

Symbol	a	B	c	D	e	F
Probability	0.1	0.4	0.06	0.1	0.04	0.3

(b) What are color models? Explain any one of the three color models used in color (9)
image processing.

Q6 (a) Discuss the fundamental operations used in morphological algorithms. (8)

(b) Describe the methods suitable for detection of gray level discontinuities. (7)

Q7. Write Notes on: (15)
(a) Video object detection and tracking
(b) Uncertainity principles of fourier transform
(c) Color slicing