

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

15CS753

Seventh Semester B.E. Degree Examination, Jan./Feb. 2023 Digital Image Processing

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. With a neat block diagram, explain the fundamental steps in image processing. (08 Marks)
b. Explain the components of an image processing system, with a help of a neat block diagram. (08 Marks)

OR

- 2 a. Explain the following terms:
(i) Neighbours (ii) Connectivity of pixels (08 Marks)
(iii) Euclidean distance (iv) City block distance (08 Marks)
b. Discuss the procedure of sampling and quantization with example. (08 Marks)

Module-2

- 3 a. Explain gray level transformation functions. (08 Marks)
b. Explain the following :
(i) Histogram (ii) Normalized histogram (08 Marks)
(iii) Histogram equalization (iv) Histogram matching (08 Marks)

OR

- 4 a. Explain the smoothing linear filter in spatial domain for digital image. (08 Marks)
b. Define image enhancement. Explain how arithmetic operators are helpful in image enhancement. (08 Marks)

Module-3

- 5 a. Explain any four properties of two dimensional discrete Fourier transform. (08 Marks)
b. Explain image sharpening using frequency domain filters. (08 Marks)

OR

- 6 a. Explain the steps involved in filtering in frequency domain. (08 Marks)
b. Obtain the equation for DFT from the continuous transform of sampled function of one variable. (08 Marks)

Module-4

- 7 a. Explain the basic steps in canny edge detection algorithm. (08 Marks)
b. Discuss how point detection and line detection algorithm works. (08 Marks)

OR

- 8 a. Explain region based segmentation. (12 Marks)
b. Write short notes on Hough transform. (04 Marks)

Module-5

- 9 a. Explain with a neat diagram, a general compression system model. (08 Marks)
b. Define data compression. Explain the types of redundancy. (08 Marks)

OR

- 10 a. Explain Huffman coding and arithmetic coding. (10 Marks)
b. With a neat block diagram, explain block transform coding. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.