



CBCS SCHEME

21CS732

Seventh Semester B.E./B.Tech. Degree Examination, June/July 2026 Digital Image Processing

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Where and how image multiplication operation is used? (05 Marks)
- b. Explain neighbors of pixel and adjacency of pixel in image. (05 Marks)
- c. Explain Sampling and quantization in image processing. (10 Marks)

OR

- 2 a. Justify, with an example the advantages of zooming and shrinking of digital images. (05 Marks)
- b. Discuss the different ways of representing digital images. (05 Marks)
- c. Explain the components of image processing system with block diagram. (10 Marks)

Module-2

- 3 a. Why image enhancement is required? Explain basic gray level transformation. (10 Marks)
- b. Apply different Smoothing filters on the given 3×3 image below :

10	20	20
20	15	20
20	25	100

(10 Marks)

OR

- 4 a. Write histogram equalized image for the image given below :

4	4	4	4	4
3	4	5	4	3
3	5	5	5	3
3	4	5	4	3
4	4	4	4	4

(10 Marks)

- b. Explain how pass filters for smoothing in frequency domain. (10 Marks)

Module-3

- 5 a. Explain the different noise models with their probability density functions. (10 Marks)
- b. What are order statistics filters? Explain any three order statistics filters. (10 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.

OR

- 6 a. Why estimation of the degradation function is required? What are the ways to estimate the degradation function? (10 Marks)
- b. List the filters used in periodic noise reduction and explain each. (10 Marks)

Module-4

- 7 a. Explain RGB Color Model. (10 Marks)
- b. With filter bank analysis, explain 2D wavelet transform. (10 Marks)

OR

- 8 a. Explain the concept of Dilation and Erosion. (10 Marks)
- b. What is Morphological Image Processing? Explain any 3 morphological algorithms. (10 Marks)

Module-5

- 9 a. What is Thresholding in image segmentation? Discuss for principles of thresholding. (10 Marks)
- b. Discuss different detection methods in image processing. (10 Marks)

OR

- 10 a. Explain Boundary Descriptors with an example. (10 Marks)
- b. Discuss about image segmentation algorithm with classification. (10 Marks)
