

GBCS SCHEME

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18AD742

Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024 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. Define Digital Image Processing. Explain the fundamental steps in Digital Image Processing with neat block diagram. (10 Marks)
- b. Explain the components of Image processing system with neat diagram. (10 Marks)

OR

- 2 a. Briefly explain the elements of visual perception. (10 Marks)
- b. Illustrate Image Sampling and Quantization with an example. (10 Marks)

Module-2

- 3 a. Explain the following Basic Intensity Transformation:
i) Image Negatives ii) Log Transformations (10 Marks)
- b. Explain Image Smoothing and Image Sharpening using Frequency Domains Filters. (10 Marks)

OR

- 4 a. Define 2D-DFT. Explain the following properties of 2D-DFT:
i) Translation ii) Rotation (10 Marks)
- b. Describe Histogram Processing with at least two examples. (10 Marks)

Module-3

- 5 a. Illustrate Restoration in the presence of Noise only using spatial filtering. (10 Marks)
- b. Explain Constrained Least Squares filtering with an example. (10 Marks)

OR

- 6 a. Describe Minimum Mean Square Error Filtering with an example. (10 Marks)
- b. Explain Linear, Position-Invariant Degradations. (10 Marks)

Module-4

- 7 a. Explain Erosion-Dilation with an example each. (10 Marks)
- b. Explain the following Basic Morphological Algorithms:
(i) Boundary Extraction (ii) Hole filling. (10 Marks)

OR

- 8 a. Explain the following color models:
i) RGB Color Model ii) CMY and CMYK color models. (10 Marks)
- b. Describe the Background of wavelets with suitable illustrations. (10 Marks)

Module-5

- 9 a. Explain the Detection of Discontinuities and Edge Detection. (10 Marks)
- b. Describe Hough Transforms and Shape Detection with an example. (10 Marks)

OR

- 10 a. Explain the following Representation:
(i) Boundary following (ii) Coin Codes (10 Marks)
- b. Describe Boundary descriptors with respect to Shape Numbers. (10 Marks)

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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.