CBCS SCHEME

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18CS741

Seventh Semester B.E. Degree Examination, June/July 2024
Digital Image Processing

Time: 3 hrs. Max. Marks: 100

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

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.

Module-1

1 a. Explain the components of a general purpose image processing system with diagram. **(10 Marks)**

b. Explain the concept of sampling and quantization with diagrams. **(10 Marks)**

OR

2 a. Explain the fundamental steps in digital image processing. **(10 Marks)**

b. Define 4-adjacency, 8-adjaency and m-adjacency. **(06 Marks)**

c. If P and Q are two pixels at coordinates (100, 120) and (130, 160) respectively. Find chess board and cityblock distance. **(04 Marks)**

Module-2

3 a. Explain Price – Wise – Linear – Transformation functions. **(10 Marks)**

b. What are the applications of arithmetic and logical operations? **(10 Marks)**

OR

4 a. Discus smoothing linear filters and order statistics filter. **(10 Marks)**

b. Describe how first order derivatives are used for image enhancement. **(10 Marks)**

Module-3

5 a. Discuss one dimensional Discrete Fourier Transform and its inverse. **(10 Marks)**

b. Explain translation and separability properties of DFT. **(10 Marks)**

OR

6 a. What are the basic steps for filtering in frequency domain? Explain with a neat diagram. **(08 Marks)**

b. Explain the following frequency domain filter
Ideal Lowpass filter, Butterworth low pass filter, Gaussian lowpass filter. **(12 Marks)**

Module-4

7 a. What are the three basic types of gray level discontinuities? Explain point detection. **(10 Marks)**

b. Describe region splitting and merging with example. **(10 Marks)**

OR

8 a. Define image segmentation and explain line detection. **(10 Marks)**

b. Explain basic global thresholding. **(10 Marks)**

Module-5

9 a. What are the principles types of data redundancies? Discuss. **(10 Marks)**

b. Explain the general image compression system with necessary diagram. **(10 Marks)**

OR

10 a. Write short note on : i) Hufmann coding ii) LZW coding. **(10 Marks)**

b. What is image compression? Where is it used? List the differences between lossy and looseless compression. **(10 Marks)**

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