

2123
B.E. (Computer Science and Engineering)
Seventh Semester
CS-701: Digital Image Processing

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) Define Digital Image Representation and explain its importance in image processing.
- b) Briefly describe the steps involved in Image Processing.
- c) What is the role of Sampling and Quantization in the context of digital images?
- d) Discuss the coding redundancy in image compression and its impact.
- e) Explain the concept of Edge Detection and its applications in Image Segmentation. (5x2)

UNIT - I

- II. a) Describe the Spatial Filtering technique in Image Transformation.
b) Discuss the applications of Frequency Domain Filters in image processing. (2x5)
- III. a) Explain the Image Degradation and Restoration process.
b) Discuss the various Noise Models and their impact on image quality. (2x5)
- IV. a) Define Color Models in image processing and compare RGB and CMY models.
b) Detail the basics of Wavelet Transforms and their significance. (2x5)

UNIT - II

- V. a) Elaborate on the concept of Image Segmentation and its significance.
b) Describe the Hough Transform technique for detecting lines in an image. (2x5)
- VI. a) Discuss the importance of Histogram in image processing.
b) Explain the steps involved in Histogram Equalization of a digital image. (2x5)
- VII. a) What is Homomorphism Filtering, and how does it contribute to image restoration?
b) Compare the coding redundancies exploited in Huffman Coding and Arithmetic Coding. (2x5)

x-x-x