

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN  
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)

Chromepet, Chennai — 600 044.

M.Sc.(Computer Science) END SEMESTER EXAMINATIONS NOVEMBER - 2023

SEMESTER - II

**20PCSCT2005 - Digital Image Processing**

Total Duration : 2 Hrs. 30 Mins.

Total Marks : 60

### Section B

Answer any **SIX** questions ( $6 \times 5 = 30$  Marks)

1. List the basic components of a digital imaging system.
2. Name two basic types of point operations used in image enhancement.
3. State the two main categories of image degradations in the context of image restoration.
4. Define loss less compression and provide an example of a loss less compression technique.
5. Name a technique used to convert grayscale images into binary images during segmentation.
6. Define distance metrics in image processing and give an example of their application.
7. Define image enhancement and explain its importance in digital image processing.
8. Identify the components of the model of degradation in image restoration.

### Section C

I - Answer any **TWO** questions ( $2 \times 10 = 20$  Marks)

9. Relate the digital imaging system components to their respective functionalities and discuss how they collectively capture and process images.
10. Apply the Discrete Cosine Transform (DCT) to a given image, and compute its DCT coefficients. Describe how these coefficients contribute to image compression.
11. Apply Huffman coding to compress a given set of characters, explaining the step-by-step process and computing the compressed data size.
12. Solve a problem involving image segmentation using thresholding on a grayscale image, demonstrating how different thresholds impact the segmentation outcome.

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II - Compulsory question ( $1 \times 10 = 10$  Marks)

13. Classify image restoration techniques into spatial and frequency domain methods, predicting their outcomes in scenarios involving different types of image degradation.

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