



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**M.Sc. DEGREE EXAMINATION – COMPUTER SCIENCE**

**THIRD SEMESTER – NOVEMBER 2022**

**PCS 3502 – DIGITAL IMAGE PROCESSING**

Date: 25-11-2022

Dept. No.

Max. Marks: 100

Time: 09:00 AM - 12:00 NOON

**Part – A**

**Answer ALL the questions**

**10 × 2 = 20 marks**

1. What is Euclidean distance?
2. How translation operations can be performed in an image?
3. Define Image enhancement.
4. What is filtering? Write the basic types of filtering.
5. What is image restoration?
6. How noises are arising in a digital image?
7. What is image compression?
8. Draw the block diagram of a compression model.
9. Write the steps in region representation.
10. Write the steps in region description.

**Part – B**

**Answer ALL the questions**

**5 × 8 = 40 marks**

11. a) Explain the basic relationship between pixels.

**(Or)**

- b) Describe the Hadamard transformation. Perform Hadamard transformation for the following 2-dimensional image.

$$\begin{bmatrix} 1 & 2 & 2 & 1 \\ 2 & 1 & 2 & 1 \\ 1 & 2 & 2 & 1 \\ 2 & 1 & 2 & 1 \end{bmatrix}$$

12. a) Discuss the basic gray level transformation techniques.

**(Or)**

- b) What is Histogram? Explain the histogram equalization techniques.

13. a) What is blind image restoration? Discuss the direct measurement approach to blind image restoration.

(Or)

b). Explain the different types of restoration filters.

14. a) Draw the block diagram of a compression system. Describe each and every blocks in the compression system.

(Or)

b). Explain the LZW coding with example.

15. a) Discuss the Chain code representation.

(Or)

b). Explain the simple regional descriptors.

**Part – C**

**Answer ANY TWO questions**

**2 × 20 = 40 marks**

16. a) Describe the fundamental steps in image processing with a neat sketch.

b) Explain the piece-wise transformation technique and its types.

17 a) What is a noise model? Explain the different types of noise models.

b) Explain the Lossy compression transform coding technique with example .

(10+10)

18 a) Explain the following

i) Simple Boundary descriptors.

ii) Fourier Boundary descriptors.

b) What is sharpening in frequency domain? Explain the types of high pass filters used in image sharpening.

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