



25802999

QP CODE: 25802999

Reg No :

Name :

INTEGRATED MSC DEGREE EXAMINATION, JUNE 2025

Eight Semester

**INTEGRATED MSC COMPUTER SCIENCE-ARTIFICIAL INTELLIGENCE AND MACHINE
LEARNING**

CORE - ICSA8CR2 - DIGITAL IMAGE PROCESSING

2020 Admission Onwards

1D98E8A8

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Explain the role of rods and cones in vision.
2. Describe the city block distance.
3. What are the advantages of histogram processing over other enhancement techniques?
4. What are the advantages of power-law transformations over other enhancement techniques?
5. Describe a Butterworth filter.
6. How does a high-pass filter enhance the edges in an image?
7. Explain the concept of a model of image degradation and restoration.
8. Discuss the properties of Gamma noise and its impact on image restoration.
9. What is the morphological watershed algorithm? How does it work in image segmentation?
10. What is global thresholding? Explain the Otsu's method for automatic threshold selection.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Describe the elements of visual perception relevant to image processing.
12. How do color models facilitate image processing?
13. Explain the role of logic operations in image enhancement.





14. How do log transformations enhance images with varying intensity ranges?
15. Describe the process of image sharpening using ideal high-pass filters. Discuss the effects of varying the cut-off frequency on the filtered image.
16. Describe the process of image enhancement using ideal low-pass filters. Discuss the effects of varying the cut-off frequency on the filtered image.
17. Explain the working principle of adaptive filters in noise removal.
18. Explain the role of histogram analysis in thresholding techniques.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Describe the concept of image registration. Discuss various techniques used for image registration, such as feature-based and area-based registration.
20. Compare the effectiveness of smoothing spatial filters and median filters in noise reduction.
21. Compare and contrast Butterworth and Gaussian filters in terms of image smoothing performance.
22. Explain the JPEG standard for image compression. Describe its process and significance.

(2×5=10 weightage)

