

QP CODE: 26801745



Reg No :

Name :

INTEGRATED M.Sc. DEGREE EXAMINATION, APRIL 2026

Eight Semester

INTEGRATED M.Sc. COMPUTER SCIENCE-ARTIFICIAL INTELLIGENCE AND MACHINE
LEARNING

CORE - ICSA8CR2 - DIGITAL IMAGE PROCESSING

2020 Admission Onwards

927A8C62

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. Describe the use of digital image processing in entertainment.
2. Explain the role of hardcopy devices.
3. Discuss the applications of spatial filtering in edge detection.
4. Discuss the applications of image averaging in noise reduction.
5. What is the purpose of the zero-padding in DFT computation?
6. How does the order of a Butterworth filter affect its frequency response?
7. Explain the use of mean filters in image restoration.
8. Discuss the advantages of order statistics filters over mean filters in image restoration.
9. Describe variable thresholding. How does it differ from global thresholding?
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. Explain the term "digital image processing" and its significance in modern technology.
12. Discuss the role of visual perception in image processing.
13. How does histogram equalization improve image contrast?





14. Discuss the applications of image subtraction in geospatial analysis.
15. Explain the concept of image sharpening using frequency domain filters. Discuss the applications of high-pass filters in edge enhancement.
16. Describe the process of image sharpening using ideal high-pass filters. Discuss the effects of varying the cut-off frequency on the filtered image.
17. Explain the function of adaptive filters in image restoration.
18. Compare the effectiveness of region-based segmentation and edge-based segmentation techniques.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

Weight 5 each.

19. Explain the elements of visual perception. Discuss how these elements influence the design of image processing algorithms.
20. Discuss the role of histogram processing in enhancing images for computer vision applications.
21. Describe the process of applying homomorphic filtering to enhance the contrast of an image.
22. Discuss the significance of adaptive filters in real-time image restoration applications.

(2×5=10 weightage)

