

C 41976

(Pages : 2)

Name.....

Reg. No.....

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)  
EXAMINATION, APRIL 2023**

(CBCSS)

Computer Science

CSS 4E 04 A—DIGITAL IMAGE PROCESSING

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

**Section A (Short Answer)***Answer any **four** questions.**Each question carries 2 weightage.*

1. Explain sampling and quantization.
2. Explain any two properties of DFT.
3. List the fundamental steps in image processing.
4. Explain image histogram.
5. Explain Laplacian of an image.
6. Outline a model for image degradation/restoration process.
7. List any *four* image compression schemes.

(4 × 2 = 8 weightage)

**Section B (Short Essay)***Answer any **four** questions.**Each question carries 3 weightage.*

8. Explain pixel neighbourhoods, adjacency, connectivity and paths with examples.
9. Summarize basics of Discrete Cosine Transformation.
10. Explain Histogram equalization.

**Turn over**

11. Outline Homomorphic filtering in frequency domain.
12. Summarize approaches for boundary representation.
13. Discuss noise models.
14. Explain Bit plane coding.

(4 × 3 = 12 weightage)

### Section C (Essay)

*Answer any **two** questions.*

*Each question carries 5 weightage.*

15. Explain in detail Walsh-Hadamard transform.
16. Demonstrate the working of smoothing and sharpening spatial filters with examples.
17. Discuss Least-mean square filtering and constrained least mean square filtering.
18. Discuss the basic concepts in Huffman coding. Demonstrate Huffman coding with an example.

(2 × 5 = 10 weightage)