2017/EVEN/08/24/MCS–804 (C)/
MS–204 (C)/CS–1001 (O)/572

PG Even Semester (CBCS) Exam., May—2017

COMPUTER SCIENCE

(8th Semester/2nd Semester/10th Semester)

Course No. : MCS–804 (C)/MS–204 (C)/CS–1001 (O)

(Digital Image Processing)

Full Marks : 75
Pass Marks : 30 (for CBCS)
26 (for Non-CBCS)

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, taking **one** from each Unit

UNIT—I

1. *(a)* Explain the digital image representation model. 5

(b) What is meant by sampling and quantization? 10

2. State and define different connectivities and distance measures under image topology. 15

UNIT—II

3. Explain basic digital image processing operations with their effect on digital image. 15

4. *(a)* What is meant by Discrete Fourier Transform? Explain. 10

(b) Explain the properties of DFT. 5

UNIT—III

5. *(a)* What is the difference between image enhancement and image restoration. 3

(b) Explain the histogram-based image enhancement techniques. 12

6. Explain the image smoothing in *(i)* spatial domain and *(ii)* frequency domain. 15

UNIT—IV

7. *(a)* List the colour models. 3

(b) Explain in detail how the colour models are converted to each other. 12

8. *(a)* List the lossless compression algorithms. 3

(b) Explain any two lossless compression algorithms. 12

UNIT—V

9. Explain the following : 15

(a) First-order edge detection operators

(b) Second-order edge detection technique

10. *(a)* What is the formal definition of segmentation? 3

(b) What are the different ways in which segmentation algorithms can be classified? 5

(c) Explain the colour-based image segmentation. 7

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