2017

MCA

5th Semester Examination

IMAGE PROCESSING

PAPER—MCA 504

Subject Code—32

Full Marks : 100

Time : 3 Hours

The figures in the right hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer any *five* questions.   5×14

1. (a) What is digital image ? What is digital Image processing ?
   2+3

   (b) What are the application of digital Image processing ?
   5

   (c) Briefly explain the history of Image processing.   4

2. (a) With diagram explain the key stages of digital image processing. 7

   (b) Describe the various components of digital Image processing. 7

3. Define the terms : 7×2

   (a) Image sampling ;

   (b) Quantization ;

   (c) Gray scale ;

   (d) Resolution ;

   (e) Connectivity ;

   (f) Neighbours of pixel ;

   (g) m-distance between pixel.

4. (a) What do you mean by Image enhancement ? What are the main objective of Image enhancement ?

   2+3

(b) Explain the following enhancement schemes :

    (i) Point processing.   3

    (ii) Contrast stretching.   3

    (iii) Thresholding.   3

5. (a) Briefly explain basic three gray level transformation function used in Image processing for enhancement. Also explain their advantage and disadvantages.   9+2

  (b) Explain Bit plane slicing.   3

6. (a) Briefly explain Histogram processing for image enhancement with suitable numerical example.   8

  (b) Explain any three spatial filtering for image smoothing.

                                        7

7. (a) Explain the use of Laplacian in image processing.   7

  (b) Explain the following operators :

    (i) Sobel ;

    (ii) Prewift

    (iii) Roberts ;

    (iv) Laplacian of Gaussion.   4×2

8. Write short notes (any *four*) : $4 \times 3\frac{1}{2}$

   (a) Thinning ;

   (b) Thickening ;

   (c) Opening ;

   (d) Closing ;

   (e) Chaincode ;

   (f) Erosion and Dialation.

[Internal Assessment : 30 Marks]

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