CBCS SCHEME

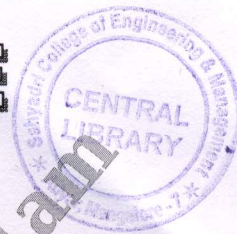USN ☐☐☐☐☐☐☐☐☐☐   15EC72

Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020
Digital Image Processing

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. With the help of a block diagram, explain the fundamental steps in digital image processing.
                                                                        (10 Marks)
   b. Explain the concept of sampling and quantization using a single example.   (06 Marks)

OR

2 a. Explain the importance of brightness adaption and discrimination in image processing.
                                                                        (06 Marks)
   b. Explain 'false contouring' and check board pattern in image processing.   (06 Marks)
   c. Explain city block distance with an example.   (04 Marks)

Module-2

3 a. Explain the power law transformation and piece –wise linear contrast stretching with a neat
      graphical illustration.   (10 Marks)
   b. Explain with a block diagram, the basic steps for image filtering in frequency domain.
                                                                        (06 Marks)

OR

4 a. Perform histogram, equalization of the 5×5 image.

Gray level	0	1	2	3	4	5	6	7
Number of pixels	0	0	0	6	14	5	0	0

Table Q4(a)

   whose data is shown in table Q4(a).   (08 Marks)
   b. Explain the smoothing of images in frequency domain using :
      i) ideal low pass filter   ii) butter worth low pass filter.   (08 Marks)

Module-3

5 a. Explain the basic model of image restoration process. Explain any four important noise
      probability density functions.   (10 Marks)
   b. Explain minimum mean square error (Wiener) filtering in image processing.   (06 Marks)

OR

6 a. Explain adaptive mean filter and list its advantages.   (08 Marks)
   b. With necessary mathematical equations, explain estimate the degradation function by
      modeling.   (08 Marks)

Module-4

7 a. Develop a procedure for converting :
      i) RGB to HSI model
      ii) HSI to RGB model.   (08 Marks)
   b. Obtain the Harr transform matrix for N = 4.   (08 Marks)

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OR

8 a. Write a note on pseudocolor image processing. Explain intensity slicing as applied to pseudo color image processing. **(08 Marks)**

   b. Explain Erosion and Dilation in image processing. **(08 Marks)**

Module-5

9 a. Explain Marr-Wildreth edge detector in image processing. **(08 Marks)**

   b. Explain MPP algorithm in image representation (MPP – Minimum Permimeter Polygon). **(08 Marks)**

OR

10 a. Explain basic global thresholding with iterative algorithm. **(08 Marks)**

    b. Explain simple descriptors and Fourier descriptors. **(08 Marks)**

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