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 × 8 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)**

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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