CBCS SCHEME

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17CS753

Seventh Semester B.E. Degree Examination, July/August 2022
Digital Image Processing

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. With a diagram explain the steps in digital image processing. **(10 Marks)**
b. Discuss some basic relationship between pixels. **(08 Marks)**
c. Give the difference between sampling and quantization. **(02 Marks)**

OR

2 a. With a diagram, explain the components of an image processing system. **(10 Marks)**
b. Elaborate different ways of representing digital images. **(06 Marks)**
c. Highlight the importance of medical imaging and remote sensing. **(04 Marks)**

Module-2

3 a. Why image enhancement is required? Explain basic gray level transformations. **(10 Marks)**
b. List out the advantages of combining spatial enhancement methods. **(03 Marks)**
c. Explain enhancement using arithmetic/logic operations. **(07 Marks)**

OR

4 a. Give the difference between sharpening and smoothing spatial filters. Explain use of second derivation of enhancement. **(10 Marks)**
b. Explain histogram processing **(05 Marks)**
c. Explain basics of spatial filtering. **(05 Marks)**

Module-3

5 a. Give the difference between Fourier transform in one and two dimensions. Explain one dimensional Fourier transform and its inverse. **(10 Marks)**
b. List the basic steps of filtering in frequency domain and explain with diagram. **(10 Marks)**

OR

6 a. Explain two dimensional DFT, its inverse and convolution them. **(10 Marks)**
b. Discuss some basic property of DFT. **(05 Marks)**
c. Explain discrete cosine transforms. **(05 Marks)**

Module-4

7 a. Why segmentation is important? Explain detection of discontinuities. **(10 Marks)**
b. How edge linking is important? Discuss local processing. **(05 Marks)**
c. Explain Hough transform. **(05 Marks)**

OR

8 a. Explain region growing, region splitting and merging. **(12 Marks)**
b. Discuss segmentation using threshold. **(08 Marks)**

Module-5

9 a. With a diagram, explain image compression model. (08 Marks)
b. List out the advantages of image compression. (02 Marks)
c. Explain coding redundancy and interpixel redundancy. (10 Marks)

OR

10 a. Give the difference between lossy and lossless compression. (04 Marks)
b. Explain the following :
i) Huffman coding
ii) Arithmetic coding
iii) LZW coding
iv) Run length coding. (16 Marks)

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