8E 8162

B.Tech. VIII Semester (Main&Back) Examination, April - 2019
Computer Science. & Engg.
8CS2A Digital Image Processing
Commom with CS,IT

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26

Instructions to Candidates:

Attempt any Five questions, selecting One question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly).

ersahilkagyan.com

Unit - I

1. a) What are the basic components of an image processing system? Explain all the components with block diagram. Write down the three example of field that uses digital Image processing. (12)

   b) Explain different types of mathematical tools which are used in digital image processing. (04)

(OR)

1. a) Explain the importance of brightness adaptation and discrimination in Image processing. (06)

   b) What are the applications of Image processing? Explain components of Image processing. (06)

   c) Differentiate Image quantization and scalar quantization. (04)

Unit - II

2. a) List out the properties of 2D Fourier transform. Explain spatial filtering. (08)

   b) Describe histogram equalization. Obtain Histogram equalization for the following image segment of size 5×5. Write the interface on image segment before and after equalization. (08)

(OR)

2. a) Describe the basic principles of Image enhancement by
   i) Spatial domain method
   ii) Frequency domain methods. (2×4=8)
   b) Explain about convolution and correlation properties of the 2D FFT. (08)

Unit - III

3. a) Write short note on (any two)
   i) Holomorphic filter
   ii) Inverse filter
   iii) Weiner filter (2×4=8)
   b) Explain the expression for observed image when the degradation are linear, position invariant. (08)

(OR)

3. a) What is Image restoration model? Explain paint and spatial Image restoration models. (08)
   b) Define the process of restoration. Explain any four important noise probability density functions. (08)

Unit - IV

4. a) Draw a Image compression model and describe the work of each block. (08)
   b) What are the basic steps in JPEG compression? Explain. (08)

(OR)

1. a) Write short note on :-
   i) Coding redundancy
   ii) Inter pixel redundancy (2×4=8)
   b) Explain Lossy and Lossless coding techniques. (08)

Unit - V

a) Describe the segmentation process in digital Image processing. Explain the fundamental of edge based segmentation. (06)

b) Explain the region growing method for segmentation in Image processing. (04)

c) Discuss gradient operators. Write 3×3 region two dimensional sobel mask and express their partial derivative equations. (06)

(OR)

a) Explain the technique of thresholding for segmentation. (08)

b) Describe how hough transform used for boundary shape detection. (08)