Printed Pages:2
Paper Id: 236659

Sub Code: KCS-062
Roll No.

B.TECH
(SEM VI) THEORY EXAMINATION 2022-23
IMAGE PROCESSING

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

(a) Define the advantages of Wiener filter.
(b) What is the Digital Image Processing?
(c) Explain the term PSF.
(d) Define erosion and dilation.
(e) What do you mean by degradation?
(f) What do you mean by reflectance?
(g) Compare the inverse filter with Wiener filter.
(h) Define the use of Boundary Extraction.
(i) Differentiate between image enhancement and restoration.
(j) Define harmonic mean filter.

SECTION B

2. Attempt any *three* of the following: 10 x 3= 30

(a) What do you mean by image processing? Explain the steps of image processing with the help of block diagram.
(b) Explain piecewise linear transformations of image enhancement with suitable example.
(c) Explain Band pass Filter Technique for noise reduction.
(d) Explain watershed segmentation algorithm in detail.
(e) Discuss the need for data compression. Also explain run length encoding algorithm in detail.

SECTION C

3. Attempt any *one* part of the following: 10 x 1= 10

(a) Explain low level, mid level and high level image processing. Also explain sampling and quantization process.
(b) Differentiate Correlation and Convolution with 1-D function and a filter example.

4. Attempt any *one* part of the following: 10 x 1= 10

(a) Explain the process of filtering in frequency domain. Discuss low pass and high pass frequency domain filters.
(b) Write notes on: i. Bit plane slicing ii. Homomorphic Filter

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5. Attempt any *one* part of the following: **10 x 1= 10**

(a) What is Image Restoration? Draw and explain the basic block diagram of the restoration process.

(b) Explain: 1. Median filter, and 2. Midpoint filter.

6. Attempt any *one* part of the following: **10 x 1= 10**

(a) Explain edge detection and edge linking. Also differentiate between edge detection and edge linking.

(b) Explain Image Segmentation and related fundamental conditions.

7. Attempt any *one* part of the following: **10 x 1= 10**

(a) Differentiate between JPEG and MPEG standard in detail.

(b) Differentiate between image compression and recognition briefly.

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