

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

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. What is the Digital Image Processing?
- b. Name some applications of digital image processing.
- c. Differentiate opening and closing.
- d. Describe Hit or miss transform.
- e. Define point detection process.
- f. What do you mean by Edge detection algorithm?
- g. Full form of SIFT and define it.
- h. Define shape numbers.
- i. What do you mean by Pattern Classes?
- j. Define Optimum (Bayes) Statistical Classifiers.

SECTION B

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

- a. Define digital image. Explain fundamental steps in image processing system with the help of suitable diagram.
- b. Explain morphological image processing step in detail.
- c. Describe image segmentation step in detail.
- d. Explain feature extraction process in detail.
- e. Define patterns. Also discuss pattern classification by prototype matching.

SECTION C

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

- a. Explain Image acquisition in detail with the help of diagram.
- b. Differentiate between smoothing and sharpening spatial filters in detail.

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

- a. Write short notes on:
 - (i) Erosion
 - (ii) Dilation
- b. Explain Morphological reconstruction algorithm in detail.

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

- a. Differentiate between Segmentation by Region Growing and by Region Splitting in detail.
- b. Write short notes on:
 - (i) Snakes sets
 - (ii) Level Sets

6. Attempt any *one* part of the following:

10 x 1 = 10

- a. Explain Topological and Texture Descriptors in detail.
- b. Write short notes on:
 - (i). Boundary Preprocessing
 - (ii). Fourier Descriptors

7. Attempt any *one* part of the following:

10 x 1 = 10

- a. Differentiate between Multilayer Feed forward neural networks and deep convolutional neural networks in detail.
- b. Write short notes on:
 - (i). Neural Networks
 - (ii). Deep Learning

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