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