R20 Regulation *Subject code: 3E5DB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech V Semester Supplementary Examinations, June/July 2023

IMAGE PROCESSING & PATTERN RECOGNITION

(Electronics and Communication Engineering)

Maximum Marks: 70 Date:06.07.2023 Duration: 3 hours

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10x2M=20 Marks)

1 Define sampling and quantization.
2 What are the steps involved in image enhancement with the frequency domain?
3 Define restoration.
4 What is the need for Compression?
5 List the various methods of thresholding in image segmentation.
6 Which transform is a basic tool for shape detection?
7 What is meant by thinning in image processing?
8 Distinguish between regional and relational descriptor?
9 Enumerate the Fundamental problems in Pattern recognition.
10 What is the most commonly used measure of similarity?

Part-B

Answer All the following questions. (10MX 5=50Marks)

11 Explain the basic relationships between pixels. [10]

OR

12 Explain the Histogram equalization technique for image enhancement. Also, give digital formulation. [10]

13 Explain inverse filtering for restoring images? [10]

OR

14 Explain block diagram of Image compression scheme. [10]

15 Discuss the segmentation techniques that are based on finding the regions directly. [10]

OR

16 What is morphological image processing? Explain the hole filling algorithm. [10]

17 Show that redefining the starting point of a chain code so that the resulting sequence of numbers forms an integer of minimum magnitude makes the code independent of the initial starting point on the boundary. Find the normalized starting point of the code 11076765543322. [10]

OR

18 Describe the various types of boundary descriptors. [10]

19 Explain in detail a simple Automatic Pattern Recognition Model. [10]

OR

20 Explain the K-means algorithm. Apply the following Data Set {(0, 0), (0, 1), (5, 4), (5, 5), (4, 5), (1, 0)} for K-Means algorithm. [10]