Regulation R18 *Subject code: 2E6DE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

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

IMAGE PROCESSING AND PATTERN RECOGNITION

(Electronics & Communication Engineering)

Maximum Marks: 70 Date:30.06.2023 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=20Marks)

1 Define Image.
2 What is Inverse Filtering?
3 What is Erosion?
4 Define Gradient Operator.
5 List the characteristics of Lossy Compression
6 Define compression ratio.
7 Define Shape number.
8 Define Eccentricity.
9 How clustering concept helps in Automatic Pattern Recognition System.
10 What is pattern recognition?

Part-B

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

11 Explain the various components of an image processing system with a block diagram. [10]

OR

12 List the steps for filtering in frequency domain with a block diagram. [10]

13 Discuss in detail about morphological algorithms. Illustrate each with appropriate examples. [10]

OR

14 Contrast among Local and Global thresholding techniques for Image Segmentation? [10]
15 Explain the significance of lossless predictive coding model using DPCM without quantizer [10]

OR

16 Explain in detail about watermarking in the spatial and frequency domain techniques. [10]
17 Explain the significance of Signature of a circle as unique representation also check for its invariance. [10]

OR

18 Consider the two-dimensional patterns (2, 1), (3, 5), (4, 3), (5,6), (6, 7), (7, 8). Compute the principal component using PCA Algorithm. [10]

19 a. Illustrate a simple mathematical model for automatic pattern recognition model
b. Differentiate between Clustering and Classification. [5+5]

OR

20 Given 7 two dimensional patterns A=(1,1) , B=(1,2),C=(2,2), D=(6,2), E=(7,2), F=(6,6), G=(7,6). Using K-means algorithm, obtain 3 Clusters. [10]M