



Regulation R18

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

Subject code: 2E6DE

B.Tech VI Semester Supplementary Examinations, January 2023

IMAGE PROCESSING AND PATTERN RECOGNITION

(ECE)

Maximum Marks: 70

19/01/2023

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 Specify the objective of image enhancement technique.
- 2 How does image sharpening effect image performance?
- 3 Specify the purpose of closing operation.
- 4 List the conditions required to be met for edge linking using local processing.
- 5 List the characteristics of Lossy Compression.
- 6 What is run length coding? *
- 7 What are Polygonal Approximations?
- 8 Define Eccentricity
- 9 How clustering concept helps in Automatic Pattern Recognition System.
- 10 What is recognition and Interpretation?

Part-B

Answer All the following questions.

(10MX 5=50Marks)

- 11 a. Explain some of the widely used gray level transformations.
b Formulate the Homomorphic filtering approach for image enhancement. [5+5]M
- OR
- 12 Assess about constrained (Wiener) and unconstrained (Inverse) restoration techniques. [10]M
- OR
- 14 a. How is edge detected? Illustrate using gray level profile of Edge between two regions?
b. Contrast among Local and Global thresholding techniques for Image Segmentation? [5+5]M

- 15 a. Find Huffman coding for the given data Original source symbol.

Original source symbol	a2	a6	a1	a4	a3	a5
Probability	0.4	0.3	0.1	0.1	0.06	0.04

- b. Write a short note on contour coding.

[6+4]M

OR

- 16 Explain in detail about image compression predictive coding techniques. [10]M

- 17 a. Explain the significance of Signature of a circle as unique representation also check for its invariance.
b. Specify the types of regional descriptors: Simple descriptors, Texture. [5+5]M
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]M
- 19 a. Enumerate the Fundamental problems in Pattern Recognition system.
b. Explain automatic pattern recognition systems with an example. [5+5]M
OR
- 20 a. Briefly explain the K-means algorithm.
b. Explain Bayes classifier. Explain how it can be used for two class classification [5+5]M