Regulation R18 *Subject code: 2E6DE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, February 2024

IMAGE PROCESSING AND PATTERN RECOGNITION

(ECE)

Maximum Marks: 70 Date: 22.02.2024 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)	CO	Bloom Tx
1	List the principal application areas of digital image processing ?	CO1	L1
2	What is image smoothing and sharpening?	CO1	L1
3	What is Erosion?	CO2	L1
4	Define Gradient Operator.	CO2	L1
5	List the characteristics of Lossy Compression	CO3	L1
6	What is run length coding?	CO3	L1
7	What are Polygonal Approximations?	CO4	L1
8	Define Eccentricity	CO4	L1
9	How clustering concept helps in Automatic Pattern Recognition System	CO5	L1
10	What is recognition and Interpretation?	CO5	L1

Part-B

	Answer All the following questions. (5X10M=50Marks)		
11	With a neat block diagram, explain the fundamental steps in digital image processing. [10M]	CO1	L2
	OR		
12	Explain the model of Image Degradation process. [10M]	CO1	L2
13	Discuss in detail about morphological algorithms. Illustrate each with appropriate examples. [10M]	CO2	L2
	OR		
14	Discuss about the types of thresholding techniques for Image Segmentation? [10M]	CO2	L2
15	Solve to find Huffman coding for the given data Original source symbol. [10M]	CO3	L3

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

	OR		
16	Infer among the various image compression predictive techniques using coding models. [10M]	CO3	L3
17	Explain in detail about Boundary based descriptors. [10M]	CO4	L2
	OR		
18	a. Infer with an example whether chain code satisfy the rotational invariance. [5M] b. Explain in brief about skeleton of a region. [5M]	CO4	L3 L2
19	a. Illustrate a simple mathematical model for automatic pattern recognition model. [5M] b. Differentiate between Clustering and Classification. [5M]	CO5	L3 L4
	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, solve to obtain 3 Clusters. [10M]	CO5	L3