



R18 Regulation

Subject code:2E6DE

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, December 2024

IMAGE PROCESSING AND PATTERN RECOGNITION (ECE)

Maximum Marks: 70

Date:04.01.2025

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?	1	L1
2	What is image smoothing and sharpening?	1	L1
3	What is Erosion?	2	L1
4	List the conditions required to be met for edge linking using local processing	2	L1
5	Identify the need for image compression?	3	L1
6	Define compression ratio ?	3	L1
7	Define eccentricity and curvature of boundary	4	L1
8	How to calculate Euler number(E) for an image	4	L1
9	How is the Pattern recognition problems classified?	5	L1
10	List the steps involved in K-means algorithm	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
11	With a neat block diagram, explain the fundamental steps in digital image processing. [10M]	1	L3
OR			
12	Explain the model of Image Degradation process. [10M]	1	L3
13	Explain in detail about any two morphological algorithms. [10M]	2	L3
OR			
14	Explain in brief about Region based segmentation. [10M]	2	L3
15	Explain the significance of lossless predictive coding model using DPCM without quantizer [10M]	3	L3
OR			
16	Explain in detail about A) Statistical Compression Techniques. [5M] B) Transform based compression. [5M]	3	L3

17	Explain the two techniques of region representation. A) Chain codes. [4M] B) Polygonal approximation. [6M]	4	L3
	OR		
18	Specify the types of regional descriptors A) Simple descriptors. [6M] B) Texture. [4M]	4	L2
19	A) Illustrate a simple mathematical model for automatic pattern recognition model. [5M] B) Differentiate between Clustering and Classification. [5M]	5	L3
	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. [10M]	5	L3