C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 97403

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

Seventh Semester

Electronics and Communication Engineering

19UEC703- IMAGE PROCESSING AND MACHINE LEARNING

(Regulations 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. In which type of projection, actual dimensions and angles of objects and therefore shapes cannot be preserved? CO1-U

   (a) Orthographic (b) Isometric (c) Perspective (d) None of these

2. A binary image pixel is represented by ----------bit CO1-U

   (a) One (b) Two (c) Four (d) Eight

3. Image segmentation is also based on _____ CO1-U

   (a) Morphology (b) set theory (c) extraction (d) recognition

4. For the total number of 1650 test patterns, only the 65 are correctly recognized test patterns.Calculate the accuracy rate. CO2-App

   (a) 38.25 (b) 25.38 (c) 46.38 (d) 38.46

5. The process of partitioning images into multiple distinct parts and thereby finding the region of interest is known as _____ CO1-U

   (a) Segmentation (b) Clustering (c) Pattern recognition (d) Feature extraction

PART – B (5 x 3= 15Marks)

6. Write the causes of vignetting effect and how can be avoided? CO1- U
7. Compare and contrast image enhanced and grayscale processing. CO1- U
8. Why the Laplacian cannot be used in its original form for edge detection? CO1- U
9. Write short notes on Recurrent network. CO1- U
10. State the function of K – means clustering. CO1- U

PART – C (5 x 16= 80Marks)

11.	(a)	Illustrate the concept of radiometry using thin lens.	CO1- U	(16)
		Or		
	(b)	How to measure the electromagnetic radiations in the particular light and explain with suitable diagrams	CO1- U	(16)
12.	(a)	Derive the expressions for DCT, KL and Wavelet transforms	CO2- App	(16)
		Or		
	(b)	Derive the expressions for DFT, Ridgelet and contourlet transforms	CO2- App	(16)
13.	(a)	Discuss in details about Watershed Segmentation with suitable diagrams	CO1- U	(16)
		Or		
	(b)	Summarize the methods of optimal thresholding with suitable examples.	CO1- U	(16)
14.	(a)	Explain the various steps in pattern recognition.	CO1-U	(16)
		Or		
	(b)	Explain in details about the different types of classifier.	CO1-U	(16)
15.	(a)	Explain in detail about the Challenges in medical image segmentation	CO1-U	(16)
		Or		
	(b)	Discuss in detail about Supervised clustering for image segmentation	CO1-U	(16)