Reg. No.																

Question Paper Code	14164

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Sixth Semester

Computer Science and Business Systems

20CBEL610 - IMAGE PROCESSING AND PATTERN RECOGNITION

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which of the following is a basic step in image processing? (a) Image acquisition (b) Data compression (c) Video processing (d) Speech recognition	1	K1	CO1
2.	What is the result of applying histogram equalization? (a) Image smoothing (b) Improved contrast (c) Edge detection (d) Color conversion	1	K1	CO1
3.	Which method is used for detecting edges in an image? (a) Gaussian filter (b) Median filter (c) Canny detector (d) Histogram equalization	1	K1	CO2
4.	Which operator is used for smoothing an image? (a) Sobel (b) Prewitt (c) Gaussian (d) Laplacian	1	K1	CO2
5.	What is quantization in image processing? (a) Assigning intensity values (b) Resizing the image (c) Reducing color depth (d) Image segmentation	1	K1	CO3
6.	Which model is used for color representation? (a) Fourier (b) RGB (c) Binary (d) Text	1	K1	CO3
7.	Which transform is used for measuring image similarity? (a) Fourier Transform (b) Radon Transform (c) Hough Transform (d) Cross-Correlation	1	K1	CO4
8.	Which technique is part of morphological filtering? (a) Canny detector (b) Histogram stretching (c) Dilation (d) Edge linking	1	K1	CO4
9.	What is the use of region growing in segmentation? (a) Noise removal (b) Contrast enhancement (c) Grouping similar pixels (d) Histogram equalization	1	K1	CO5
10.	What is pseudo color image? (a) Grayscale image (b) Artificially colored grayscale image (c) Binary image (d) RGB image	1	K1	CO5

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

		Marks	K – Level	CO
11.	Define image quantization.	2	K1	CO1
12.	What are neighborhood metrics in image processing?	2	K1	CO1
13.	Compare and Contrast maximum filter and minimum filter.	2	K2	CO1
14.	What is contrast stretching?	2	K1	CO2
15.	Compare global and local thresholding.	2	K2	CO2
16.	Define morphological dilation with an example.	2	K1	CO2
17.	Show the principle of region growing technique.	2	K1	CO3
18.	Name any two edge detection operators.	2	K1	CO3
19.	What are shape properties in image processing?	2	K1	CO4
20.	List any two texture features derived from GLCM.	2	K1	CO4
21.	What is pseudo color image enhancement?	2	K1	CO5
22.	List any two color models used in image processing.	2	K1	CO5

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a) (i)	Explain the process of image digitization and representation with necessary diagrams.	*6*	*K2*	*CO1*
	(ii)	Illustrate the geometric and photometric image formation models.	*5*	*K2*	*CO1*
		OR			
	b)	Explain image sensing and acquisition with a neat diagram.	*11*	*K2*	*CO1*
24.	a)	Illustrate various intensity transformation functions and spatial filtering techniques used for image enhancement.	*11*	*K2*	*CO2*
		OR			
	b)	Explain in detail about smoothing spatial and linear filters.	*11*	*K2*	*CO2*
25.	a)	Illustrate region based segmentation and region growing with examples.	*11*	*K2*	*CO3*
		OR			
	b)	Demonstrate the various Edge Detection Methods in detail.	*11*	*K2*	*CO3*
26.	a)	Explain image registration and discuss the methods used for global and local registration.	*11*	*K2*	*CO4*
		OR			
	b)	Illustrate the concept of interpolation in detail.	*11*	*K2*	*CO4*
27.	a)	Identify and explain the purpose of Pseudocolor Image Processing.	*11*	*K3*	*CO5*
		OR			
	b)	Apply the various color models to real world images and explain.	*11*	*K3*	*CO5*
28.	a) (i)	Compare Mono-modal image registration and Multimodal image registration.	*6*	*K2*	*CO4*
	(ii)	Explain CMY color model in detail.	*5*	*K2*	*CO5*
		OR			
	b) (i)	Explain in detail gray level co occurrence matrix.	*6*	*K2*	*CO4*
	(ii)	Compare and contrast False color and Pseudo color in detail.	*5*	*K2*	*CO5*