CBCS SCHEME

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BAI515A

ACHARYA INSTITUTE OF TECHNOLOGY MCA Library Date BANGALORE

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Computer Vision

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	What is Computer Vision? Why is vision so difficult? Discuss the real-world examples of computer vision.	10	L2	CO1
	b.	With a neat diagram, explain the image sensing pipeline and its important effects.	10	L2	CO1
		OR			
Q.2	a.	Explain in detail the Bidirectional Reflectance Distribution Function (BRDF).	10	L2	CO1
	b.	Explain the linear filtering along with examples of linear filtering.	10	L2	CO1
		Module – 2			
Q.3	a.	Explain the Bilateral filtering in detail.	10	L2	CO2
	b.	Explain the derivation of Discrete Fourier Transform (DFT) form the continuous transform of the sampled function.	10	L2	CO2
		OR			
Q.4	a.	Explain the binary image processing. Obtain the distance transform D(i, j) of a binary image B(i, j).	10	L2	CO2
	b.	Explain the wavelets of image processing. Describe the application of Laplacian pyramid.	10	L2	CO2
		Module – 3			
Q.5	a.	Give the probability density functions for all which are commonly found in image processing applications.	10	L2	CO3
	b.	Discuss the noise reduction capabilities of the following spatial filters : i) Mean filters ii) Adaptive filters.	10	L2	CO3
		OR			
Q.6	a.	Explain the more advanced techniques for edge detection.	10	L2	CO3
	b.	Write the region–growing algorithm for 8-connections. Explain the concept of region splitting and merging.	10	L2	CO3

		Module – 4			
Q.7	a.	Explain any two color models along with conversion technique of one model to another model and vice-versa.	10	L2	CO4
	b.	Explain in detail image segmentation process based on color.	10	L2	CO4
		OR			
Q.8	a.	Explain the concept of pseudo color image processing.	10	L2	CO4
	b.	Explain the color image smoothing and sharpening procedure.	10	L2	CO4
		Module – 5			
Q.9	a.	Explain the following with respect to feature extraction : i. Boundary (border) following ii. Chain codes.	12	L2	CO5
	b.	Explain any 4 basic morphological algorithms.	8	L2	CO5
		OR			
Q.10	a.	With the help of a diagrams, explain the concept of erosion, dilation, opening and closing used in morphological image processing.	12	L2	CO5
	b.	What is Pattern Classification? Explain the minimum distance classifier.	8	L2	CO5

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