Reg. No.															

Question Paper Code	13853

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

Seventh Semester

Mechanical and Automation Engineering

20MUPC701 - ROBOTIC VISION AND INTELLIGENCE

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	The input and output of image processing are? (a) signal and image (b) signal only (c) image only (d) depends on input	1	K1	CO1
2.	Which of the following is an Applications of Computer Vision? (a) Robotics (b) Medicine (c) Security (d) All of the above	1	K1	CO1
3.	What is the procedure done on a digital image to alter the values of its individual pixels known as? (a) Geometric Special Transformation (b) Single Pixel Operation (c) Image Registration (d) Neighborhood Operations	1	K1	CO2
4.	How does picture formation in the eye vary from image formation in a camera? (a) Fixed focal length (b) Varying distance between lens and imaging plane (c) No difference (d) Variable focal length	1	K1	CO2
5.	What is the process of breaking an image into groups? (a) Edge detection (b) Smoothing (c) Segmentation (d) None of the mentioned	1	K1	CO3
6.	Algorithm stating that boundaries of the image are different from background is (a) Discontinuity (b) Similarity (c) Extraction (d) Recognition	1	K1	CO3
7.	Which of the following operation is done on the pixels in sharpening the image,in the spatial-domain? (a) Differentiation (b) Median (c) Integration (d) Average	1	K1	CO4
8.	Region of Interest (ROI) operations is generally known as _____ (a) Masking (b) Dilation (c) Shading correction (d) None of the Mentioned	1	K1	CO4
9.	What is the process of storing an image with the help of numerical values of light intensity called? (a) Image segmentation (b) Image compression (c) Frame grabbing (d) Image enhancement	1	K1	CO5
10.	What is the primary purpose of a vision-based navigation guidance system? (a) To recognize obstacles (b) To estimate the position of a vehicle (c) To avoid collisions (d) All of the above	1	K1	CO5

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

		Marks	K – Level	CO
11.	Justify the need of proper lighting in machine vision.	2	K2	CO1
12.	Compare and contrast CCD and CMOS camera.	2	K2	CO1
13.	Narrate the need and justification of Histogram in Image processing.	2	K2	CO2
14.	What is a frame buffer?	2	K1	CO2
15.	Compare region growing and region splitting.	2	K2	CO3
16.	Illustrate the purpose of Free man chain code.	2	K2	CO3
17.	What do you mean by gradients?	2	K1	CO4
18.	What do you mean by propagation?	2	K1	CO4
19.	What are the advantages of using AI in vision-based palletizing systems?	2	K1	CO5

20.		Justify the role of image processing in vision-based navigation systems.	*2*	*K2*	*CO5*
21.		What do you mean by Image smoothing?	*2*	*K1*	*CO2*
22.		Define edge detection with its types.	*2*	*K1*	*CO3*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Explain the need and applications of Machine vision in industrial scenario.	*11*	*K2*	*CO1*
		OR			
	b)	Explain in detail about Image acquisition with suitable sensor and arrays.	*11*	*K2*	*CO1*
24.	a)	Explain briefly about sampling and quantization.	*11*	*K2*	*CO2*
		OR			
	b)	Summarize Morphology with suitable explanations.	*11*	*K2*	*CO2*
25.	a)	Explain briefly about segmentation and its techniques.	*11*	*K2*	*CO3*
		OR			
	b)	Explain the need and working of boundary descriptors.	*11*	*K2*	*CO3*
26.	a)	Construct and model thinning algorithm for a vision system.	*11*	*K3*	*CO4*
		OR			
	b)	Explain how Skeltoning techniques can be applied in image processing with suitable algorithms.	*11*	*K3*	*CO4*
27.	a)	Develop the need of machine vision in inspection and testing with suitable industrial scenario.	*11*	*K3*	*CO5*
		OR			
	b)	Construct a machine vision Automated assembly line with suitable diagram.	*11*	*K3*	*CO5*
28.	a)	Enumerate various types, needs and applications of light sensors.	*11*	*K2*	*CO1*
		OR			
	b)	With a neat sketch explain about various steps of machine vision.	*11*	*K2*	*CO1*