

GYANMANJARI INNOVATIVE UNIVERSITY

GYANMANJARI INSTITUTE OF TECHNOLOGY

B.Tech.-Mid Semester Examination (MSE)-W2026

Enrollment No.: _____

Subject Code: BETCE14401

Subject Name: Computer Vision

Time: 02:30 PM to 04:30 PM

Date: 28-09-2026

Semester: 4

Total Marks: 60

Instructions:

1. Question No. 1 is compulsory.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		Marks
Q.1	(a) Explain the concept of image interpolation. Compare nearest-neighbor, bilinear, and bicubic interpolation methods.	05
	(b) How do you programmatically adjust the brightness and contrast of an image? Explain the mathematical operations involved.	05
	(c) Explain the process of digital image formation and its representation in computer memory.	10
Q.2	(a) Define frames and FPS in video processing. How do they affect video quality and file size?	05
	(b) Explain how keyboard interactions are implemented in OpenCV applications. Provide an example where a key press triggers an action.	05
	OR	
	(b) Differentiate between image I/O and video I/O operations in OpenCV.	05
	(c) List and explain five practical applications of video processing in fields like surveillance, sports, and healthcare.	10
	OR	
	(c) What is image thresholding? Explain binary and adaptive thresholding methods with examples and their use cases.	10
Q.3	(a) What is contour detection? Explain its significance in object detection and shape analysis.	05
	(b) What is image enhancement? Why is it a crucial pre-processing step in computer vision pipelines?	05
	(c) Explain the step-by-step process of connected component analysis to label distinct objects in a binary image.	10
	OR	
Q.3	(a) What is the bilateral filter? How does it achieve edge-preserving smoothing?	05
	(b) Compare RGB and HSV color spaces in terms of their properties, advantages, and suitability for different vision tasks (e.g., object tracking).	05
	(c) Explain the Sobel edge detection algorithm. How does it calculate gradients in the x and y directions?	10