Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2023

Subject Code:3174206 Date:08-12-2023

Subject Name: Computer Vision

Time: 10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Discuss perspective camera model	**03**
	(b)	What is zero crossing edge detector?	**04**
	(c)	Discuss significance of Chain codes in object representation	**07**
Q.2	**(a)**	Explain mean shift technique.	**03**
	(b)	Discuss region splitting and region merging	**04**
	(c)	Discuss Hough transformation with example. Mention its merits and demerits	**07**
		OR	
	(c)	What is histogram equalization? Apply histogram equalization on following image with 8 gray levels:	**07**

1	1	2	0
2	3	7	0
7	7	7	1
2	7	0	1

Q.3	**(a)**	What is Affine transformation	**03**
	(b)	What is computer vision and state its applications?	**04**
	(c)	Explain the key principles underlying the Scale-Invariant Feature Transform (SIFT).	**07**
		OR	
Q.3	**(a)**	Write short note on content based image retrieval.	**03**
	(b)	Write note on motion parallax.	**04**
	(c)	Explain the structure of human vision system.	**07**
Q.4	**(a)**	Explain the concept of image transformation	**03**
	(b)	Explain the process of image formation	**04**
	(c)	How principal component analysis helps to reduce the dimension. Discuss with derivation.	**07**
		OR	
Q.4	**(a)**	Explain following term for image quality measurement: MSE, SNR, PNSR	**03**
	(b)	Explain working of Kalman filter.	**04**
	(c)	Mention properties of wavelet transformation.	**07**
Q.5	**(a)**	Describe: Statistical filtering	**03**
	(b)	What is texture and explain primary issues in texture analysis	**04**
	(c)	Explain area based matching and feature based matching.	**07**
		OR	

Q.5	**(a)**	What is Machine Learning? Discuss types of machine learning	**03**
	(b)	Explain the process of corner detection.	**04**
	(c)	How to derive HOG descriptor?	**07**

****