GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 3171113   **Date: 30/06/2023**
Subject Name: Practical aspects of 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)**	Explain basic component of Digital Image Processing.	**03**
	(b)	Enlist fundamental steps involved in image processing with block	**04**
	(c)	Explain Histogram equalization with necessary equations.	**07**
Q.2	**(a)**	Explain warping of images with python programming or pseudo code.	**03**
	(b)	What do you mean by geo-tagged images? From where it can be downloaded?	**04**
	(c)	Explain Scale Invariant Feature Transform.	**07**
		OR	
	(c)	Discuss basic steps of image filtering in frequency domain.	**07**
Q.3	**(a)**	Explain K-nearest neighbor classifier.	**03**
	(b)	Discuss Image mosaicing.	**04**
	(c)	Explain Harris Corner Detector algorithm.	**07**
		OR	
Q.3	**(a)**	Discuss camera matrix.	**03**
	(b)	Write a short note on affine transform.	
	(c)	Explain Scale Invariant Feature Transform.	**07**
Q.4	**(a)**	State different limitations of a pinhole camera & how to overcome these limitations?	**03**
	(b)	Explain camera calibration.	**04**
	(c)	Explain below terms in the context of transformations in 2D. (i) Scaling (ii) Shearing	**07**
		OR	
Q.4	**(a)**	Write a note on RANSAC.	**03**
	(b)	What do you mean by clustering? Also explain K-means clustering.	**04**
	(c)	Write a short note on epipolar geometry in detail.	**07**
Q.5	**(a)**	Explain 3D reconstruction in brief.	**03**
	(b)	Explain about Indexing images in brief.	**04**
	(c)	Write a note on support vector machine algorithm.	**07**
		OR	
Q.5	**(a)**	Write a short note on Augmented Reality.	**03**
	(b)	Discuss image segmentation using Clustering.	**04**
	(c)	Explain the significance of Principal Component Analysis (PCA) technique for dimensionality reduction of large Data set.	**07**

****