GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–VII EXAMINATION – WINTER 2025

Subject Code:3171113 **Date:28-11-2025**

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 Frequency domain operations for Image processing.	**03**
	(b)	State different limitations of a pinhole camera and how to overcome these	**04**
	(c)	Explain below spatial domain operations on image. (i) Contrast Stretching　　　　　　　　(ii) Gray level slicing	**07**
Q.2	**(a)**	Define a corner in an Image.	**03**
	(b)	What do you mean by Image Mosaicing?	**04**
	(c)	Explain Scale Invariant Feature Transform.	**07**
		OR	
	(c)	State any three spatial domain operations employed in image processing. Explain anyone in detail.	**07**
Q.3	**(a)**	Explain Camera Calibration.	**03**
	(b)	Write a short note on affine transform.	**04**
	(c)	Write a short note on homography & also explain direct linear transformation algorithm.	**07**
		OR	
Q.3	**(a)**	Write a short note on camera matrix.	**03**
	(b)	Write down matrix to obtain rotation and scaling of an image.	**04**
	(c)	Write a short note on Epipolar geometry in detail.	**07**
Q.4	**(a)**	Explain about Stereo Images in brief.	**03**
	(b)	What do you mean by clustering? Also explain K-means clustering.	**04**
	(c)	Explain principle of spectral clustering for image segmentation.	**07**
		OR	
Q.4	**(a)**	State three types of kernel functions used in SVMs.	**03**
	(b)	Write down any four applications of Content-Based Image Retrieval (CBIR).	**04**
	(c)	Explain k-Nearest Neighbor Classifier.	**07**
Q.5	**(a)**	State whether the following statement is true or false and provide a justification for your answer: "Clustering approach belongs to the supervised learning approach."	**03**
	(b)	Discuss advantages and disadvantages of Content Based Image Retrieval.	**04**
	(c)	What is the significance of Principal Component Analysis (PCA)?Explain In detail.	**07**

OR

Q.5 **(a)** Write a note on Optical Character Recognition(OCR).   **03**
 (b) Discuss advantages and disadvantages of SVMs.   **04**
 (c) Explain the principle of k-means clustering.   **07**

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