Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– 1 • EXAMINATION – WINTER 2014

Subject Code: 2710506 **Date:12/01/2015**

Subject Name: Advanced Image Processing

Time: **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define boundary and regions. Explain Chain codes.	**07**
	(b)	Explain Canny Edge detection operator in detail.	**07**
Q.2	**(a)**	Explain different thresholding techniques with respect to Image segmentation. What is the role of noise illumination and reflectance for the same?	**07**
	(b)	Explain Harris Corner detector algorithm.	**07**
		OR	
	(b)	Explain the concept of Template matching in detail.	**07**
Q.3	**(a)**	Explain Horn and Schunk Optical Flow Technique with necessary mathematical equations.	**07**
	(b)	Explain Hough transform for detection of line with Cartesian parameterization. What is the problem with this method? How can you solve it?	**07**
		OR	
Q.3	**(a)**	Explain slicing the data set for 3D visualization.	**07**
	(b)	Explain the concept of stereo viewing.	**07**
Q.4	**(a)**	Explain the concept of Phase congruency technique and justify how it is better compared to conventional edge detector techniques.	**07**
	(b)	Define Texture. Explain different texture descriptor techniques in brief.	**07**
		OR	
Q.4	**(a)**	Explain basic concept of snakes. Define greedy algorithm for snakes in brief	**07**
	(b)	Write equations and significance of zero order, first order and second order moments.	**07**
Q.5	**(a)**	Explain edge detection with gradient operator. How can we find diagonal edges using gradient operator?	**07**
	(b)	Explain Histogram equalization.	**07**
		OR	
Q.5	**(a)**	Explain Algebric Reconstruction method to solve the density problem in reconstruction of tomography image.	**07**
	(b)	Write difference between volume imaging and sections.	**07**

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