

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME – SEMESTER I (NEW) – • EXAMINATION – SUMMER 2016**

**Subject Code: 2710506****Date: 17/05/2016****Subject Name: Advanced Image Processing****Time: 02:30 pm to 05:00 pm****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. How chain code can be made rotation invariant? **07**  
 (b) Explain basic concept of snakes. Define greedy algorithm for snakes in brief **07**

- Q.2** (a) Explain concept of measuring curvature by changes in intensity. **07**  
 (b) What is the region descriptor? Explain the basic region descriptor. **07**

**OR**

- (b) Explain Canny Edge detection operator in detail. Derive its advantages over conventional edge detection operators. **07**

- Q.3** (a) Explain the differential approach for image motion detection. **07**  
 (b) By giving formal definition of GHT, explain how it is useful for irregular shaped object. **07**

**OR**

- Q.3** (a) How Phase congruency technique is advantageous over conventional corner detector techniques? **07**  
 (b) Explain the concept of volumetric display and stereo viewing for 3D data analysis. **07**

- Q.4** (a) Define Texture. Explain different texture descriptor techniques in brief. **07**  
 (b) Explain Algebraic Reconstruction method to solve the density problem in reconstruction of tomography image. **07**

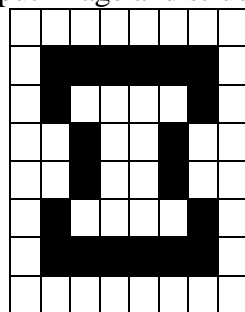
**OR**

- Q.4** (a) Write difference between volume imaging and sections. **07**  
 (b) Explain the K-nearest Neighborhood rule for cluster classification. **07**

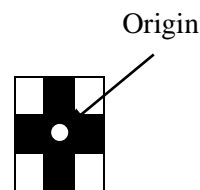
- Q.5** (a) Explain (1) homomorphic filter and (2) Gaussian high pass filter in frequency domain. **07**  
 (b) Explain the concept of Hit or Miss transform with suitable example. **07**

**OR**

- Q.5** (a) For the input image and structuring element shown in figure, perform the region filling operation. **07**



Image



Structuring Element

- (b) Explain the importance of 3D data set for medical image analysis. How the data set can be sliced for analysis? **07**

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