

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – SUMMER • 2014****Subject Code: 170307****Date: 31-05-2014****Subject Name: Image Processing****Time: 02:30 pm - 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) Explain the human visual system and image formation in eye. **07**
 (b) Explain the effects of reducing sampling and quantization. **07**
- Q.2** (a) Explain the following processes of image enhancement in spatial domain; **07**
 i. Contrast stretching. ii. Grey level slicing iii. Bit plane slicing
 (b) Differentiate log transform with power law transform with example. **07**
- OR**
- (b) Classify the noise in a digital image arise during acquisition and transmission, based on shapes (PDF) of the noise. **07**
- Q.3** (a) Explain the following edge extraction operators **07**
 i. Sobel ii. Prewitt iii. Roberts iv. Laplacian v. Fri-chen
 (b) Explain the process of image segmentation using region growing. **07**
- OR**
- Q.3** (a) Develop an algorithm for a fast Hadamard transform. **07**
 (b) Explain Slant transform with example. **07**
- Q.4** (a) Explain the following operations **07**
 i. Erosion ii. Dilation iii. Operation iv. Closing v. Thinning
 (b) Explain Hit-or-Miss transformation. **07**
- OR**
- Q.4** (a) What are the various types of redundancies in image? Suggest the methods to remove such noise. **07**
 (b) Explain Huffman encoding with example. **07**
- Q.5** (a) Explain in detail the Fourier descriptors. Where are they used? Explain with an example. **07**
 (b) Show how moments can be used to determine symmetry in an image. **07**
- OR**
- Q.5** (a) Write a note on Walsh-Hadamard and Haar transform **07**
 (b) Generate an algorithm to achieve LZW compression. **07**
