

GUJARAT TECHNOLOGICAL UNIVERSITY
ME Semester –I Examination Feb. - 2012

Subject code: 710404N**Date: 15/02/2012****Subject Name: Image Processing****Time: 10.30 am – 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.

- Q.1** (a) What is digital image processing? What are the various steps for performing the digital image processing? **07**
- (b) What do you mean by sampling and quantization of a digital image? Explain in brief 2D sampling and quantization method. How zooming is perform in a digital image? **07**

- Q.2** (a) Write a short note: Piecewise linear transformation functions for image processing. **07**
- (b) What is gamma correction? Explain the transformation used for this purpose in detail. Explain log transformation in brief. **07**

OR

- (b) Explain digital image compression standard JPEG and JPEG 2000. **07**
- Q.3** (a) What is histogram of an image? Explain the concept of histogram equalization with suitable example. **07**
- (b) Explain the basic steps for performing the image filtering in the frequency domain. **07**

OR

- Q.3** (a) What is histogram matching (specification)? Explain the procedure for the histogram specification. **07**
- (b) Write a short note: Haar transform. **07**

- Q.4** (a) Explain the Homomorphic filter for the image enhancement. List out the properties of 2D DFT. **07**
- (b) Explain the frequency domain filtering technique for the image sharpening. **07**

OR

- Q.4** (a) Explain Minimum mean square error (wiener) filtering. How this filtering technique is different from inversing filtering? **07**
- (b) Explain the concept of dilation and erosion with suitable example. **07**

- Q.5** (a) What is thresholding? Explain various methods of thresholding in brief. **07**
- (b) State and explain the various application of gray scale morphology. **07**

OR

- Q.5** (a) Write a short note: Chain coding **07**
- (b) Explain the shape detection using the morphological hit or mass transform. **07**
