

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E –Ist SEMESTER–EXAMINATION – JULY- 2012****Subject code: 710404N****Date: 13/07/2012****Subject Name: Image Processing****Time: 2:30 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) (1) Describe in brief representation of digital images. **07**
(2) How to determine the principal factors (resolution) of an image
- (b) Write a note on smoothing and sharpening spatial domain filters. **07**
- Q.2** (a) Define following terms related to digital images: **07**
(1) pixel, (2) neighbors of a pixel, (3) adjacency
(4) connectivity, (5) regions, (6) boundaries, (7) distance function
- (b) Compare basic types of function in gray level transformation for image enhancement. **07**
- OR**
- (b) Describe enhancement of digital images using arithmetic/logic operation. **07**
- Q.3** (a) List out the color models for color image processing; also explain the RGB color model and how to convert RGB to HIS color model. **07**
- (b) Describe blurring is achieved in frequency domain by attenuating of high frequency component. **07**
- OR**
- Q.3** (a) Justify with detail description padding is needed in filtering of digital images processing application. **07**
- (b) Which are the various transforms used in processed of digital images and explain two dimension discrete cosine transform in details? **07**
- Q.4** (a) Explain the principal ways to estimate degradation function for image restoration. **07**
- (b) Write a note on Minimum Mean Square Error filtering method. **07**
- OR**
- Q.4** (a) Describe in brief the noise reduction using spatial filters. **07**
- (b) Explain two dimension wavelet transform. **07**
- Q.5** (a) Which are the image compression standards and explain JPEG2K2 image compression technique? **07**
- (b) Describe in details for uses of laplacian and gradient in image segmentation. **07**
- OR**
- Q.5** (a) Explain linear predictive coding for image compression. **07**
- (b) Describe the properties and implementation image thresholding in image segmentation. **07**
