

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – I • EXAMINATION – WINTER 2012****Subject code: 710404N****Date: 10-01-2013****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) Define the Image Enhancement. Explain different Spatial domain Enhancement method. **07**

(b) Apply 3*3 Average Filter on image x given below. **07**

X = 25 40 50 80
 30 22 60 70
 42 60 52 51
 28 27 31 45

Q.2 (a) Explain the edge detection using gradient operators. **07**

(b) Describe different point processing techniques used for Image Transformation **07**

OR

(b) Compare Laplacian and Gradient methods for Image Sharpening. **07**

Q.3 (a) Write the basic steps for filtering in the frequency domain. Also discuss the Algorithm complexity to calculate DFT and FFT. **07**

(b) What is the Image Restoration? Explain Inverse Filtering Method. **07**

OR

Q.3 (a) Discuss the different types of Color models in brief. **07**

(b) Explain different Low Pass and High Pass filtering in the Frequency Domain. **07**

Q.4 (a) Define the Histogram of an Image? Explain the Equalization of Histogram. **07**

(b) Discuss the application of Digital Image Processing. **07**

OR

Q.4 (a) Describe DCT and DWT in brief. **07**

(b) Illustrate the Process of the Edge detection. Write the steps of Canny Edge Detector. **07**

Q.5 (a) Give a brief note on Opening and Closing Morphological operations with suitable example. **07**

(b) Explain the JPEG 2000 Standard. **07**

OR

Q.5 (a) Write a note on Component of Digital Image Processing. **07**

(b) Explain the H.26x standard. **07**
