

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E Sem-I Examination January 2010****Subject code: 710404****Subject Name: Image Processing****Date: 27 / 01 / 2010****Time: 12.00 – 2.30pm****Total Marks: 60****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) Apply 2*2 smoothing filter on image A given below. **06**

A =	24	28	30	20	1
	10	10	12	0	0
	42	39	49	44	33
	10	10	12	5	5
	20	15	15	10	10

(b) Define the following terms: **06**
 (i) digital image, (ii) Pixel, (iii) spatial resolution, (iv) Gray level resolution.

Q.2 (a) Define Histogram, draw the histogram of image A of question 1 (a), also find out its normalized values. **06**

(b) Write a brief note on Objectives of digital Image processing. **06**

OR

(b) Components of Digital Image Processing, A Short note. **06**

Q.3 (a) Explain in detail different models of color image. **06**

(b) Enlist and explain various point processing techniques used for image enhancement. **06**

OR

Q.3 (a) How a color image processing is differ from gray image processing. **06**

(b) Draw block diagram of image processing in frequency domain and explain each block. **06**

Q.4 (a) What do you mean by Image restoration? Is original Image can be restored? Justify your answer. **06**

(b) Compare : Laplacian and The gradient **06**

OR

Q.4 (a) Wiener Filtering process. **06**

(b) Histogram Equalization process. **06**

Q.5 (a) What is H.26x? Explain its structure in detail. **06**

(b) Write down the followings: **06**

(i) properties of 2D DFT.

(ii) Hadamard matrix for $n = 3$.

(iii) K L Transform in matrix notation.

OR

Q.5 (a) Explain various steps performed in JPEG2000. **06**

(b) How DCT can be utilized in Image Processing? **06**
