Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2013

Subject code: 1710404 **Date: 31-12-2013**

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)** Explain different models of color images **07**

(b) Define histogram of an image with histogram statistics. Explain the histogram equalization. **07**

Q.2 **(a)** Write brief note on Different point processing techniques. **07**

(b) A 5 x 5 image is given below. Apply 3 x 3 median filter mask. **07**

I =

13	21	20	15	16
15	12	12	16	13
10	7	20	25	23
30	25	15	18	24
30	20	13	12	12

OR

(b) Apply the 3 X 3 averaging filter for above image. **07**

Q.3 **(a)** Define Spatial Resolution and Intensity Resolution. Show the relationship between them. **07**

(b) Differentiate between the Laplacian operator and Gaussian derivative operator. How it is used for image enhancement? **07**

OR

Q.3 **(a)** Explain sobel operator? Explain the process of edge detection using gradient operator. **07**

(b) Describe Canny edge detection method. **07**

Q.4 **(a)** Describe Unsharp filtering and Highboost filtering. **07**

(b) Explain Wiener filtering and Inverse filtering. **07**

OR

Q.4 **(a)** Write notes on Hadmard Transform. **07**

Q.4 **(b)** What is a bitplane slicing? Explain with suitable examples. **07**

Q.5 **(a)** Explain DCT and DWT in brief. **07**

(b) Write short note on Dilation and Erosion for morphological operation. **07**

OR

Q.5 **(a)** Give notes on Morphological operations on binary image. **07**

(b) Describe the structure of H.26x. **07**

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