Seat No.: _____ Enrolment No._____

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. (2) How to determine the principal factors (resolution) of an image	**07**
	(b)	Write a note on smoothing and sharpening spatial domain filters.	**07**
Q.2	**(a)**	Define following terms related to digital images: (1) pixel, (2)neighbors of a pixel, (3) adjacency (4) connectivity, (5) regions, (6) boundaries, (7) distance function	**07**
	(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**

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