Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – III • EXAMINATION – WINTER • 2014

Subject code: 732304   **Date: 27-11-2014**
Subject Name: Speech and 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)**	Explain different elements of DIP system?	07
	(b)	Explain with example a) Neighbors of pixel b) Connectivity	07
Q.2	**(a)**	Define m-adjacency, connected component and chessboard distance with an example.	07
	(b)	Define and explain compression ratio, coding redundancy, and entropy. Discuss the steps in Huffman coding for lossless compression with an example.	07
		OR	
	(b)	Explain with block diagram, fundamental steps in digital image processing.	07
Q.3	**(a)**	Explain Homomorphic filtering for image enhancement in detail.	07
	(b)	Explain the Geometric Transformations used in image restoration?	07
		OR	
Q.3	**(a)**	Explain Lossy Predictive coding Model?	07
	(b)	Explain process of image smoothing using Median filtering?	07
Q.4	**(a)**	What do you understand by dilation and erosion operation in morphological operation? Explain in brief?	07
	(b)	What are different enhancement operations? Explain any one with example.	07
		OR	
Q.4	**(a)**	Define Local thresholding, Global Thresholding and Dynamic or adaptive Thresholding.	07
	(b)	Explain why the discrete histogram equalization technique will not in general yield flat histogram.	07
Q.5	**(a)**	Explain the following Standards: (1) JPEG 2000 (2) MPEG	07
	(b)	Explain block diagram of color image enhancement in brief.	07
		OR	
Q.5	**(a)**	Explain morphological Hit-or-Miss transform for shape detection.	07
	(b)	Explain the color conversion with appropriate method in detail.	07

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