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GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VIII (Old) EXAMINATION – WINTER 2019

Subject Code: 181102   **Date: 27/11/2019**

Subject Name: Fundamentals Of Image Processing

Time: 02:30 PM TO 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 following terms with respect to image. Pixel, neighborhood, adjacency, resolution of an image, connectivity, digital image, image negative.	**07**
	(b)	Draw and explain basic block diagram of image processing system.	**07**
Q.2	**(a)**	Explain basic intensity transformation functions in brief.	**07**
	(b)	What is meant by bit plane slicing? Explain in detail. Also state the applications of bit plane slicing.	**07**
		OR	
	(b)	Explain the use of second order derivatives for image sharpening.	**07**
Q.3	**(a)**	What is meant by histogram? Explain the process of histogram equalization with appropriate mathematical equations.	**07**
	(b)	Explain homomorphic filtering in detail.	**07**
		OR	
Q.3	**(a)**	What is meant by histogram? Explain the process of histogram matching with appropriate mathematical equations.	**07**
	(b)	Explain the periodicity property of 2-D DFT.	**07**
Q.4	**(a)**	Explain image degradation/restoration model in detail.	**07**
	(b)	Explain adaptive median filtering in detail.	**07**
		OR	
Q.4	**(a)**	Explain Gaussian noise, Rayleigh noise and Gamma noise with appropriate noise profiles.	**07**
	(b)	Explain Wiener filtering in detail.	**07**
Q.5	**(a)**	What is morphology? Explain Erosion and Dilation. Also state appropriate applications of erosion and dilation.	**07**
	(b)	Explain RGB color model in detail.	**07**
		OR	
Q.5	**(a)**	Explain Region filling	**07**
	(b)	Explain Huffman coding with appropriate example.	**07**

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