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GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2170712   **Date: 29/11/2018**

Subject Name: Image Processing

Time: 10:30 AM TO 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.**

			MARKS
Q.1	**(a)**	Explain Electromagnetic Spectrum	**03**
	(b)	Explain Types of Images?	**04**
	(c)	Explain Digital Imaging System?	**07**
Q.2	**(a)**	What is histogram equalization? Demonstrate with example.	**03**
	(b)	Explain the following edge extraction operators i. Sobel ii. Prewitt iii. Roberts iv. Laplacian v. Fri-chen	**04**
	(c)	Explain basic gray level transformations?	**07**
		OR	
	(c)	Explain following terms: 1) Luminance 2) Radiance 3) Brightness 4) Contrast 5) Intensity and Spatial Resolution 6) Modulation Transfer Function 7) Dynamic Range.	**07**
Q.3	**(a)**	Explain Image restoration Model?	**03**
	(b)	Explain DFT and DCT with their applications in image processing field.	**04**
	(c)	Write steps for filtering of image in frequency domain. Also explain ringing effect and Gaussian Highpass Filter.	**07**
		OR	
Q.3	**(a)**	Explain mean and median filtering with example?	**03**
	(b)	Explain Homomorphic filtering?	**04**
	(c)	Explain spatial correlation and convolution with suitable example.	**07**
Q.4	**(a)**	Explain machband effect and weber ratio	**03**
	(b)	Explain Gaussian filter	**04**
	(c)	Explain Bitplane coding with example	**07**
		OR	
Q.4	**(a)**	Explain Haar Transform and mention its applications.	**03**
	(b)	Explain HSI color model with all essential figure and equation.	**04**
	(c)	Explain Huffman Encoding with example?	**07**
Q.5	**(a)**	Discuss Spatial and Temporal Redundancy of an Image.	**03**
	(b)	What is Histogram? Draw histogram patterns of Dark, Bright, Low and High contrast Image.	**04**
	(c)	Explain LZW Coding ?	**07**
		OR	
Q.5	**(a)**	Explain Hough Transform.	**03**
	(b)	What is edge? Explain the types of discontinuities in image.	**04**
	(c)	Explain Image segmentation using Global Thresholding.	**07**

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