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

Subject Code: 2173210   **Date: 29/11/2018**
Subject Name: Digital 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.

Q.1	(a)	Explain block diagram of Image processing	03
	(b)	Write a short note: smoothing filter in frequency domain.	04
	(c)	Draw and explain structure of human eye and discuss human vision System.	07
Q.2	(a)	List the types of noise and their cause, which can corrupt an image.	03
	(b)	Write a short note on Edge-detection.	04
	(c)	What is histogram? Explain histogram equalization algorithm. Write Matlab code for calculation of histogram and histogram equalization	07
		OR	
	(c)	Explain each stage of JPEG image compression.	07
Q.3	(a)	Compare lossy and lossless image compression	03
	(b)	Explain in detail the RGB color model	04
	(c)	Explain basic steps for filtering of image in frequency domain. What are the filter mask used for low pass filtering and high pass filtering?	07
		OR	
Q.3	(a)	Explain different digital image file formats.	03
	(b)	Explain basic concepts of image sampling and quantization.	04
	(c)	Explain gray level slicing and bit plane slicing.	07
Q.4	(a)	Explain Image Degradation –Restoration model.	03
	(b)	Explain Image segmentation in short.	04
	(c)	Explain Low Pass Filter in Spatial domain with suitable Example	07
		OR	
Q.4	(a)	Explain different applications of image processing.	03
	(b)	Write a short note on Pseudo-coloring.	04
	(c)	Explain in brief: (i) Contra-harmonic mean filter (ii) Alpha-trimmed mean filter.	07
Q.5	(a)	Explain contrast stretching.	03
	(b)	Explain edge linking algorithms.	04
	(c)	Write a MATLAB program to implement various edge detectors: Robert, sobel, prewitt, canny.	07
		OR	
Q.5	(a)	Explain Region growing in short.	03
	(b)	Write a MATLAB program to generate and plot histogram of given image and equalization of histogram	04
	(c)	Define the following terms with respect to image. Neighbor of a pixel, adjacency, Resolution of an image, nearest neighbor interpolation, connectivity, digital image, image negative.	07

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