PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M.Tech., Winter 2017 - 18 Examination

Semester: 1   Date: 02/01/2018
Subject Code: 03201136   Time: 2: 00 pm to 4:30 pm
Subject Name: Image Processing   Total Marks: 60_____

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1	**A)** Explain fundamental steps and objective of each step in digital image processing with proper Diagram.	**(05)**
	B) Write a Short note on: Image Sampling and Quantization.	**(05)**
	C) Define Image Compression. Explain Image Compression Model.	**(05)**
Q.2	**Answer the following questions. (Attempt any three)**	**(15)**
	A) What is morphology? Discuss two basic morphological operations Erosion and Dilation.	
	B) Differentiate between Butterworth Low pass and Gaussian low pass filter.	
	C) Explain various application of image processing in medicine.	
	D) Write a short note on RGB color model.	
Q.3	**A)** Define histogram. Explain histogram equalization algorithm. Write pseudo code or matlab code for calculation of histogram and histogram equalization.	**(07)**
	B) Explain the following edge extraction operators	**(08)**
	i. Sobel ii. Prewitt iii. Roberts iv. Laplacian	
	OR	
	B) Write a short note on Huffman Coding with appropriate example	**(08)**
Q.4	**A)** Explain Minimum Mean Square Error (Wiener) Filtering.	**(07)**
	OR	
	A) Explain Periodic Noise Reduction by Frequency Domain filtering.	**(07)**
	B) What is difference between image enhancement and image restoration? Explain following gray level transformation for image enhancement in spatial domain.	**(08)**
	1) log transformation	
	2) power-law transformation	