Seat No.: _____ Enrolment No._____

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

Subject Code: 2171712   **Date: 03/12/2018**

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)	Briefly explain the concept of Spatial Resolution for image.	03
	(b)	What is digital image and what is digital image processing? Explain it in brief.	04
	(c)	With proper block diagram explain key stages in digital image processing	07
Q.2	(a)	Why do we need image processing? Explain its requirement	03
	(b)	How can you read and write images in MATLAB? Explain with example.	04
	(c)	Briefly explain applications of image processing.	07
		OR	
	(c)	Explain the concept of sampling and quantization processes	07
Q.3	(a)	Write MATLAB code to build a matrix intensity image.	03
	(b)	Discuss image soothing vs image sharpening	04
	(c)	Explain different types of processing used for image enhancement	07
		OR	
Q.3	(a)	List out arithmetic operations between images and explain any one with example.	03
	(b)	Write a program using MATLAB commands to calculate mean value of an image.	04
	(c)	Explain the technique of image compression.	07
Q.4	(a)	How can one decide the quality of image using histogram?	03
	(b)	Write MATLAB commands to add and subtract two images. What mathematical operation is required to increase and decrease the brightness of an image?	04
	(c)	What do you mean by image restoration? Explain it in detail with examples of various noise models.	07
		OR	
Q.4	(a)	Explain the functions 1) imhist( ) 2) im2bw( ).	03
	(b)	Briefly explain the principle of image formation in human eye.	04
	(c)	What do you mean by image compression? Explain it in detail.	07
Q.5	(a)	Explain imshow ( ) and imwrite ( ) commands with example.	03
	(b)	Briefly explain the steps of filtering in frequency domain.	04
	(c)	What is histogram? Why histogram processing is required? Explain it in detail.	07
		OR	
Q.5	(a)	What is weber ratio in image processing?	03
	(b)	Briefly explain the concept of frequency domain filtering.	04
	(c)	Explain the concept of image segmentation in detail and also explain its applications.	07

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