Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VIII (New) EXAMINATION – WINTER 2019

Subject Code: 2181102 **Date: 21/11/2019**

Subject Name: Fundamental 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.**

			MARKS
Q.1	**(a)**	Define Image, Low-mid and high-level processes on image.	**03**
	(b)	List the fields that use digital image processing. Briefly explain X-ray imaging.	**04**
	(c)	Using block diagram explain the fundamental steps in digital image processing.	**07**
Q.2	**(a)**	Explain brightness adaptation.	**03**
	(b)	Briefly explain spatial and gray-level resolution.	**04**
	(c)	Explain structure of the human eye with neat and clean diagram in detail.	**07**
		OR	
	(c)	Write short note on bit-plane slicing.	**07**
Q.3	**(a)**	What is contrast stretching?	**03**
	(b)	What type of data redundancies that can be identified and exploited for digital image compression purpose?	**04**
	(c)	Explain any two basic gray level transformations.	**07**
		OR	
Q.3	**(a)**	Define image enhancement and its approaches.	**03**
	(b)	Briefly explain homomorphic filtering approach for image enhancement.	**04**
	(c)	Write short note on histogram equalization.	**07**
Q.4	**(a)**	What is application of power law (Gamma) transformation in digital image processing?	**03**
	(b)	Explain steps of filtering in the frequency domain using block diagram.	**04**
	(c)	What is use of image smoothing filters? Explain Butterworth low-pass filters in detail.	**07**
		OR	
Q.4	**(a)**	Explain the term “Safe web colors”.	**03**
	(b)	Explain the model of image degradation/restoration process.	**04**
	(c)	Write short note on MMSE (Wiener) Filtering.	**07**
Q.5	**(a)**	Explain 2D discrete Fourier transform with the help of equations.	**03**
	(b)	Explain Noise probability density function for Gaussian noise and impulse noise.	**04**
	(c)	What is pseudocolor image processing? Explain Intensity slicing technique in details.	**07**
		OR	
Q.5	**(a)**	Explain image segmentation and basic approaches of image segmentation algorithms.	**03**
	(b)	Discuss the applications of gray-scale morphology.	**04**
	(c)	What is morphology? Explain Hit-or-miss transformation.	**07**

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