Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2018

Subject Code:2161604 **Date:04/12/2018**

Subject Name: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**

Q-1	**(A)**	Define the following terms 1) Contrast Strecthing 2) Nearest neighbor interpolation 3) Image negative	**[3]**
	(B)	What is mean by Digital Image Processing? Explain how digital images can be represented?	**[4]**
	(C)	Explain the process of image acquisition.	**[7]**
Q-2	**(A)**	Discuss a simple image formation model.	**[3]**
	(B)	Write short note on :smoothing filter	**[4]**
	(C)	explain following: 1)mach band effect 2)image contrast, image resolution	**[7]**

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	(C)	Explain piecewise-linear transformation functions in detail	**[7]**
Q-3	**(A)**	List applications of RGB, HIS and CMYK color Models	**[3]**
	(B)	Explain ideal low pass filter and butterworth low pass filter in frequency domain.	**[4]**
	(C)	Explain sharpening using a 3x3 mask.	**[7]**

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Q-3	**(A)**	Write a short note on Power-Law (Gamma) transformation	**[3]**
	(B)	Explain the Error-free compression techniques in short.	**[4]**
	(C)	Define histogram.explain histogram equalization algorithm.write pseudo code or matlab code for calculation of histogram and histogram equalization.	**[7]**
Q-4	**(A)**	Explain the properties of Haar transform.	**[3]**
	(B)	Explain thresholding concept of Image segmentation in details.	**[4]**
	(C)	Explain RGB color model. Mention safe RGB colors and its detail.	**[7]**

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Q-4	**(A)**	Explain Adaptive filters	**[3]**
	(B)	Explain DCT with their applications in image processing field.	**[4]**
	(C)	Explain the following image restoration technique. 1. Salt Noise 2) Papper Noise 3) Uniform Noise	**[7]**
Q-5	**(A)**	Write note on edge detection	**[3]**
	(B)	What is morphology? Explain any one morphology operation in details.	**[4]**
	(C)	Write a detailed note on 2-D fast wavelet transform	**[7]**

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Q-5	**(A)**	Discuss Spatial and Temporal Redundancy of an Image.	**[3]**
	(B)	Explain LZW Coding in brief.	**[4]**
	(C)	What is Segmentation? List segmentation approaches. Explain use of gradient operators to find out discontinuous.	**[7]**

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