Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) - EXAMINATION – SUMMER 2018

Subject Code:2171712 Date:08/05/2018

Subject Name:Image Processing(Departmental Elective - II)

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)**	Draw and Explain structure of human eye and discuss human vision system	**07**
	(b)	With the help of necessary equation, plots and images, explain the use of power law transformations in detail.	**07**
Q.2	**(a)**	What is redundancy in image? List different types of redundancy available in the digital image? Explain Coding redundancy with example.	**07**
	(b)	Describe HIS color model. Explain in detail how to convert RGB to HIS color model.	**07**
		OR	
	(b)	Explain RGB and CMY color models, and their relationship.	**07**
Q.3	**(a)**	Explain basic concepts of image sampling and quantization. Discuss spatial & intensity resolutions.	**07**
	(b)	Explain the methods of image sharpening in spatial domain	**07**
		OR	
Q.3	**(a)**	Explain different noise model in image.	**07**
	(b)	Explain Homomorphic filter giving a block diagram and its applications.	**07**
Q.4	**(a)**	Explain JPEG compression standard with its block diagram.	**07**
	(b)	Explain Hough transform and its applications.	**07**
		OR	
Q.4	**(a)**	Explain Pseudo-color image processing. What is the application of pseudo-color image processing?	**07**
	(b)	Discuss detection of points and lines in image. include mask used for detection.	**07**
Q.5	**(a)**	What is morphology? Discuss two basic morphological operations Erosion and Dilation. Write two applications of Erosion and Dilation	**07**
	(b)	Explain Arithmetic coding method with a suitable example.	**07**
		OR	
Q.5	**(a)**	List out various basic morphological algorithms and explain any one in detail.	**07**
	(b)	Write the algorithm steps of Huffman coding. Using Huffman coding technique find the average length of given coding model as shown below.	**07**

Sample	Probability
A1	0.2
A2	0.1
A3	0.05
A4	0.05
A5	0.6

****