Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2020

Subject Code:2173210 **Date:30/01/2021**

Subject Name:Digital Image Processing

Time:10:30 AM TO 12:30 PM **Total Marks: 56**

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain basic concepts of Image sampling and quantization.	**03**
	(b)	Compare lossy and lossless image compression.	**04**
	(c)	Draw and explain structure of human eye and discuss human vision System.	**07**
Q.2	**(a)**	List the types of noise and their cause, which can corrupt an image.	**03**
	(b)	Write a short note: Smoothing filter in frequency domain.	**04**
	(c)	Explain Color Models.	**07**
Q.3	**(a)**	Explain block diagram of Image processing.	**03**
	(b)	Explain Huffman coding with example.	**04**
	(c)	Explain Homomorphic filtering.	**07**
Q.4	**(a)**	Write a short note: Smoothing filter in frequency domain.	**03**
	(b)	What is Contrast stretching? Explain in Short.	**04**
	(c)	Write a Short note on Thresholding.	**07**
Q.5	**(a)**	Write a short note on Pseudo-coloring.	**03**
	(b)	Explain region growing by pixel aggregation method.	**04**
	(c)	Explain various methods for detecting edge in an image.	**07**
Q.6	**(a)**	Explain difference between Image Enhancement and Restoration.	**03**
	(b)	Explain different Digital image file formats.	**04**
	(c)	Write a short note on Color Segmentation.	**07**
Q.7	**(a)**	Explain basic steps for filtering of image in frequency domain. What are the filter mask used for low pass filtering and high pass filtering?	**03**
	(b)	Explain Contra-harmonic mean filter.	**04**
	(c)	What is Histogram? Explain histogram equalization algorithm. Write Matlab code for calculation of histogram and histogram equalization.	**07**
Q.8	**(a)**	Explain applications of Image processing.	**03**
	(b)	Explain Edge linking algorithms.	**04**
	(c)	Briefly explain JPEG image compression (Encoder and Decoder). Explain each stage of JPEG compression.	**07**

****