

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V EXAMINATION – WINTER 2025****Subject Code:3155204****Date:19-11-2025****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) How do you define and distinguish regions and boundary in an image?	03
	(b) Explain Electromagnetic spectrum according to Digital image fundamentals.	04
	(c) What is histogram processing with suitable example?	07
Q.2	(a) List out various applications of digital images.	03
	(b) Show Euclidian distance with an example.	04
	(c) Define the following terms with respect to image.	07
	1) Neighbor of a pixel	
	2) Adjacency	
	3) Resolution of an image	
	4) Nearest neighbor interpolation	
	5) Connectivity	
	6) Digital image	
	7) Image negative	
	OR	
	(c) What is a basic gray level transformation?	07
Q.3	(a) Explain block diagram of Image processing.	03
	(b) Give difference between Forward, mapping to frequency domain and Backward, inverse mapping to time domain.	04
	(c) What is Fourier Transform explain with example.	07
	OR	
Q.3	(a) List the types of noise.	03
	(b) Write a short note: smoothing filter in frequency domain.	04
	(c) State and explain filtering process in frequency domain with clear diagram.	07
Q.4	(a) What is wavelet transform? Explain with an example.	03
	(b) Describe Image degradation process.	04
	(c) Explain Inverse filtering in detail.	07
	OR	
Q.4	(a) Explain Edge detection in detail.	03
	(b) How do you compare Image enhancement vs Image restoration?	04
	(c) Explain Mean Filters in brief.	07
Q.5	(a) List out Spatial and Frequency Properties of Noise.	03
	(b) Compare Lossy compression and Lossless compression.	04
	(c) List out color models and explain RGB color model in brief.	07
	OR	
Q.5	(a) Explain region growing by pixel aggregation method.	03
	(b) Briefly discuss on color segmentation	04
	(c) Explain applications of Image processing.	07
