

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM**  
**IV B. Tech I Semester Advanced Supplementary Examinations March 2025**  
**IMAGE PROCESSING**

(Open Elective)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions. **ONE** Question from **Each unit**

All Questions Carry Equal Marks

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**UNIT-I**

1. a) Enlist various fundamental steps in Digital image Processing with a neat block Diagram? [7M]  
b) Explain briefly Image sensing and Acquisition. [7M]  
(OR)
2. a) Describe the theory of sampling of an image? [7M]  
b) Explain about quantization with neat sketch. [7M]

**UNIT-II**

3. a) Analyze the procedure for histogram equalization? [7M]  
b) Explain Spatial filtering in Image enhancement [7M]  
(OR)
4. a) Explain in detail about basic gray level transformations. [7M]  
b) Discuss briefly Image subtraction and Image Averaging. [7M]

**UNIT-III**

5. a) Draw the image compression model and describe the work of each block. [7M]  
b) Describe the Run-Length Coding technique and what are its advantages and limitations? [7M]  
(OR)
6. a) Explain Huffman coding with any one example. [7M]  
b) Draw the block diagram of lossless predictive coding model and explain it. [7M]

**UNIT-IV**

7. a) What are the various Multiresolution analysis requirements? Explain. [7M]  
b) What are the different image compression standards? Explain [7M]  
(OR)
8. a) Describe MRA, scaling functions. [7M]  
b) Explain about wavelet transform in two dimensions. [7M]

**UNIT-V**

9. a) Explain briefly about Object recognition. [7M]  
b) Explain the significance of Thresholding in image segmentation. [7M]  
(OR)
10. a) Explain about segmentation. [7M]  
b) Explain watermarking in Frequency domain. List out various applications of watermarking. [7M]

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