

Duration: 3 Hours

Total Marks: 80

- N.B. :** (1) Question No 1 is Compulsory.  
 (2) Attempt any THREE questions out of the remaining FIVE.  
 (3) All questions carry equal marks.  
 (4) Assume suitable data, if required and state it clearly.

- Q1 Attempt any **FOUR**.
- A. List and explain four types of distance measures [5]
  - B. List and define different types of Fidelity Criterion. [5]
  - C. Explain Statistical Moments with an example. [5]
  - D. Explain median filter with an example. [5]
  - E. List properties of Haar Transform. Apply it on  $x(n) = \{3, 1, 7, 4\}$  [5]

- Q2 A. Equalize the given histogram. Also draw the original and equalized histogram. [10]

Grey level	0	1	2	3	4	5	6	7
No. of pixels	2	4	0	4	2	3	1	0

- B. Explain the process of Hough Transform with an example. [10]

- Q3 A. Classify point processing techniques. Apply clipping on the image given in [10]

Q.4(B). Use  $r_1 = 2$ ;  $r_2 = 5$

- B. Apply Huffman over the image given in Q.4(B) to show codes and Calculate [10]  
 compression ratio.

- Q4 A. Apply Arithmetic Coding technique and show the compression processing. [10]

1	2
2	3

- B. Give Discrete Cosine Transform properties. Apply Cosine Transform on the [10]  
 given 3-bit of 4x4 image.

2	6	1	6
2	2	1	2
3	4	7	5
6	6	6	6

- Q5 A. Apply morphological operations: (i) Dilation (ii) Erosion [10]  
 The origin in 3x3 structuring element B is highlighted with bold font &  
 underlined.

1	1	1	
	1	1	1
1	1	1	
	1	1	1

1	1	1
	<b><u>1</u></b>	
	1	

- B. Represent a given object using Chain Codes and Shape Number. [10]



- Q6 A. Explain the process of Boundary Extraction with the help of an example. [10]

- B. List Filtering in Frequency Domain methods? Explain any two in detail. [10]