

(3 hours)

Total Marks: 80



- N.B. 1. Question No. 1 is compulsory
 2. Attempt any **three** out of remaining
 3. Assume suitable data if **necessary** and justify the assumptions
 4. Figures to the **right** indicate full marks

- Q.1. Answer the following 20 M
 a. What is Shape Number?
 b. Run length coding is lossless compression technique Explain
 c. Explain City Block Distance, Chess board distance , Dm Distance
 d. What would be the effect on the histogram if we set to zero, the higher order bit planes
- Q.2.a What are the different types of redundancies in an image? Explain 10 M
 i) Psychovisual redundancies
 ii) Interpixel redundancy
 iii) Coding redundancy
- b. Explain Chain code with example and show that how first difference makes chain code rotation invariant. 10 M
- Q.3.a Using the Butterfly diagram, compute Hadamard transform for $X(n)=\{ 1,2,3,4,1,2,1,2\}$ 10 M
- b. Generate the DFT Transform of the given Image 10 M

2	1	2	1
1	2	3	2
2	3	4	3
1	2	3	2

- Q.4.a Given a histogram, what happens when we equalize it twice, comment 10 M

Grey levels	0	1	2	3
No of pixels	70	20	7	3

- b. Explain Region based segmentation with an example. 10 M

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Q.5.a Find Huffman code for the following stream of data 10 M
{a, a, a, b, b, c, c, c, c, c, d, d, d, d, d, d, d, e, e, e, e, f, f }

b Explain Hough Transform with suitable example 10 M

Q.6 Write short notes on (Any two) 20 M

- a) Holomorphic Filtering
- b) Hit and miss transform
- c) Moments with Example
- d) Color models



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