

Q.P. Code : 31550

(3 Hours)

[Total Marks : 80



- N.B. : (1) Question No 1 is compulsory.
 (2) Solve any three questions of remaining 5 Questions.
 (3) Assume any suitable data if required.

1. Attempt any four.

- (a) Explain with block diagram the components of an Image processing system. 20
 (b) Explain Median filter.
 (c) Explain Run Length Encoding.
 (d) What is the transform matrix for $N = 4$ to Discrete cosine Transform?
 (e) What are opening and closing operations?

2. (a) Explain the Fundamental steps in an Image processing system. 10

- (b) What is Hadamard Transform? Calculate Hadamard Transform of the following Image. 10

4	1	3	2
1	5	2	3
3	2	1	2
2	3	2	1

3. (a) Define segmentation. State different methods of segmentation base on discontinuities in grey levels. 10

- (b) Explain Homomorphic filter with the help of a neat block diagram. 10

4. (a) Perform Histogram Equalization on grey level distribution shown in the table. What happens if the Histogram is equalized twice? 10

Grey level	0	1	2	3	4	5	6	7
No. of Pixels	513	1300	950	550	100	435	100	148

(b) Apply the following filters on the given image and show the results. 10

- (i) Low pass filter (ii) High pass filter

4	5	0	1	4
3	8	3	2	1
2	7	6	5	3
0	1	9	8	2

TURN OVER

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5. (a) Explain the properties of 2D DFT.
(b) Explain wiener filter.

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6. Write a short-notes on:

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- (i) Euclidean, D4, D8 and Dm distance
 - (ii) Hit or Miss Transform
 - (iii) Transform coding
 - (iv) Region oriented segmentation
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