

- (1) Question No. 1 is **compulsory**.
- (2) Attempt any **four** questions out of remaining **six** questions.
- (3) Assume any data if **necessary** and **clearly** state it.
- (4) **Figures** to the right indicate full marks.

**Attempt any four :—**

- Explain what is meant by Frequency domain and Spatial domain operations.
- Distinguish between point operations and neighbourhood operations.
- What do we mean by band limited signals ?
- Explain the technique of thresholding for segmentation.
- What do we mean by redundancy in digital images ?

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|-----|--|---|
| (a) | Explain the procedure of zooming an image using replication and interpolation. | 8 |
| (b) | State and explain the differences between 2-D DFT and DCT                      | 6 |
| (c) | Give a brief account of enhancement filters in the spatial domain.             | 6 |

- (a) Equalize the given histogram.

<b>Grey level</b>	0	1	2	3	4	5	6	7
<b>No. of pixels</b>	50	0	50	0	50	0	50	0

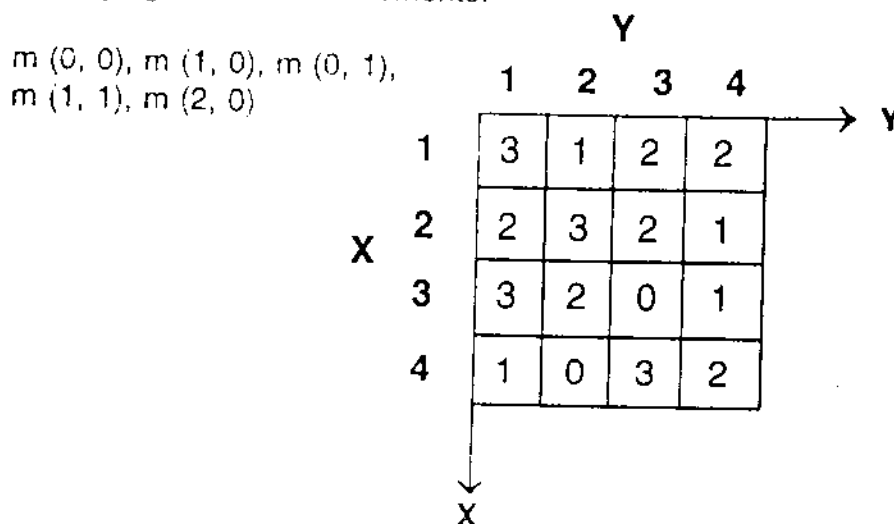
- (b) Find the Huffman code for the following stream of data. 12  
 { a, a, a, a, a, a, b, b, b, c, c, c, c, c, c, d, d, d, d, d, d, d, d, d, d, e, e, e, e, f, f }

- (a) Explain the following redundancies.— 12
- (i) Coding redundancy
  - (ii) Interpixel redundancy
  - (iii) Psychovisual redundancy.

- (b) Explain in detail the Transform Coding.

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|-----|--|----|
| (a) | Explain opening and closing operations with suitable examples. | 10 |
| (b) | For the image given find out moments.                          | 10 |

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|-----|--|----|
| (a) | Explain in detail Region Base Segmentation.                                  | 10 |
| (b) | Describe in detail how Hough transform is used for boundary shape detection. | 10 |

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Write short notes on (any four) :—

- (a) Homomorphic Filtering
- (b) HIT-or-MISS Transformation
- (c) Arithmetic Coding
- (d) Non-uniform sampling
- (e) Image file formats.