TE/Vik BGS/BM/DIP

Q.P. Code : 732801

(3 Hours) | Total Marks : 80

N.B. : (1) Question No.1 is **compulsory**
    (2) Attempt any **three** questions out of remaining five questions
    (3) Assume suitable data
    (4) Assumption should be clearly stated
    (5) Use legible handwriting. Use black ink

1. Explain the following
    (a) 1st difference of a chain code makes it invariant to rotation   20
    (b) Image resulting from poor illumination could be quite difficult to segment
    (c) Convolution in spatial domain is multiplication in frequency domain
    (d) DFT is example of unitary transform

2. (a) Find the Huffman code for the following data points   10
    {2,2,2,2,2,2,2,4,4,4,4,4,4,3,3,3,3,3,1,1,1,1,5,5,5,6,6,7}
  (b) Explain LZW compression with suitable example.   10

3 (a) Explain the Translation and Convolution property of Fourier transform   10
  (b) Plot the histogram for the following 3-bit image. Perform histogram   10
    equalization and then plot the equalized" histogram and histogram
    equalized image. What will be the result equalized image is further
    equalized?

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

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4. (a) Explain the following distance with suitable example
        (i) Euclidean Distance
        (ii) City Block Distance   10
        (iii) Chess board Distance
        (iv) D-adjacency Distance
    (b) Derive the walsh transformation matrix W(4). Generate the basic
        images of walsh transform W(4)   10

5. (a) Explain the spatial domain filters
    (b) Explain the Homomorphic filter. Under which condition Homomorphic   10
        Filter is used?   10

6   Write short notes on (Any **Four**)
    (a) High Boost filtering
    (b) Power law transformation   20
    (c) Signatures
    (d) Discrete Sine Transfor
    (e) Boundary Extraction