QP Code : 812401

(3 Hours) [Total Marks : 80

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

1. Answer the following (any **four**) :–   20
    (a) Explain the slant transform.
    (b) Explain 3 edge detector and describe them.
    (c) Explain the following term
        (i) Neighbours of a pixel
        (ii) Connectivity
        (iii) Adjacency
        (iv) Path
    (d) What are the differences between lossy and lossless compression.
    (e) Distinguish between global, local and dynamic thresholdng.

2. (a) Explain the Homomorphic filtering in image enhancement.   10
    (b) Generate Huffman code for the given image space entropy, average code   10
    length and compression ratio.

Levels	0	1	2	3	4	5	6	7
Probability	0.06	0.02	0.3	0.5	0.04	0.01	0.03	0.04

3. (a) Explain the following term with example   10
        (i) Thresholding
        (ii) Gray level slicing
        (iii) Digital negative
        (iv) Contrast stretching
    (b) Explain discrete cosine transform and compute DCT for the given image   10

$F(x, y) =$

4	2	1	2
1	0	2	0
2	1	0	2
1	2	4	3

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4. (a) Name different types of image segmentation techniques and explain　**10**
region merging and region growing technique with suitable example.

(b) Apply the Histogram equlization on following　**10**

Gray level	0	1	2	3	4	5	6	7
No. of pixel	800	1013	850	650	335	200	150	98

5. (a) Explain the basic block diagram of digital image processing.　**10**

(b) Explain the properties of 2-D DFT.　**10**

6. (a) Discuss the DPCM predictive coding and transform coding.　**10**

(b) Explain Hough transform with a suitable example.　**10**