(3 Hours)   **(80 Marks)**

N.B: 1) Question No 1 is compulsory
      2) Attempt any three of the remaining five questions

1 .Explain the following
   (a) Image Types   5M
   (b) Grey level Slicing   5M
   (c) Objective error criteria   5M
   (d) Boundary Extraction   5M

2. (a) Explain: 10M
       i) Region growing
       ii) Region split and merge

   (b) Explain the operations of opening and closing with an example each   10M

3. (a) What are lossless compression techniques? What do you mean by   10M
       Dictionary based coding? Explain LZW compression with an example

   (b) Derive the Hadamard transform matrix H (8).Check if H (8) is orthogonal   10M
       Plot the basis function for H (8)

4. (a) Perform Histogram equalisation for the following and plot original and   10M
      Equalised histogram

Grey level	0	1	2	3	4	5	6	7
No of Pixels	220	140	50	60	70	170	130	160

   (b) Explain Homomorphic filter in detail   10M

5. (a) What is edge linking? How Hough transform can be used for boundry shape   10M
      detection

   (b) Find the Huffman code for the following: 10M

symbol	a1	a2	a3	a4	a5	a6	a7	a8
probability	0.06	0.02	0.3	0.5	0.04	0.01	0.03	0.04

6. Write short notes on **(Any four)**
   (a) Low pass median filter   5M
   (b) 2D sampling   5M
   (c) Gaussian high pass filter   5M
   (d) Hit/Miss Transform   5M
   (e) DCT   5M

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