

Q.P. Code :24273

[Time: Three Hours]

[Marks:80]

Please check whether you have got the right question paper.

- N.B:
1. Question.No.1 is compulsory.
 2. Attempt any three questions from remaining five questions.
 3. Assume suitable data if required.

- Q.1 Attempt any four 20
- a) What is a role of Discrete cosine transform image compression
 - b) Compute the memory required of an image size 256x256 with 128 gray level.
 - c) Differentiate between lossy and lossless compression.
 - d) Distinguish between global, local and dynamic thresholding.
 - e) Explain the mask for paint detection and line detection.

- Q.2
- a) Show how the K-L transform is useful for reducing the dimension of Image. 10
 - b) With a neat block diagram explain the steps involved in typical image processing system. 10

- Q.3 a) 64x64 image, represented by 3 bits/ pixel has following gray level distribution
- | | | | | | | | | |
|----|-----|------|-----|-----|-----|-----|-----|----|
| rk | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| nk | 790 | 1023 | 850 | 656 | 329 | 245 | 122 | 81 |
- Perform Histogram Equalization and give new distribution of gray levels show plots of the original and the equalized images. 10
- b) Explain the properties of 2-D DFT. 10

- Q.4 a) Generate Hattman code for the given image source. Calculate entropy of the same and average length of code generated. Also calculate the compression ratio achieved compare to standard binary encoding. 10

Level	0	1	2	3	4	5	6	7
probability	0.1	0.09	0.02	0.01	0.5	0.2	0.03	0.05

- b) Explain the following point processing technique. 10
- 1) Thresholding
 - 2) Gray level slicing
 - 3) Digital negative
 - 4) Bit plane slicing

- Q.5 a) Explain the process of image segmentation
- 1) Region Growing
 - 2) Region splitting and Merging
- b) What is Hadamard Transform? Calculate the Hadamard transform of given Image 10

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

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- Q.6 Write a short notes on
- i) Euclidean, D4, D8 Dm distance
 - ii) Transform coding
 - iii) Image compression block diagram with explanation
 - iv) Run length coding.

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