

(3 Hours)

Total Marks : 80

Instructions:

(1) Question No 1 is Compulsory

(2) Answer any 3 questions from the remaining questions

Q1 Answer any four questions

20

- Write a short note on connectivity of pixels.
- Discuss the classification of video frames.
- Explain dilation and erosion of binary image.
- Explain image degradation model.
- Quality of picture depends on the number of pixels and grey level that represent the picture. Justify or contradict

Q2 a. A Two dimensional DFT can be obtained using one dimensional DFT algorithms twice, explain with following example.

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

- b. Explain image enhancement in frequency domain.

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Q3 a. For the following image find the contrast stretching, $r_2=5, r_1=3, s_2=6, s_1=2$

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$$f(x, y) =$$

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

- b. Explain KL transform.

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Q4. a. Perform histogram equalization for following image. Plot original and the equalized histogram.

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4	4	4	4	4
3	4	5	4	3
3	5	5	5	3
3	4	5	4	3
4	4	4	4	4

- b. Discuss the concept of optical flow for motion estimation.

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[TURN OVER]

- Q5. a. Given 5 points use Hough transform to draw a line joining these points. (1, 4) (2, 3) (3, 1) (4, 1) (5, 0) 10
- b. Let $V = \{0, 1\}$. compute D_e , D_4 , D_8 , D_m using D_4 connectivity distance between two pixels p & q . Let the pixel coordinates p & q be (3, 0) and (2, 3) respectively for the image shown. Find distance measures. 10

	0	1	2	3
0	0	1	1	1
1	1	0	0	1
2	1	1	1	ⓐ q
3	ⓐ p	1	1	1

- Q6. Write short note on 20
- a. Wiener filter
 - b. RGB and HSI color models
 - c. Exhaustive block matching algorithms
