

Instructions:

- (1) Question No 1 is Compulsory
- (2) Answer any 3 questions from the remaining questions

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Q1 Answer any 4

- a. Explain RGB and HSI colour models.
- b. Quality of picture depends on the number of pixels and grey level that represent the picture. Justify or contradict.
- c. What are the different types of order statistics filters? Discuss their advantages.
- d. Discuss the classifications of video frames.
- e. Explain opening and closing of a digital image.

Q2 a. Write an expression for a two dimensional DCT. Also, find the DCT of the given image. 10

$$\begin{bmatrix} 1 & 2 & 2 & 1 \\ 2 & 1 & 2 & 1 \\ 1 & 2 & 2 & 1 \\ 2 & 1 & 2 & 1 \end{bmatrix}$$

b. Why Fourier transform and the frequency domain tools are so useful for image enhancement? With the help of neat block diagram explain the basic of filtering in the frequency domain. Give the reasons of shifting the origin. 10

Q3 a. Perform histogram Equalization for the following image. Plot the original and the Equalized Histograms 10

Intensity	0	1	2	3	4	5	6	7
No. of pixels	70	100	40	60	10	70	10	40

b. Discuss region based segmentation. 10

Q4 a. What are the required sampling rates for video signals? Explain video sampling in three dimensions. 10

b. Explain HIT or MISS transform using an example. 10

Q5 a. Explain the working of Wiener filter in image restoration. 10

b. Discuss the concept of optical flow for motion estimation. 10

Q6 Write short notes on any two 20

- a. KL Transform.
- b. Exhaustive block matching algorithms.
- c. Hough transform.
- d. Point Processing.