

Time : 3hrs

Max. Marks: 80



N.B:

1. Question No.1 is compulsory
2. Attempt any **three** out of remaining **five** questions
3. Assume any suitable data wherever required but justify the same
4. Illustrate answers with neat sketches wherever required

- .....
- Q.1 a) Define with diagram, perspective projection (05)
- b) What are the advantages and disadvantages of edge based segmentation? (05)
- c) What is the basic idea of Histogram modeling? (05)
- d) Write video frame classification & various digital video formats. (05)
- Q.2 a) State properties of Fourier Transform and prove convolution property of Fourier transform. (10)
- b) Given orthogonal kernel matrix A and image U: (10)

$$A = \frac{1}{\sqrt{2}} \begin{bmatrix} 1 & 1 \\ 1 & -1 \end{bmatrix}$$

$$U = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$$

Find transformed image and basis image

- Q.3 a) Compare histogram equalization, histogram specification and contrast stretching with example. (10)
- b) For 3 bit, 4x4 image, perform image negative, Bit plane slicing, And low pass filtering (10)

0	7	3	1
3	6	4	6
2	4	2	2
1	2	5	3

- Q.4 a) Explain split and merge segmentation technique (10)
- b) Elaborate Hit or Miss transform with example (10)

- Q. 5 a) Differentiate between image enhancement and restoration  
Explain application of Wiener filter (10)
- b) Which are different motion estimation techniques?  
Explain any one technique in detail. (10)
- Q. 6 Write short notes on any four. (20)
- a) Opening and Closing
- b) Homomorphic Filtering
- c) Inverse filter
- d) Image noise models
- e) Hierarchical block matching algorithm
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