

- N. B.: (1) All questions are compulsory.
 (2) Make suitable assumptions wherever necessary and state the assumptions made.
 (3) Answers to the same question must be written together.
 (4) Numbers to the right indicate marks.
 (5) Draw neat labeled diagrams wherever necessary.
 (6) Use of Non-programmable calculator is allowed.

1. Attempt any two of the following:

12

- Enumerate and explain different steps in Digital Image Processing.
- Explain about image sampling and quantization process.
- What are the components of an Image Processing System?
- Perform the following operations on the given sub image of size 3x3
 - Image negative
 - Image Thresholding [Thresholding Point (T) = 4]
 - Bit Plane Slicing
 - Gray Level Slicing with and without background (r1=2 and r2=6)

3	3	2
7	1	0
6	2	2

2. Attempt any two of the following:

12

- Explain sampling theorem? Describe the Fourier transform of sampled function.
- What are the three methods of estimating the degradation function? Explain them in detail.
- Explain Image Sharpening Filter with its model in the frequency domain.
- Explain Gaussian Low pass filter transfer function with diagram?

3. Attempt any two of the following:

12

- Write a note on Slant transform.
- Explain different types of redundancies in the image.
- What is Pseudocolor image processing? Explain different techniques used in Pseudocolor image processing.
- Explain the Huffman coding with an example.

4. Attempt any two of the following:

12

- Explain closing and opening morphological image processing operations.
- Describe Hit-or-Miss Transform in detail.
- Explain the role of noise in image thresholding.
- Discuss in detail Region based segmentation

5. Attempt any two of the following:

12

- Explain boundary descriptors in detail.
- What are Active Contours? Why they are needed? How does it work?
- What are chain codes? Explain with examples.
- Write a note on Harris-Stephens Corner Detector.