

Information Technology : Paper IV - Image Processing (R-2020)

(Time: 2hours)

[Total Marks: 60]

- 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 a Non-programmable calculator is allowed.

Q1. Attempt any two of the following.

[12]

- Describe fundamental steps in image processing.
- Write a note on high-pass filtering.
- Write a note on brightness adaptation and discrimination.
- Define image enhancement. Explain gray-level slicing.

Q2. Attempt any two of the following.

[12]

- Explain any two properties of 2D DFT.
- Write a note on the order statistic function.
- List the different types of noise probability density functions. Explain any two types in detail.
- Explain Gaussian Low pass filter transfer function with a diagram.

Q3. Attempt any two of the following.

[12]

- Write a note on Haar transform.
- Explain Digital Image Watermarking with an example.
- Write a note on pseudo coloring.
- Explain the RGB color model to represent a digital image.

Q4. Attempt any two of the following.

[12]

- What is the dilation and erosion of an image?
- Write a note on the opening and closing operations of an image.
- Write a note on segmentation methods for point, line, and edge detection.
- What is Thresholding? Explain basic global thresholding.

Q5. Attempt any two of the following.

[12]

- Describe Image Segmentation using Snakes.
- Write a short note on SIFT.
- What are chain codes? Explain with examples.
- State and explain boundary feature descriptors.
