INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Four Year B.Tech V Semester End Examinations(Regular) - November, 2019

Regulation: IARE – R16

IMAGE PROCESSING

Time: 3 Hours   **(CSE)**   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT – I

1. (a) Mention different types of digital images. Explain sampling process and quantization of digital images. **[7M]**

   (b) Write the basic relationships among the pixels in the image for the following
   i) Neighbour of a pixel
   ii) Adjacency **[7M]**

2. (a) Illustrate the image acquisition and formation model with neat diagram. **[7M]**

   (b) Discuss any four relationships between pixels with neat diagrams. **[7M]**

UNIT – II

3. (a) Explain smoothing spatial filters and nonlinear order statistic spatial filters and describe image histogram equalization. **[7M]**

   (b) Explain the method of using the second derivate for image sharpening by Laplacian operator. **[7M]**

4. (a) Discuss how the bit plane slicing is useful in image processing and description of homo-morphemic filtering. **[7M]**

   (b) What is meant by image enhancement using point processing? Discuss any two methods in it. **[7M]**

UNIT – III

5. (a) Explain the probability density functions for the Erlang noise models and the probability density functions for salt and pepper noise models. **[7M]**

   (b) Explain the method of minimum mean squares filtering (Wiener) for image restoration. **[7M]**

6. (a) Explain how to restore original image by using inverse filtering. **[7M]**

   (b) The noise arises from electrical or electromechanical interference during image acquisition then give outline to reduce this noise. **[7M]**

UNIT – IV

7. (a) What is color image smoothing and sharpening? Explain about the RGB colour model in detailed. **[7M]**

    (b) Compare segmentation in HIS color space and RGB vector space. Explain about the HSI colour models in detail.

    [7M]

8. (a) What is the meaning of Pseudo color image of intensity slicing and gray level to color transformations. **[7M]**

    (b) Give the names and discuss in detail about color transformations. **[7M]**

UNIT – V

9. (a) What are the things included in region based segmentation? Differentiate point, line and edge detection segmentation techniques. **[7M]**

    (b) What is morphological image processing? Write about some basic morphological algorithms.

    [7M]

10. (a) Write about edge linking and boundary detection in image segmentation? Outline region growing approach for image segmentation. **[7M]**

    (b) What is thresholding? Contrast global and local thresholding-based segmentation. **[7M]**