

# 15EC72 – Digital Image Processing

## Assignment-II

- Note: i) Write the assignment in the assignment booklet.  
 ii) Even USN numbered students have to answer even numbered questions and Odd USN numbered students have to answer odd numbered questions.  
 iii) Submit the assignment on or before 11.00 AM, Saturday, 19/10/2019

- 1) Briefly explain smoothing spatial domain filters with an example (consider image in figure 1 given at the end).
- 2) Briefly explain sharpening spatial filters with an example (consider image in figure 1).
- 3) Briefly explain how arithmetic and logical operations can be used for image enhancement
- 4) Using the second derivative, develop a Laplacian mask for image sharpening.
- 5) Explain the following order statistic filters with example, indicating their uses.
  - a) Median Filter b) Max Filter c) Min Filter
- 6) Discuss the characteristics of high boost filter for both frequency and spatial domain. Explain how high boost filtering increases the enhancement of image.
- 7) Explain the Homomorphic Filtering approach for image enhancement.
- 8) Write a short note on various methods of estimation of degradation model.
- 9) With a neat block diagram explain the steps involved in Frequency domain filtering
- 10) Explain the smoothing of images in frequency domain using any two filters.
- 11) Briefly explain Adaptive Local Noise Reduction filter
- 12) Explain the Adaptive median filtering.
- 13) Explain the process of image restoration with a neat block diagram.
- 14) Explain any four important noise probability density functions.
- 15) Explain the Weiner Filtering method of restoring images
- 16) Explain in brief the inverse filtering approach. List its limitations in image restoration.
- 17) Briefly Explain Geometric Mean, Harmonic Mean, Contra-harmonic mean and alpha-trimmed mean filters.
- 18) Justify the statement “median filter is an effective tool to minimize salt and pepper noise” using the image example in figure 1.

*Figure 1: Image example*

24	22	33	25	32	24
34	255	24	0	26	23
23	21	32	31	28	25