

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER M. TECH DEGREE EXAMINATION

Computer Science & Engineering
(Computer Science & Systems Engineering)

04 CS 7407—Digital Image Processing & Analysis

Max. Marks : 60

Duration: 3 Hours

PART A

Answer All Questions

Each question carries 3 marks

1. Define neighbors of a pixel.
2. Differentiate correlation and convolution.
3. Compare arithmetic mean filter and geometric mean filter.
4. What is impulse noise?
5. Write short note on point detection.
6. Define region growing.
7. Define shape numbers.
8. Write short note on topological descriptors.

PART B

Each question carries 6 marks

9. Assume you have to process a digital image. List the stepwise process to do the processing. Explain with the help of a diagram.

OR

10. Illustrate how the image is digitized by sampling and quantization.
11. Explain the types of gray level transformations used for image processing.

OR

12. Perform histogram equalization of the image $\begin{vmatrix} 4 & 4 & 4 & 4 & 4 \\ 3 & 4 & 5 & 4 & 3 \\ 3 & 5 & 5 & 5 & 3 \\ 3 & 4 & 5 & 4 & 3 \\ 4 & 4 & 4 & 4 & 4 \end{vmatrix}$

13. Explain image degradation/restoration model.

OR

14. Write notes on linear image restoration techniques.
15. Explain median filtering in detail.

OR

16. Explain the concept of arithmetic coding with an example.
17. How edge detection is done in image segmentation. Explain.

OR

18. Explain region based segmentation.
19. Elucidate the use of polygonal approximations to represent boundary in an image.

OR

20. What is digital image watermarking? Explain watermarking in spatial domain.