



MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : PEC-IT601D Image Processing

UPID : 006591

Time Allotted : 3 Hours

Full Marks : 70

The Figures in the margin indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer *any ten* of the following :

[1 x 10 = 10]

- (I) How do you measure the resolution of an image?
- (II) What is the difference between spatial and frequency domain filtering ?
- (III) What is the meaning of image resampling?
- (IV) How can you define image morphing ?
- (V) What is the purpose of image enhancement?
- (VI) What is the meaning of image thinning in character recognition?
- (VII) Why do you need image resampling ?
- (VIII) What is the purpose of image denoising ?
- (IX) What is Digital watermarking?
- (X) When do you need image registration in medical imaging?
- (XI) What is the difference between lossless and lossy image compression ?
- (XII) When do you need image warping?

Group-B (Short Answer Type Question)

Answer *any three* of the following :

[5 x 3 = 15]

2. Explain in brief the process of feature extraction in an image . [5]
3. What do you mean by image restoration ? Point out the differences between image deblurring and image inpainting. [5]
4. Describe in brief the steps involved in morphing between two images. Give an example. [5]
5. Explain the process of image convolution with an example. [5]
6. What are the common metrics used to assess the performance of segmentation algorithms ? Explain them in brief. [5]

Group-C (Long Answer Type Question)

Answer *any three* of the following :

[15 x 3 = 45]

7. What do you mean by Unconstrained & Constrained restoration ? Describe restoration technique using Homomorphic Filtering. Give an example. [6+9]
8. Discuss the process of global processing by Hough Transform. Explain the concept of Region Growing & splitting with an example. [8+7]
9. Compare and contrast lossless compression method with lossy one. Explain the working principle of any popular lossless compression technique. [6+9]
10. Explain three (3) different transformations used in Images . Give example for each of them. What do you mean by Sampling & Quantization ? Explain its function in Digital Image Processing. [9+6]
11. Write down the properties of Discrete Fourier Transform & Discrete Cosine Transform . What are the different distance measures used in digital Image ? . What do you mean by 4 adjacency & 8 adjacency of an image.. Explain with an example. [7+4+4]

*** END OF PAPER ***