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 ***