BankuraUnnayani Institute of Engineering

Class Test / ECE / 2022 / Digital Image and Video Processing / PE-EC702B (N)

Full marks: 25 Time : 60mins.

GROUP – A [Multiple Choice Type Questions]

Answer all. **(1x5)**

1. Quantization is
   a) digitizing the co-ordinate value b) digitizing the intensity value c) digitizing the amplitude value d) digitizing the pixel value
2. What will be the number of bits required to store a 256x256 image with 32 gray levels ?
   a) 256 bits b) 327680 bits c) 255 bits d) 256x256x32 bits
3. Smoothing in frequency domain is achieved by
   a) homomorphic filter b) low-pass filters c) Wiener filter d) high-pass filter
4. Segmentation is proces that partitions an image into
   a) blocks b) regions c) pixels d) vertices
5. Logical operation is performed in
   a) Only gray level image b) Only binary image c) Both (a) and (b) d) None of these

GROUP – B [Short Answer Type Questions]

Answer any four. **(4x5)**

1. Explain sampling and quantization for digitizing images. How is a digital image represented ? (2+3)

2. What do you mean by an image histogram ? Critically comment about the quality of the images with respect to following :
   i) Histogram clustered at the low end
   ii) Histogram clustered at the high end
   iii) Histogram with a small spread
   iv) Histogram with a wide spread.

3. a) Why is image enhancement different from image restoration ?
   b) How does the "salt and pepper" noise look like ? How can it be removed ? (2+3)

4. a) Explain the Median filter technique with an example.
   b) Write down the advantages and disadvantages of Median filter over the Mean/Average filter technique ? (2+3)

5. a) What is an edge ? Explain with an example.
   b) Discuss the role of the Laplacian operator as an edge detector. What is the major shortcoming of the Laplacian operator ? (2+3)

6. For what purpose smoothing filters are used in image enhancement phase ? Write short notes on Otsu method? (2+3)