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BICS-024

B.Tech. – VIEP – COMPUTER SCIENCE AND ENGINEERING (BTCSVI)

00023 **Term-End Examination**

December, 2018

BICS-024 : DIGITAL IMAGE PROCESSING

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any* ***seven*** *questions. All questions carry equal marks.*

1. What do you understand by the term "Image Restoration" ? Discuss the Minimum Mean-Square Error approach of Image Restoration ? Explain the degradation model. *10*

2. Explain the basis of filtering in Spatial domain and Frequency domain. Differentiate between Low-pass filter and High-pass filter. *10*

3. Write short notes on the following : *10*

   (a) Chain Codes

   (b) Graph Matching

   (c) Statistical Moments

   (d) Color Space

4. What is the role of thresholding in Digital Image Processing ? Differentiate between basic global thresholding and basic adaptive thresholding. *10*

5. Explain the HSV color model and compare it with RGB and CMY color models. Discuss the advantages and disadvantages of all models i.e., HSV, RGB and CMY. *10*

6. What is Image Segmentation ? Explain the process of Image Segmentation using Region Growing, Region Splitting and Region Merging. *10*

7. Write short notes on the following : *10*

   (a) Frequency Domain Filters

   (b) Gaussian High Pass Filters

   (c) Band Reject Filter

   (d) Band Pass Filter

8. (a) State and prove the separability property of Discrete Fourier Transform. *5*

   (b) Explain the terms Histogram Specification and Histogram Equalization. *5*

9. Describe the various steps of image processing. Explain the structure of the human eye with the help of a diagram. *5+5*

10. Define and explain Dilation and Erosion operations with example. Explain how Region filling is achieved with these operations. *10*