

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

**Term-End Examination**

**June, 2017**

00594

**BICS-024 : DIGITAL IMAGE PROCESSING**

*Time : 3 hours*

*Maximum Marks : 70*

---

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

---

1. What is the requirement of a histogram in image processing ? Briefly discuss the terms histogram specification and histogram equalization. What would be the effect on the histogram of an image, if we set to zero the higher order bit planes and the lower order bit planes, respectively ? 10
  
2. What is the difference between bitmap images and vector images ? Explain HSV, RGB and CMY colour models. Give the advantages and disadvantages of each of these colour models. 10
  
3. Why is image filtering required to be performed ? Briefly discuss the Low Pass, High Pass and Band Pass filters, giving the advantages and disadvantages of each. 10

4. Write short notes on the following : 10
- (a) Colour Spaces
  - (b) Classification of Colour Spaces
  - (c) Colour Slicing
  - (d) Colour Complement
5. What is the role of thresholding in digital image processing ? What are the different types of thresholding ? Write an algorithm to set the global thresholding value. 10
6. Discuss the term Fourier Transform. Compare and contrast Fast Fourier Transform with Discrete Fourier Transform, giving advantages and disadvantages of both. 10
7. Differentiate between the following : 10
- (a) Dilation and Erosion
  - (b) Arithmetic mean filter and Geometric mean filter
8. What do you understand by the term feature in image processing ? Discuss the process of feature extraction with suitable diagram and example. Explain how artificial neural networks are used for feature selection. Give suitable example and diagram in support of your explanation. 10

9. Briefly discuss the following with suitable diagrams and examples : 10

(a) Image Restoration

(b) Image Registration

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

---