

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

Term-End Examination

00444

June, 2017

BICSE-018 : PATTERN RECOGNITION

Time : 3 hours

Maximum Marks : 70

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

1. What do you understand by pattern ? List some techniques of pattern recognition ? What is the role of datasets in pattern recognition ? List some well-known datasets. How is statistical pattern recognition different from syntactical pattern recognition ? 10

2. Discuss the following data structures of pattern representation with suitable examples : 10
 - (a) Vectors
 - (b) Strings
 - (c) Logical Descriptions
 - (d) Fuzzy and Rough Pattern Set
 - (e) Trees and Graphs

3. Differentiate between the following : 10
- (a) Clustering and Classification
 - (b) Supervised and Unsupervised learning
 - (c) Regular and Irregular patterns
 - (d) Distance measure and Weighted distance measure
4. Briefly discuss the salient features of the following types of images : 10
- (a) Binary image
 - (b) Grayscale image
 - (c) True colour image
 - (d) Indexed image
5. What do you understand by the term edge detection ? What are the stages of edge detection ? Discuss each stage with suitable examples. List the edge detection algorithms. Discuss any one algorithm. 10
6. Discuss the term Laplacian in pattern recognition. What is the importance of determining Laplacian of any dataset in pattern recognition ? Determine Laplacian of a continuous image. Explain about the discrete Laplacian operator with the help of a suitable example. 10

7. Discuss the following classifiers with suitable examples :

- (a) Fuzzy classifier
- (b) Statistical classifier
- (c) Neural classifier

Explain how Fuzzy classifier is related to Statistical classifier and Neural classifier. 10

8. Elaborate the following : 10

- (a) Point Detection algorithms
- (b) Line Detection algorithms

9. Write the snake method. Explain each step of the snake method and apply them to locate object contours. 10

10. What is smoothing transformation ? How does it contribute to noise reduction ? Explain it with suitable example and block diagram. 10
