Code: 13A04805

R13

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2017
PATTERN RECOGNITION & APPLICATION
(Electronics & Communication Engineering)

Time: 3 hours
Max. Marks: 70

PART – A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
   (a) Describe the need of feature extraction.
   (b) Define the supervised classification.
   (c) Write short notes on minimum risk classifiers.
   (d) Define the decision boundary normal density function.
   (e) Define the multiple discriminant analysis.
   (f) What is the meaning of nearest neighborhood and how it is decided?
   (g) What is the perceptron criterion function?
   (h) Memorize one difference between the perceptron and a minimum squared error (MSE) procedure.
   (i) List the three main standard problems of Hidden Markov models.
   (j) What are the roles of k in knn and k-means clustering?

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) Explain the concept of feature extraction in pattern recognition with examples.
   (b) Differentiate the supervised and unsupervised classification.

OR

3   Summarize the different activities involved in the design cycle of the pattern recognition system.

UNIT – II

4 (a) State and explain Bayes decision rule and describe the input necessary to arrive at a Bayes decision rule for a given data set.
   (b) Derive the discriminant function by using Bayes theorem.

OR

5   Given an example where the feature space would be continuous and such a decision theory is useful.

UNIT – III

6   Describe the fuzzy classification for nonparametric pattern classification.

OR

7   What is meant by a metric? Discuss any two metrics that can be used as a metric for the nearest-neighbour method.

UNIT – IV

8 (a) Define a pseudo inverse and explain how it is used in minimum square error criterion.
   (b) Summarize the steps of the Ho-Kashyap algorithm.

OR

9   Explain back propagation learning for neural network classifier.

UNIT – V

10   Explain the sum of squared error technique for unsupervised classification.

OR

11   Describe the graph based method for unsupervised classification.

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