Total No. of Questions : 12]

SEAT No. :

P1461

[Total No. of Pages : 2

[4759]-218
B.E. (Computer Engineering)
PATTERN RECOGNITION
(410450) (2008 PATTERN)(Semester-II) (Elective-III)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Figures to the right indicate full marks.***
2) ***Answer THREE questions from each section.***
3) ***Answers to the two sections should be written in different answer sheets.***
4) ***Assume suitable data wherever necessary.***

SECTION-I

Q1) a) Describe the basic modules in designing a pattern recognition system. **[8]**

b) What are the issues in design of pattern recognition system? How feature extraction is important for pattern recognition? **[10]**

OR

Q2) a) What do you mean by patterns? How segmentation and grouping is important components of pattern recognition system? **[8]**

b) Define Pattern recognition. What are the different methods for pattern recognition? Give the application of pattern recognition. [**10]**

Q3) a) Define bayes rule. What is probability density function? Define minimum error rate classification. **[8]**

b) Explain Feature space, Loss function,Risk, and Bayes risk in brief. **[8]**

OR

Q4) a) Explain Bayes criterion, Maximum a Posteriori (MAP) criterion, and Maximum Likelihood Criterion. **[8]**

b) Explain decision hyperplanes and perceptron with suitable examples.**[8]**

Q5) a) Explain various parameter estimation method of pattern classification.**[8]**

b) Explain recursive Bayes incremental learning method with example. **[8]**

OR

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Q6) a) Discuss maximum Likelihood approach used for parameter estimation. **[8]**

b) What are sample covariance, and absolutely unbiased estimator? Explain in detail. **[8]**

SECTION-II

Q7) a) Define within- class scatter matrix & between-class scatter matrix. Discuss the discriminate analysis for 2-class problem. **[8]**

b) What is Overfitting problem? Explain in detail with suitable example. **[8]**

OR

Q8) a) What is mean by Context-dependent classification? Explain Discrete Hidden Markov Model and continues density hidden Markov. **[8]**

b) What is problem of finding the best direction? Explain how scatter matrix is useful to solve this problem. **[8]**

Q9) a) Explain what is the difference between parametric and non parametric density estimation. Explain kernel density estimation. **[8]**

b) Explain the steps involved in SVM training, in brief. **[8]**

OR

Q10) a) Explain batch perceptron algorithm for finding a solution vector in brief. **[8]**

b) Explain non parametric technique for directly estimating the posteriori probabilities in brief. **[8]**

Q11) a) What is pattern clustering? How it differs from classification? Explain k-mean clustering algorithm. **[10]**

b) Justify the significance of Nominal data and String in a classification problem with suitable example. **[8]**

OR

Q12) a) What is the difference between classification and clustering. State and explain various techniques used for clustering. **[10]**

b) Justify the significance of Nominal data and String in a classification problem with suitable example. **[8]**