Total No. of Questions :12]

SEAT No. :

P3440

[Total No. of Pages :3

[4959]-215

B.E. (Computer Engineering)

PATTERN RECOGNITION

(2008 Course) (Semester - II) (Elective - III) (410450)

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

Instructions to the candidates:

1) ***Answer any 3 questions from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION-I

Q1) a) Describe steps involved in pattern recognition. **[8]**

b) Compare supervised and unsupervised pattern recognition. **[8]**

OR

Q2) a) Explain learning and adaption methods in pattern recognition system. **[8]**

b) What is unsupervised pattern recognition? State different methods and explain any one. **[8]**

Q3) a) Explain Bayesian classifier for defining risk for decision making. **[8]**

b) Explain with example following terms: **[8]**

i) Loss function

ii) Bayes risk

iii) Feature space

iv) Risk

OR

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

b) Explain linear discriminant function and decision hyper planes. **[8]**

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

b) Write a note on Expectation-maximization method. **[10]**

OR

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

b) Explain Gaussian mixture model for density estimation in detail? **[10]**

SECTION-II

Q7) a) What is problem of finding the best direction? Explain how scatter matrix is useful to solve this problem. **[8]**

b) What is the role of Dimension reduction in pattern recognition? State and explain different methods for Dimension reduction. **[8]**

OR

Q8) a) Explain how Hidden Markov Model (HMM) is effective to solve the problem of multiple decision? **[8]**

b) Explain Principal component analysis for dimension reduction. **[8]**

Q9) a) Explain non-parametric techniques for density estimation? Explain Kernel density estimation. **[8]**

b) Explain linear Support vector machine in detail. **[8]**

OR

Q10)a) Explain Quadratic and Polynomial discriminant function in detail. **[8]**

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

Q11)a) Explain k-Means and fuzzy k-Means clustering algorithm in detail. **[8]**

b) What is Non-metric data? State and explain the technique used for classification of Non-metric data. **[10]**

OR

Q12)a) What is the difference between classification and clustering? State and explain various techniques used for clustering. **[8]**

b) Justify the significance of Root node, Descendent and Subtree in a classification problem using decision tree with suitable example. **[10]**

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