[4959]-1123

B.E. (IT)

Machine Learning

(2012 Course) (Semester - I) (414455) (End Sem)

Time : 2.5 Hours   *[Max. Marks :70]*

Instructions to the candidates:

   1)   *Draw neat diagrams wherever necessary.*

   2)   *Assume suitable data, if necessary.*

   3)   *Figures to the right indicate full marks.*

Q1) a)   Explain least square method.   **[5]**

    b)   For a given data having 100 examples, if squared errors SE_1, SE_2, and SE_3 are 13.33, 3.33 and 4.00 respectively, calculate Mean Squared Error (MSE). State the formula for MSE.   **[5]**

OR

Q2) a)   What is multivariate regression? How will it be different from univariate regression?   **[5]**

    b)   Explain feature transformation.   **[5]**

Q3) a)   Explain True Positives, True Negatives False Positives, False Negatives and class ratio.   **[5]**

    b) What is a contingency table? What does it represent?   **[5]**

OR

Q4) a)   Write a note on class probability estimation.   **[5]**

    b)   What are the ingredients of machine learning?   **[5]**

Q5) a) What is subgroup discovery? **[9]**

b) Write k-means algorithm. **[9]**

OR

Q6) a) Write the Grow Tree algorithm to generate feature tree. Explain the role of best split in this algorithm. **[9]**

b) What are neighbors? Why is it necessary to use nearest neighbor while classifying? **[9]**

Q7) a) Define. **[8]**
   i) Bernoulli's distribution.
   ii) Binomial distribution.
   iii) MAP decision rule.
   iv) Maximum likelihood function.

b) Explain probabilistic models. **[8]**

OR

Q8) a) Explain in brief logistic regression. **[8]**

b) Define. **[8]**
   i) Frequent itemset.
   ii) Support.
   iii) Confidence.
   iv) Market basket analysis.

Q9) a) Write a note on sequence prediction **[8]**

b) Explain multitask learning. **[8]**

OR

Q10) a) Explain deep learning. **[8]**

b) Explain active learning. **[8]**