Exam. Code: 1000
Sub. Code: 34995

2015

M.E. (Computer Science and Engineering)

Second Semester

Elective - III

CS-8205: Machine Learning

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Section.

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Q1.	a)How do you determine the best fit line for a linear regression model? b) Difference between Hard-Margins and Soft-Margins SVM. c)Define logistic regression and explain its role in binary classification tasks. d)Discuss the importance of dimensionality reduction in machine learning. e)How threshold plays an important role in evaluating a model?	10
	Section-A	
Q2.	a) What is the method by which model parameters are estimated in multiple linear regression? b)Suppose you are studying the factors influencing students' exam scores. You collect data on three independent variables: study hours per week, previous exam scores, and attendance percentage. The dependent variable is the final exam score. Here are the data points you've collected: **Study Hours : [10, 12, 15, 8, 9]** **Previous Scores: [85, 78, 92, 80, 88]** **Attendance (%)): [90, 85, 95, 80, 92]** **Final Exam Scores: [90, 85, 94, 82, 91]** Usingregression, determine the regression equation for predicting final exam scores based on study hours, previous scores, and attendance. Also, calculate the coefficient of determination (R-squared) to assess the goodness of fit of the model.	4 6
Q3.	a) Describe the role of kernels in SVMs and their significance in nonlinear classification tasks. Explain how kernels transform data into a higher-dimensional space to make nonlinear separation possible. b) Discuss the challenge of overfitting in machine learning models. c) Compare logistic regression with linear regression.	5 3 2

P.T.O.