Exam. Code: 1000
Sub. Code: 34995

2055

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 (section-A) which is compulsory and selecting two questions each from Section B-C.

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Section-A

Q 1(a)	How would you determine overfitting of the model using bias and variance?	(10)
(b)	Consider the following outcomes of a classifier (TP:40, FP:20:TN:30, FN:10). Calculate Precision and Recall	
(c)	What is the use of Sigmoid function in Logistic regression?	
(d)	What are low rank matrices?	
(e)	List the different types of kernels used in SVM.	

Section -B

Q2	Describe the cost function of Support vector machines. What is the use of different kernels? How the use of kernel reduce the time complexity.	(10)
Q3 (a)	Why do we need regularization? Explain Ridge, LASSO and Elastic Net techniques ?	(7)
(b)	How to know the amount of training data required? How cross validation helps in improving the accuracy?	(3)
Q 4 (a)	What is the problem of handling large datasets? How training, test and validation data set is selected in large data set. How Cross validation is applied?	(5)
(b)	How lazy learners are different from eager learners? Describe the k-NN algorithm. Highlight is pros and cons.	(5)

Section -C

Q5 (a)	Describe the different parameters of DBSCAN algorithm and its main steps in detail.	(5)
(b)	Describe the difference between divisive and agglomerative clustering. Explain the Dendrogram and how we can cut them irregular way for clustering?	(5)
Q6 (a)	How SVD can be used for dimensionality reduction? Explain its use in PCA algorithm.	(5)
(b)	Explain the Forward and Back Propagation in neural networks with derivative calculation using gradient descent.	(5)
Q7 (a)	What are Recommender systems? Explain the collaborative filtering technique in detail.	(5)
(b)	What is the use of Adaptive Moment Estimation? Explain its effect on Gradient Descent in Neural Networks.	(5)

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