

Vidyalankar Institute of Technology
Semester 7 – CMPN - Mid Semester Assessment – 2

Date: 23/09/2024	Machine Learning	30 Marks /1 hour
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1	Solve any two (5 marks each)				CO	
	A	Elaborate Ensemble Learning.			CO4	
	B	Justify importance of stepsize in gradient descent. And give formula to calculate new step size.			CO4	
	C	What is the fundamental difference between a hard margin and a soft margin SVM classifier.			CO5	
2	Solve any two (5 marks each)					
	A	Summarize the Gradient Boost for Classification in steps.			CO4	
	B	How do bagging and boosting differ in their underlying mechanisms and approach to improving model performance?			CO4	
	C	Justify pruning of trees in Ensemble Learning. Mention the rule to prune the tree.			CO4	
3	Solve anyone (10 marks each)					
	A	How do we derive the loss function in a Support Vector Machine (SVM) that penalizes misclassification errors, and how does this loss influence the overall cost function for the classifier?			CO5	
	B	Elaborate working of Random Forest in detailed steps for following dataset; Show working using at least one tree. Take necessary assumptions for explanation:			CO4	
		Chest Pain	Good Blood Circulation	Blocked Arteries	Weight	Heart Disease
		NO	NO	NO	125	NO
		YES	YES	YES	180	YES
		YES	YES	NO	210	NO
		YES	NO	YES	167	YES

CO4	To demonstrate ensemble techniques to combine predictions from different models.
CO5	Ability to understand Classification and Clustering techniques