

# Assignment-1

## ECHELON INSTITUTE OF TECHNOLOGY Department of Computer Application Machine Learning II (BCA-DS-312)

Course: BCA DS  
Date of Issue: 18<sup>nd</sup> March, 2025  
Course Unit included: 1<sup>st</sup> & 2<sup>nd</sup>  
Session: 2024-25

Semester: 6<sup>th</sup>  
Date of Submission: 24<sup>th</sup> Mar, 2025  
Assignment Number: 1<sup>st</sup>  
Max. Marks: 20

CO-1: Recall and define ensemble learning techniques like Bagging, Boosting, and Random Forests.

CO-2: Explain various dimensionality reduction techniques such as PCA, LDA, and ICA.

Q.N.	Question	CO	Revised Bloom's Taxonomy Level	Marks
Q.1	What is <b>Boosting</b> , and how does it differ from Bagging ?	CO-1	RBTL-1	4
Q.2	Explain the working principle of <b>PCA, LDA and Kernel PCA</b> .	CO-2	RBTL-2	4
Q.3	Explain the concept of <b>Bagging</b> and how it helps in improving the performance of machine learning models.	CO-1	RBTL-2	4
Q.4	What is <b>Statistical Learning Theory</b> , and how is it useful in machine learning?	CO-2	RBTL-1	4
Q.5	Describe how a <b>Random Forest</b> works and its advantages over a single decision tree.	CO-1	RBTL-2	4