QP CODE: 25024866

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Reg No : .....

Name : .....

M.Sc DEGREE (CSS) EXAMINATION, APRIL 2025

Fourth Semester

MSc Statistics with Data Science

ELECTIVE - ST880401 - MACHINE LEARNING

2020 ADMISSION ONWARDS

E91F72FC

Time: 3 Hours Weightage: 30

(Answer any **THREE** questions. Each question carries a weight of **10**)

1. 1. (a) Define Machine learning. Distinguish between traditional programming and machine learning. Mention some of the applications of machine learning.
   2. (b) What do you mean by perceptron? Explain various training algorithms to construct a perceptron.

2. Train a decision tree classifier using data set load_iris from sklearn.datasets. Using 80% of the sample as training data. Split the data with random_state = 501 Use entropy as criterion and random_state = 666. Measure the accuracy of the classifier using accuracy score and confusion matrix. Plot the confusion matrix and decision tree. Write the codes used and the output obtained.

3. Train an ANN classifier using data set load_wine from sklearn.datasets. Using 75% of the sample as training data. Split the data with random_state = 103. Measure the accuracy of the classifier using accuracy score and confusion matrix. Plot the confusion matrix. Write the codes used and the output obtained.

4. Train a naive Bayes classifier using data set load_ breast_cancer from sklearn.datasets. Using 90% of the sample as training data. Split the data with random_state = 232 Measure the accuracy of the classifier using accuracy score and confusion matrix. Plot the confusion matrix. Write the codes used and the output obtained.

5. Train a random forest classifier using data set load_ wine from sklearn.datasets. Using 90% of the sample as training data. Split the data with random_state = 365. Measure the accuracy of the classifier using accuracy score and confusion matrix. Plot the confusion matrix. Write the codes used and the output obtained. Use n_estimators = 500.

6. (a) What do you mean by Bayesian learning?

   (b) Explain various Bayesian learning methods.