



QP CODE: 26019599



Reg No :

Name :

M.Sc DEGREE (CSS) EXAMINATION, MARCH 2026

Fourth Semester

MSc Statistics with Data Science

ELECTIVE - ST880401 - MACHINE LEARNING

2020 Admission Onwards

CB85DC76

Time: 3 Hours

Weightage: 30

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

1. (a) Define Machine learning. Explain the classification of various machine learning techniques with suitable examples.
(b) What do you mean by perceptron? Explain various training algorithms to construct a perceptron.
(c) Explain Multilayer Network and Back propagation algorithm.
2. Train a decision tree regressor using data set load_diabetes from sklearn.datasets. Using 75% of the sample as training data. Split the data with random_state = 606. Use squared_error as criterion and random_state = 888. Measure the accuracy of the regressor using mean squared error, root mean squared error, mean absolute error and median absolute error. Write the codes used and the output obtained.
3. Train an ANN regressor using data set load_diabetes from sklearn.datasets. Using 80% of the sample as training data. Split the data with random_state = 565. Use mse as loss function and mae as metrics. Measure the accuracy of the regressor using mean squared error, root mean squared error, mean absolute error and median absolute error. Write the codes used and output obtained.
4. Train a naive Bayes classifier using data set load_wine from sklearn.datasets. Using 90% of the sample as training data. Split the data with random_state = 801. Measure the accuracy of the classifier using accuracy score and confusion matrix. Plot the confusion matrix. Write the codes used and output obtained.
5. Train a random forest classifier using data set load_iris from sklearn.datasets. Using 75% of the sample as training data. Split the data with random_state = 421. 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 ensemble learning?
(b) Explain various ensemble learning methods.

