1. Calculate Accuracy, Precision, Recall and F1-score using below confusion matrix.

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Actual Values | |
| Positive | Negative |
| Predicted  values | P | 150 | 20 |
| N | 30 | 80 |

1. Implement the following tasks on the Ionosphere Dataset using the scikit-learn (sklearn) library or the statsmodels library: Consider “V6” **to** “V12” as predictor variables and predict “class” (the last column is class).
   * + - 1. Implement Logistic Regression on this dataset and print Coefficients, Intercept of the model. (Split ratio for train and test data is 70:30)
         2. Predict probabilities of the test set.
         3. Calculate ROC curve using ROC\_curve and the AUC-ROC score (sklearn.metrics).
         4. Plot ROC curve with matplotlib.
2. Implement Linear Discriminant Analysis on the same dataset. Print a classification report, which typically includes metrics such as precision, recall, F1-score, and support for each class. (Split ratio for train and test data is 75:25)
3. Implement K-Nearest Neighbors for the “Smarket” dataset by setting the K value as 5 and independent variables as “lag3”, “lag5” and predict “direction”. Find the accuracy of the model. (Split ratio for train and test data is 80:20)