**This is the code that we used to calculate the values that you wanted from us:**

import pandas as pd  
from sklearn.ensemble import RandomForestClassifier  
from sklearn.feature\_selection import SelectFromModel  
from sklearn.metrics import accuracy\_score, roc\_auc\_score  
from sklearn.model\_selection import train\_test\_split, cross\_val\_score  
from sklearn.preprocessing import LabelEncoder  
from sklearn.model\_selection import ShuffleSplit  
from sklearn.metrics import classification\_report  
  
df = pd.read\_csv(r'C:\Users\begum\Desktop\Projects\Pattern Recognition\otu.csv', low\_memory=False)  
  
X = df.iloc[2:, :].T  
y = df.iloc[1, :]  
  
X = X.apply(pd.to\_numeric, errors='coerce')  
  
X = X.fillna(X.mean())  
  
le = LabelEncoder()  
y = le.fit\_transform(y)  
  
X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)  
  
selector = SelectFromModel(estimator=RandomForestClassifier(n\_estimators=100, random\_state=42))  
X\_train = selector.fit\_transform(X\_train, y\_train)  
X\_test = selector.transform(X\_test)  
  
clf = RandomForestClassifier(n\_estimators=100, random\_state=42)  
clf.fit(X\_train, y\_train)  
  
n\_splits\_adjusted = min(5, min(pd.Series(y).value\_counts()))  
ss = ShuffleSplit(n\_splits=n\_splits\_adjusted, test\_size=0.2, random\_state=42)  
scores = cross\_val\_score(clf, X\_train, y\_train, cv=ss)  
print(f'Cross-validation scores: {scores}')  
  
y\_pred = clf.predict(X\_test)  
  
accuracy = accuracy\_score(y\_test, y\_pred)  
print(f'Accuracy: {accuracy}')  
  
if len(set(y)) == 2:  
 auc = roc\_auc\_score(y\_test, y\_pred)  
 print(f'AUC: {auc}')  
  
report = classification\_report(y\_test, y\_pred, zero\_division=1)  
print(report)

**And these are the outputs:**

Cross-validation scores: [0.79545455]

Accuracy: 0.8363636363636363

precision recall f1-score support

0 0.90 1.00 0.95 46

3 1.00 0.00 0.00 1

6 0.00 1.00 0.00 0

10 0.00 1.00 0.00 0

12 1.00 0.00 0.00 1

13 1.00 0.00 0.00 1

14 1.00 0.00 0.00 1

17 1.00 0.00 0.00 1

18 0.00 1.00 0.00 0

22 1.00 0.00 0.00 1

25 0.00 1.00 0.00 0

26 1.00 0.00 0.00 1

37 1.00 0.00 0.00 1

44 1.00 0.00 0.00 1

accuracy 0.84 55

macro avg 0.71 0.36 0.07 55

weighted avg 0.92 0.84 0.79 55