Executive Summary

ALGORITHMS	ACCURACY
PERCEPTRON	98%
LOGISTIC REGRESSION	98%
SUPPORT VECTOR MACHINES	100%
DECISION TREES	93%
RANDOM FORESTS	99%
K NEAREST NEIGHBORS	100%

Part -1: - Data Analysis

From the data analysis, we can see that entropy of image is showing very small relation with the output feature we need predict so we can ignore that feature for the training of prediction model which will be more convenient for us, but as per the instruction I have used all the features to train the model and predict the binary values of whether the given note is counterfeit or not. If we drop the features from all of them to only two of them our model accuracy will drop to around 85-90% which comparatively low.

Part: -2: -

The dataset is simple on which binary classification needs to be done, which implies overfitting of the data needs to be avoided. Support Vector Machines and KNN although giving around 100% accuracy, with the consistency in its results. Random Forest algorithm fails to achieve consistency but on the other hand, sometimes it provides accuracy as good as KNN and SVM. The other methods as Logistic Regression, Perceptron, Decision Tree have good accuracy of 98% and 93% while also maintaining consistency and repeating the results for different values. As the Logistic regression and Perceptron have acceptable accuracy compare to KNN and SVM like 98% and it is also faster and simpler. Where the Decision tree lacks both the accuracy and computational speed