Statistics

1- D)Expected
2- C)Frequencies doubt
3- C)6
4- D)Poisson distribution doubt
5- C) F distribution
6- B) Hypothesis
7- A) Null Hypothesis
8- A) Two tailed
9- B) Research Hypothesis
10- A) np

Machine Learning

1- Both are useful in calculating goodness of fit of a model. R-squared is used for accessing overall fit of the model while RSS is the total sum of squared differences between actual values and predicted values of dependent variable

2- TSS is sum of squared differences between the observed dependent variables around the mean.
ESS is the sum of differences between the predicted value and the mean of the dependent variable.
RSS is the difference between the observed and predicted values.
TSS=ESS+RSS

3- Regularization is used to properly fit a model onto our test set.

4- It is the probability of incorrectly classifying a randomly chosen element in the dataset.

5- Decision trees have a tendency to overfit to the training set because they can keep growing which leads to the tree capturing noise in the data. Regularization techniques aim to simplify the tree and prevent it from becoming more complex.

6- Ensemble techniques enhances the accuracy and resilience in forecasting by merging predictions from multiple models.

7- Bagging aim to decrease variance and Boosting sims to decrease bias.

8- OOB errors are an estimate of the performance of a random forest classifier on unseen data.

9- K-fold cross validation is a technique for evaluating predictive models.

10- Hyper parameter tuning is is an essential part of controlling the behaviour of a machine learning model.

11- IF the learning rate is too high the algorithm may overshoot the minimum.

12- Logistic regression is a linear model that cannot solve non-linear problems because it has a linear decision surface.

13- A) Gradient boosting algorithm is more robust to outliers than Adaboost.
B) In Adaboost shifting is done by up-weighting observations that were misclassified before while gradient boosting identifies the difficult observations by large residuals computed in the previous iteration.

14- It describes the relationship between a models complexity, the accuracy of its predictions.

15- Linear Kernel defines the dot product between the input vectors in the original feature space. RBF is a non linear kernel function that maps the input data into a higher dimensional feature space using gaussian function. Polynomial function is a non linear kernel function that employs polynomial functions to transfer the input data into a higher dimensional feature space.