MACHINE LEARNING

1. Which of the following methods do we use to find the best fit line for data in Linear Regression?
A) Least Square Error B) Maximum Likelihood C) Logarithmic Loss D) Both A and B
Ans: A) Least Square Error

2. Which of the following statement is true about outliers in linear regression?
A) Linear regression is sensitive to outliers B) linear regression is not sensitive to outliers
C) Can't say D) none of these
Ans: A) Linear regression is sensitive to outliers

3. A line falls from left to right if a slope is _____?
A) Positive B) Negative C) Zero D) Undefined
Ans: B) Negative

4. Which of the following will have symmetric relation between dependent variable and independent variable?
A) Regression B) Correlation C) Both of them D) None of these
Ans: B) Correlation

5. Which of the following is the reason for over fitting condition?
A) High bias and high variance B) Low bias and low variance
C) Low bias and high variance D) none of these
Ans: C) Low bias and high variance

6. If output involves label then that model is called as:
A) Descriptive model B) Predictive modal C) Reinforcement learning D) All of the above
Ans: B) Predictive model

7. Lasso and Ridge regression techniques belong to _____?
A) Cross validation B) Removing outliers C) SMOTE D) Regularization
Ans: D) Regularization

8. To overcome with imbalance dataset which technique can be used?
A) Cross validation B) Regularization C) Kernel D) SMOTE
Ans: D) SMOTE

9. The AUC Receiver Operator Characteristic (AUCROC) curve is an evaluation metric for binary classification problems. It uses _____ to make graph?
A) TPR and FPR B) Sensitivity and precision C) Sensitivity and Specificity D) Recall and precision
Ans: A) TPR and FPR

10. In AUC Receiver Operator Characteristic (AUCROC) curve for the better model area under the curve should be less.
A) True B) False
Ans: B) False

11. Pick the feature extraction from below:
A) Construction bag of words from a email B) Apply PCA to project high dimensional data
C) Removing stop words D) Forward selection
Ans: B) Apply PCA to project high dimensional data

In Q12, more than one options are correct, choose all the correct options:
12. Which of the following is true about Normal Equation used to compute the coefficient of the Linear Regression?
A) We don't have to choose the learning rate. B) It becomes slow when number of features is very large. C) We need to iterate. D) It does not make use of dependent variable.
Ans: A) We don't have to choose the learning rate. B) It becomes slow when number of features is very large. C) We need to iterate.

13. Explain the term regularization?
Ans: Regularization is a technique which solves the overfitting of the machine learning model. This technique helps in best fitting of the model on the test data. Regularisation is the process of limiting a model to prevent overfitting by reducing the coefficient estimates to zero. We should limit the complexity of the model when overfitting occurs. In a technical sense, regularisation prevents overfitting by introducing a penalty to the loss function of the model.

14. Which particular algorithms are used for regularization?
Ans: There are two widely used regularization techniques:
1. **Least Absolute Shrinkage and Selection Operator (lasso) regression or L1 Regularization**
2. **Ridge Regression or L2 Regularization**
3. **Elastic Net**

15. Explain the term error present in linear regression equation?
Ans: Mean Absolute Error (MAE): It measures the average absolute difference between predicted and actual values. It represents the average magnitude of errors, without considering their direction.
Mean Squared Error (MSE): It quantifies the average squared difference between predicted and actual values. It is calculated by taking the average of the squared differences between predicted and actual values.
Root Mean Squared Error (RMSE): It is used in cases where the scale of the data matters and we want to represent errors in the original units.