

## ASSIGNMENT – 39 MACHINE LEARNING

In Q1 to Q11, only one option is correct, choose the correct option:

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

**Answer:** - Option 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

**Answer:** - Option A- 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

**Answer:** - Option 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

**Answer:** - Option 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

**Answer:** - Option C)- Low Base 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

**Answer:** - **Option B** – Predictive Model

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

**Answer:** - **Option B**- Removing Outliers

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

**Answer: - Option A- Cross Validation**

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

**Answer: - Option 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

**Answer: - Option 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

**Answer: - Option 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.

**Answer: - Option A , B and C**

Q13 and Q15 are subjective answer type questions, Answer them briefly.

13. Explain the term regularization?

**Answer: -** Regularization is one of the most important concepts of machine learning. It is a technique to prevent the model from overfitting by adding extra information to it. It mainly regularizes or reduces the coefficient of features toward zero. Regularizations are techniques used to reduce the error by fitting a function appropriately on the given training set and avoid overfitting.

There are mainly two types of regularization techniques, which are given below:

- L1 Regularization or Lasso Regularization.
- L2 Regularization or Ridge Regularization.

14. Which particular algorithms are used for regularization?

**Answer: -**

- Ridge Regression.
- LASSO (Least Absolute Shrinkage and Selection Operator) Regression.
- Elastic-Net Regression.

15. Explain the term error present in linear regression equation?

**Answer: -** Linear Regression most often uses mean square error (MSE) to calculate the error of the model. MSE is calculated by:

1. measuring the distance of the observed y-values from the predicted y-values at each value of x;
2. squaring each of these distances
3. calculating the mean of each of the squared distances.

Linear regression fits a line to the data by finding the regression coefficient that results in the smallest MSE.

