# 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

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

3. A line falls from left to right if a slope is_____?
   **A)** Positive B) **Negative**
   C) Zero D) Undefined

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

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

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**

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

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

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

**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.

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

13. Explain the term regularization?

**Ans;-**

The word regularize means to make things regular or acceptable. This is exactly why we use it for. Regularizations are techniques used to reduce the error by fitting a function appropriately on the given training set and avoid overfitting.

14. Which particular algorithms are used for regularization?

**Ans:-**

A regression model which uses L1 Regularization technique is **called** LASSO(Least Absolute Shrinkage and Selection Operator) regression.
A regression model that uses L2 regularization technique is called Ridge regression**.**
Lasso Regression adds *"absolute value of magnitude"* of coefficient as penalty term to the loss function(L)

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

**Ans:-**

A regression line always has an error term because, in real life, independent variables are never perfect predictors of the dependent variables. Rather the line is an estimate based on the available data. so the error term tells you how certain you can be about the formula.