

**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

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 modal

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

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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 A) Construction bag of words from a email

**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) ,B) and D)

## **MACHINE LEARNING**

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

13. Explain the term regularization?

Ans) Regularization is technique used in Machine Learning to prevent overfitting of the model. It works on the basic rule of penalizing the data which is not contributing or very less contribution in model training. It is used to optimize the balance between bias and variance which lead to reduce variance by reducing the complexity and hence reduce the over fitting of the training model. By reducing complexity higher variance is reduced in training data which generalize the model for unseen data which lead to better overall performance.

14. Which particular algorithms are used for regularization?

Ans) Regularization is technique used in Machine Learning. The major algorithms used for regularization are:

1) Ridge which use L2 regularization to reduce the coefficient of less important feature to near Zero but not exactly zero. It penalizes the less important features by adding penalty term which is a function of square of magnitude of coefficients of the features.

2) LASSO which use L1 regularization to remove the coefficient of less important features to exact zero. It can use used as feature selection technique as it completely reduces the coefficient of some features to zero.

3) Elastic Net it is a combination of L1 and L2 Regularization, which allow both features selection as well as feature weighting.

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

Ans The error term is also Known as residual in Linear Regression. Residual represent the difference between predicted value and set of actual value of dependent variable.

$\text{Residual} = Y(\text{actual}) - Y(\text{Predicted})$

In linear regression our aim is to minimize the Residual sum of square between the predicted value and the set of actual value of dependent variable hence, obtaining the best-fit line using the given data.

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