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

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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

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3. A line falls from left to right if a slope is _____?

A) Positive B) Negative C) Zero D) Undefined

Ans:- A) Positive

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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

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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

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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

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7. Lasso and Ridge regression techniques belong to _____?

A) Cross validation B) Removing outliers C) SMOTE D) Regularization

Ans:- D) Regularization

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8. To overcome with imbalance dataset which technique can be used?

A) Cross validation B) Regularization C) Kernel D) SMOTE

Ans:- D) SMOTE

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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:- C) Sensitivity and Specificity

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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

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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) We don't have to choose the learning rate ,B) It becomes slow when number of features is very large and C) We need to iterate.

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

13. Explain the term regularization?

Ans:- a)The word regularize means to make things regular or acceptable.

b) It will give penalty which will decrease label.

c)Regularizations are techniques used to reduce the error by fitting a function appropriately on the given training set and avoid overfitting (Overfitting is a phenomenon that occurs when a Machine Learning model is constraint to training set and not able to perform well on unseen data).

d) Regularization is of 3 types: - L1=Lasso; L2=Ridge and Elastic-Net Regression

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14. Which particular algorithms are used for regularization?

Ans:- The working of all these algorithms is quite similar to that of Linear Regression.

- Ridge Regression

Ridge regression is a method for analyzing data that suffer from multi-collinearity. Ridge regression adds a penalty **(L2 penalty)** to the loss function that is equivalent to the square of the magnitude of the coefficients.

- LASSO Regression

LASSO is a regression analysis method that performs both feature selection and regularization in order to enhance the prediction accuracy of the model. LASSO regression adds a penalty **(L1 penalty)** to the loss function that is equivalent to the magnitude of the coefficients.

- Elastic-Net Regression

Elastic-Net is a regularized regression method that linearly combines the L1 and L2 penalties of the LASSO and Ridge methods respectively.

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

Ans:- a)The error terms are normally distributed.

b) The error term are not correlated with each other.

c)Eg:- row 1 – 2

row 2- 2.5

→ **its an error the gap**

d) The error terms have a constant variance.

Eg:- error 1 = .5

Error 2 = 2.5

Error 3 = 50

→ **it should keep on changing**

e) The linear regression model contains an error term that is represented by **ε**. The error term is used to account for the variability in y that cannot be explained by the linear relationship between x and y.

If ε were not present, that would mean that knowing x would provide enough information to determine the value of y.
