1. **In the linear regression equation y = θ0 + θ1x, θ0 is the:**

A) Slope of the line

B) Independent variable

C) y intercept

D) Coefficient of determination

**Ans – C**

1. **True or False: Linear Regression is a supervised learning algorithm**.

A) True

B) False

**Ans – A**

1. **In regression analysis, the variable that is being predicted is:**

A) the independent variable

B) the dependent variable

C) usually denoted by x

D) usually denoted by r

**Ans – B**

1. **Generally, which of the following method(s) is used for predicting continuous dependent variables?**

A) Logistic Regression

B) Linear Regression

C) Both

D) None of the above

**Ans – B**

1. **The coefficient of determination is:**

A) the square root of the correlation coefficient

B) usually less than zero

C) the correlation coefficient squared

D) equal to zero

**Ans: - C**

1. **If the slope of the regression equation is positive, then:**

A) y decreases as x increases

B) y increases as x increases

C) y decreases as x decreases

D) None of these

**Ans: - B**

1. **Linear Regression works best for:**

A) linear data

B) non-linear data

C) both linear and non-linear data

D) None of the above

**Ans: A**

1. **The coefficient of determination can be in the range of:**

A) 0 to 1

B) -1 to 1

C) -1 to 0

D) 0 to infinity

**Ans: - A**

1. **Which of the following evaluation metrics can be used for linear regression?**

A) Classification Report

B) RMSE

C) ROC curve

D) MAE

**Ans: BD**

1. **Which of the following is true for linear regression?**

A) Linear regression is a supervised learning algorithm.

B) Linear regression supports multi-collinearity.

C) Shape of linear regression’s cost function is convex.

D) Linear regression is used to predict discrete dependent variable.

**Ans: AC**

1. **Which of the following regularizations can be applied to linear regression?**

A) Ridge

B) Lasso

C) Pruning

D) Elastic Net

**Ans: ABD**

1. **Linear regression performs better for:**

A) Large amount of training samples with small number of features.

B) Same number of features and training samples

C) Large number of features

D) The variables which are drawn independently, identically distributed

**Ans: - AB**

1. **Linear regression performs better for:**

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**Ans: - AB**

1. **Explain Linear Regression?**

Linear regression is statistical method used to model the relationship between dependent variable and one or more independent variables. It assumes that the relationship between the dependent variable and independent variables is linear, mainly that the change in dependent variable is proportional to the change in independent variable(s).

The goal of linear regression is to find the best linear relation that can explain the variability of the dependent variable based on the independent variables.

This is done by estimating the co-efficient of the linear equation that best fit the data. Linear regression is widely used in various fields such as finance, economics, social sciences, and engineering to make predictions and infer relationships between variables.

1. **What is difference between simple linear and multiple linear regression?**

The main difference between simple linear regression and multiple linear regression is the no. of independent variables used to model the relationship with the dependent variable.

Simple linear regression is used when there is only one independent variable , and it is used to model the linear relationship between that variable and dependent variable. The model can be represented by a straight line equation of the form Y=a+bX, where Y is the dependent variable, X is the independent variable, and a and b are the intercept and slope co – efficient of the line, respectively

On the other had, multiple linear regression is used when there are two or more independent variables and it is used to model the linear relationship between those variables and the dependent variable. The model can be represented by an equation of Y = a+b1x1+b2x2+…bkyk, where y is the dependent variable, x1,x2 ……..xk are the independent variables, and a,b1,b2……..bk are the intercept and slope co-efficient of the line, respectively.

In summary, simple linear regression uses one independent variable, while multiple linear regression uses two or more independent variables to model the relationship with the dependent variable.