MACHINE LEARNING

1. In the linear regression equation $y = \theta_0 + \theta_1 X$, θ_0 is the:
   A) Slope of the line B) Independent variable
   C) y intercept D) Coefficient of determination
   Ans. (C)

2. True or False: Linear Regression is a supervised learning algorithm.
   A) True B) False
   Ans. (A)

3. 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)

4. 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)

5. 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)

6. 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)

7. 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)

8. 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)

In Q9 to Q13, more than one options are correct, Choose all the correct options:

9. Which of the following evaluation metrics can be used for linear regression?
   A) Classification Report B) RMSE
   C) ROC curve D) MAE
   Ans. (B)

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10. 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. (A,C,D)

11. Which of the following regularizations can be applied to linear regression?
    A) Ridge B) Lasso
    C) Pruning D) Elastic Net
    Ans. (A,B,D)

12. 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. ()

13. Which of the following assumptions are true for linear regression? A) Linearity B) Homoscedasticity
    C) Non-Independent D) Normality

    Ans. (A,B,D)

Q14 and Q15 are subjective answer type questions, Answer them briefly.

14. Explain Linear Regression?

Ans. Linear regression analysis is used to predict the value of a variable based on the value of another variable. The variable you want to predict is called the dependent variable. The variable you are using to predict the other variable's value is called the independent variable.

It mathematically models the unknown or dependent variable and the known or independent variable as a linear equation.

Example: The weight of the person is linearly related to their height. So, this shows a linear relationship between the height and weight of the person. According to this, as we increase the height, the weight of the person will also increase.

15. What is difference between simple linear and multiple linear regression?

Ans. Simple linear regression has only one x and one y variable. Multiple linear regression has one y and two or more x variables.