

**Question 1:**

Which of the following statements is true?

- (a) The parameters (intercept and slope) in a simple linear regression are estimated by minimizing the sum of the squared errors.
- (b) The parameters (intercept and slope) in a simple linear regression are estimated by maximizing the sum of the squared errors.
- (c) The parameters (intercept and slope) in a simple linear regression are estimated by minimizing the sum of the squared regression.
- (d) The parameters (intercept and slope) in a simple linear regression are estimated by minimizing the sum of the squared total.

**Question 2:**

Which of the following statements is true?

- (a) For a simple linear regression model to be valid the errors should follow normal distribution (at least approximately).
- (b) For a simple linear regression model to be valid the errors should have non-constant variance.
- (c) For a simple linear regression model to be valid the errors should be positively auto-correlated.
- (d) Both (a) & (c).

**Question 3:**

Suppose you have a dataset with sample size = 100. You are estimating a simple linear regression from this data. Then which of the following statements is true?

- (a) The t-test may be used to check if the slope or coefficient of the independent variable is non-zero.
- (b) The degrees of freedom associated with the mentioned t-test (in option (a) above) is 98.
- (c) The ANOVA F-test is equivalent to the t-test in the given scenario.
- (d) All of the above.

**Question 4:**

Which of the following statements is true?

- (a) Durbin-Watson statistics is used to find influential observations in regression model.
- (b) Cook's distance is used to check for auto-correlation among the error terms.
- (c) Shapiro-Wilk's test is used to check for homoscedasticity in the error terms.
- (d) None of the above.

**Question 5:**

A simple linear regression model is run on a dataset. The p-value associated with the Kolmogorov-Smirnov test applied on the standardized regression errors is 0.01. Then which of the following statements is true?

- (a) The errors from the regression model follow a normal distribution.
- (b) The errors from the regression model are heteroscedastic.
- (c) The errors from the regression model do not follow normal distribution.
- (d) The errors from the regression model are homoscedastic.

**Question 6:**

Which of the following statements is true?

- (a) The Probability-Probability (P-P) plot has the cumulative probabilities of the normal distribution on the Y axis.
- (b) The plot to check for homoscedasticity has the standardized error values (from regression model fitting) on the Y-axis.
- (c) The plot to check for homoscedasticity has the standardized predicted values (from regression model fitting) on the Y-axis.
- (d) Both (a) & (b).

**Question 7:**

A simple linear regression model is run on a dataset consisting of 100 records. Then which of the following statements is true?

- (a) A record in the dataset is a suspected outlier because the associated Cook's distance is 1.8

- (b) A record in the dataset is a suspected outlier because the associated Mahalanobis distance is 8.
- (c) A record in the dataset is a suspected outlier because the associated leverage value is 0.05.
- (d) All of the above

**Question 8:**

Which of the following statements is true?

- (a) The R-square value for a regression model may be more than 1.
- (b) The R-square may decrease as you increase the number of independent variables in the regression model.
- (c) Adjusted R-square value for a regression model is less than its R-square value.
- (d) R-square value of a regression is calculated by minimizing the sum of squared errors.

**Question 9:**

Which of the following statements is true?

- (a) The Y variable in simple linear regression is also known as the explanatory variable.
- (b) The Y variable in simple linear regression is also known as the predictor variable.
- (c) The Y variable in simple linear regression is also known as the regressor variable.
- (d) None of the above.

**Question 10:**

Which of the following statements is true?

- (a) A simple linear regression may be non-linear in the explanatory variable.
- (b) A simple linear regression may not have an intercept.
- (c) A simple linear regression may give interval estimates for the average value of Y.
- (d) All of the above.