Quiz 3: Simple Regression

Name: _____ Grade: ___/5

1. **What is the MAIN purpose of simple regression analysis, as explained in the text?**

   a) To determine the cause-and-effect relationship between two variables.
   b) To uncover mean-dependence or patterns of association between two variables.
   c) To predict future values of the dependent variable with perfect accuracy.
   d) To create visually appealing graphs for data presentation.

2. **What is the significance of the function "f" in the regression model notation (yE = f(x))?**

   a) It represents the error term or random noise in the data.
   b) It defines the specific mathematical relationship between the expected value of y and x.
   c) It denotes the predicted value of the dependent variable for a given x.
   d) It symbolizes the overall goodness of fit of the regression model.

3. **According to the text, why is variation in the explanatory variable (x) crucial for regression analysis?**

   a) It allows for comparisons across observations with different x values to identify patterns in the dependent variable.
   b) It ensures that the regression line passes through the origin (0, 0) of the coordinate system.
   c) It guarantees that the R-squared value will be high, indicating a good fit.
   d) It eliminates the need for non-parametric regression methods.

4. **Which of the following is a characteristic of non-parametric regression methods?**

   a) They impose a specific functional form on the relationship between variables.
   b) They produce readily interpretable numbers that summarize the association.
   c) They can capture complex patterns that may be missed by restrictive parametric functions.
   d) They are always preferred over parametric methods, regardless of the data.

5. **When is it appropriate to interpret the slope coefficient ( ) in a linear regression as the "effect" of x on y?**

   a) In all cases, regardless of the data source or type.
   b) Only when the data comes from well-designed experiments where variation in x is controlled.
   c) When analyzing observational data with a strong correlation between x and y.
   d) When the R-squared value of the regression is close to 1, indicating a perfect fit.