

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 ($y_E = f(x)$)?**
 - 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.