CHAPTER 7

INTRODUCTION TO LINEAR REGRESSION

1. (C) **percentage of the variation in the dependent variable explained by the variation of the independent variable.**
    Explanation
    The coefficient of determination for a linear regression describes the percentage of the variation in the dependent variable explained by the variation of the independent variable.
    (Study Session 2, Module 7.2, LOS 7.d)
    Related Material
    SchweserNotes - Book 1

2. (C) **The error terms from a regression are positively correlated.**
    Explanation
    One assumption of linear regression is that the error terms are independently distributed. In this case, the correlations between error terms are expected to be zero. Constant variance of the error terms and no correlation between the independent variable and the error term are assumptions of linear regression.
    (Study Session 2, Module 7.1, LOS 7.c)
    Related Material
    SchweserNotes - Book 1

3. (A) **5.83.**
    Explanation
    Y = 2.83 + (1.5)(2) = 2.83 + 3 = 5.83.
    (Study Session 2, Module 7.3, LOS 7.g)
    Related Material
    SchweserNotes - Book 1

4. (B) **0.45.**
    Explanation
    R^2 = regression sum of squares / total sum of squares = 556 / 1,235 = 0.45.
    (Study Session 2, Module 7.2, LOS 7.e)
    Related Material
    SchweserNotes - Book 1

5. (A) **be rejected because the test statistic of -1.77 is less than the critical value.**

    Explanation

    The test statistic is (0.894 - 1.0) / 0.06 = -1.77. The critical value with 200 - 2 = 198 degrees of freedom for 5% significance is -1.653. Because the test statistic of -1.77 is less than the lower critical value, we reject the hypothesis that b_1 is greater than or equal to 1.0.

    (Study Session 2, Module 7.2, LOS 7.f)

    Related Material

    SchweserNotes - Book 1

6. (B) **27.87.**

    Explanation

    F = mean regression sum of squares / mean squared error = 550 / 19.737 = 27.867.

    (Study Session 2, Module 7.2, LOS 7.e)

    Related Material

    SchweserNotes - Book 1

7. (A) **0.774.**

    Explanation

    We are given the coefficient of determination of 0.599 (R^2) and are asked to find the correlation coefficient (r), which is the square root of the coefficient of determination for a simple regression:

    $\sqrt{0.599}$ = 0.774

    (Study Session 2, Module 7.2, LOS 7.d)

    Related Material

    SchweserNotes - Book 1