Sample Quiz 7

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Question 1-7: Management of a soft-drink bottling company wished to develop a method for allocating delivery costs to customers. Although one cost clearly relates to travel time within a particular route, another variable cost reflects the time required to unload the cases of soft drink at the delivery point. A sample of 22 customers was selected from routes within a territory. The delivery time (in minutes) and the numbers of cases delivered were measured. These data are partially presented in the table with the following results: SST=2500, SSR=2320, \( \sum (X_i - \bar{X})^2 = 3906.25 \) and \( \hat{Y} = 25.00 + 0.12X \).

<table>
<thead>
<tr>
<th>Customer</th>
<th>Number of Cases (X)</th>
<th>Delivery Time(Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>52</td>
<td>32.1</td>
</tr>
<tr>
<td>2</td>
<td>64</td>
<td>34.8</td>
</tr>
<tr>
<td>...</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>22</td>
<td>298</td>
<td>67.3</td>
</tr>
</tbody>
</table>

1) Which of the following statement is correct, when we interpret the meaning of the slope \( b_1 \).
   A) for each additional minute, the estimated case increases 0.12
   B) for each additional case, the estimated delivery time decreases by 0.12 minutes
   C) for each additional minute, the estimated case decreases 0.12
   D) for each additional case, the estimated delivery time increases by 0.12 minutes

2) If the company wants to test the significance of a linear relationship between \( X \) and \( Y \). The value of the test statistic \( t_{cal} \) is __________.
   A) 2.852  B) 3.000  C) 2.400  D) 2.500

3) For the test with \( \alpha = 0.05 \), which of the following represents the result of the relevant hypothesis test?
   A) reject \( H_0 \)  B) fail to reject \( H_0 \)
   C) can't find the level of significance.  D) no decision

4) The 95% confidence interval estimate for the population slope is __________ to __________.
   A) -0.017 to 0.317  B) 0.020 to 0.220  C) 0.034 to 0.206  D) 0.092 to 0.189

5) The predicted delivery time for a customer who receiving 160 cases of soft drink is __________
   A) 44.2 min  B) 47.5 min  C) 50.5 min  D) 25.0 min

6) Which of the following statement is correct for the coefficient of determination?
   A) 96.33% of the variation in the delivery time can be explained by the variation in the number of cases.
   B) 96.33% of the variation in the number of cases can be explained by the variation in the delivery time.
   C) 92.80% of the variation in the delivery time can be explained by the variation in the number of cases.
   D) 92.80% of the variation in the number of cases can be explained by the variation in the delivery time.

7) The 95% confidence interval estimate of the average delivery time for customers that receive 160 cases of soft drink (use \( \bar{X} = 169.9 \)) is from __________ to __________.
   A) 41.23 to 47.77  B) 40.50 to 51.58  C) 42.54 to 45.86  D) 42.50 to 45.90
Question 8–9: Use the sample data below to test the hypotheses

H0: p1 = p2 =p3
H1: Not all population proportions are equal

<table>
<thead>
<tr>
<th>Response</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>150</td>
<td>150</td>
<td>96</td>
<td>396</td>
</tr>
<tr>
<td>No</td>
<td>100</td>
<td>150</td>
<td>104</td>
<td>354</td>
</tr>
<tr>
<td>Totals</td>
<td>250</td>
<td>300</td>
<td>200</td>
<td>750</td>
</tr>
</tbody>
</table>

8) What is the test statistic?
   A) 8.277 B) 7.993 C) 13.628 D) 8.972

9) To perform a chi-square test using a level of significance of 0.01, what decision should you make?
   A) Reject H0. B) Can't find α. C) No decision. D) Fail to reject H0.
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) B
2) D
3) A
4) B
5) A
6) C
7) C
8) B
9) D