King Fahd University of Petroleum & Minerals
Department of Mathematics & Statistics
STAT-212-Term181
Quiz #4-08/11/2018

Name: *ID:* *Serial:*

In a study about the relationship between the age of shoppers and the day of shopping, 200 shoppers of each group were randomly selected, and the results are given the table.
Expected counts are given below the observed counts. Chi Square contributions are given below the expected counts

Day preference		< 35	35– 54	>54
Saturday	Observed	51	60	24
	Expected	45	45	45
	Chi-Square	0.8	5	9.8
Other days	Observed	149	140	176
	Expected	155	155	155
	Chi-Square	0.23	1.45	2.85

From the table above

1. Fill the missing values
2. Write the null and the alternative hypotheses of your test
3. Perform the test statistic.
4. The decision rule and the critical value
5. The decision:
6. The conclusion

Q2: A company wishes to study the relationship between the number of advertising and associated sales, they collected the data for the past 18 months. Use the following MINITAB output to answer the following questions

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The regression equation is: Sale = 33.4 + 2.73 Ads

Predictor    Coef  SE Coef      T      P
Constant   33.375    2.450  13.63  0.000
Ads        2.7312   0.3138   8.70  0.000

S = 3.35427

Analysis of Variance
Source          DF       SS      MS      F      P
Regression       1   852.43   852.43   75.76  0.000
Residual Error  16   180.02    11.25
Total           17   1032.44
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a) Find the coefficient of determination. And interpret your finding.

b) The company believes that the values of the slope should be more than 2, do you agree with the company claim? Explain using 5% level of significance.

c) The company wishes to predict the value of the sale if the number of advertising is 10 using 95% confidence interval. (assume: $Sxx = 114 \;\; \& \;\; \bar{x} = 15$)

d) State the assumptions of the regression model.