KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS
Term 172

STAT 212: BUSINESS STATISTICS II

First Exam

Wednesday, 21 February 2018
5:00 PM - 6:30 PM

Name:_____

ID #:_____

Serial#:_____ **Section: 1 2 (Al-Sawi) 3 (Abbas)**

Important Notes:

1) **You must show all work to obtain full credit for questions on this exam.**
2) **DO NOT round your answers at each step. Round answers only if** necessary at your final step to **4 decimal places**.

Question No	Full Marks	Marks Obtained
Q1	10	
Q2	14	
Q3	10	
Q4	12	
Q5	14	
Total	**60**	

1. At the time he was hired as a server at the Dammam Family Restaurant, Mr. Ali was told, “You can average SR 80 a day in tips.” Over the first 25 days Mr. Ali was employed at the restaurant, the mean daily amount of his tips was SR 84.85 with a standard deviation of SR 9.95. At the 0.01 significance level, can Mr. Ali conclude that his daily tips average more than SR 80?

Hypotheses (2 marks):

H_0: Vs H_1:

Assumption(s) (1 mark):

Test Statistic (2 marks):

P-value(2 mark):

Decision(1 mark):

Managerial Conclusion (2 marks):

2. Educational Technology, Inc. sells software to provide guided homework problems for a statistics course. They would like to know if students who use the software score better on exams. A sample of students who used the software had the following exam scores:

86, 78, 66, 83, 84,__,__, 109, 65, 102. $Where\ \sum_{1}^{10} x = 838\ ,\ \sum_{1}^{10} x^2 = 71908$

A sample of students who did not use the software had the following exam scores: 91,__,__, 76, 87, 79, 73, 76, 79, 78, 87, 90, 76, 72. $Where\ \sum_{1}^{14} y = 1110\ ,\ \sum_{1}^{14} y^2 = 88592$

Assume the population standard deviations are the same. At the 0.10 significance level, can we conclude that there is a difference in the mean exam scores for the two groups of students?

Hypotheses (2 marks)**:**

H_0: **Vs** **H_1:**

Assumption(s) (2 marks)**:**

Test Statistic (6 marks)**:**

Critical Value (2 marks)**:**

Decision (1 mark)**:**

Managerial Conclusion (1 mark)**:**

3. A stockbroker at Critical Securities reported that the mean rate of return on a sample of 10 oil stocks was 12.6% with a standard deviation of 3.9%. The mean rate of return on a sample of 8 utility stocks was 10.9% with a standard deviation of 3.5%. At the 0.05 significance level, can we conclude that there is more variation in the oil stocks?

Hypotheses (2 marks):

H_0: Vs H_1:

Assumption(s) (1 mark):

Test Statistic (2 marks):

Decision Rule (1 mark):

Critical Value(s) (2 mark):

Decision (1 mark):

Managerial Conclusion (1 marks):

4. Chicken Delight claims that 90% of its orders are delivered within 10 minutes of the time the order is placed. A sample of 100 orders revealed that 82 were delivered within the promised time. At the 0.10 significance level, can we conclude that less than 90% of the orders are delivered in less than 10 minutes?

Hypotheses (2 marks):

H_0: Vs H_1:

Assumption(s) (2 mark):

Test Statistic (2 marks):

Decision Rule (1 mark):

Critical Value(s) (2 mark):

Decision (1 mark):

Managerial Conclusion (2 marks):

5. A study was conducted on the use of cell phones for accessing news. The study reported that 47% of users under age 50 and 40% of users age 50 and over accessed news on their cell phones. Suppose that the survey consisted of 1,000 users under age 50, of whom 470 accessed news on their cell phones, and 700 users age 50 and over, of whom 280 accessed news on their cell phones. Is there evidence of a significant difference in the proportion of users under age 50 and users 50 years and older that accessed the news on their cell phones? (Use $\alpha = 0.05$)

Hypotheses (2 marks):

H_0: Vs **H_1:**

Assumption(s) (2 mark):

Test Statistic (5 marks):

P-value(2 mark)**:**

Decision(1 mark):

Managerial Conclusion (2 marks):