KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS AND STATISTICS
Term 122

STAT 212: BUSINESS STATISITICS II

First Major Exam   Sunday March 17, 2013

Please check/circle your instructor's name

□ Al-Sabah   □ Saleh   .

Name: _____ ID #: _____ Section# _____

☺Important Note:
 Show all your work including formulas, intermediate steps and final answer.
You may assume α = 0.05 for testing if not otherwise stated.

Question No	Full Marks	Marks Obtained
1	11	
2	10	
3	29	
4	20	
Total	70	

1) A car insurance company found that the average amount it was paying to its customers in 2010 was $435 with standard deviation of $141. The first six payments, in $, in 2011 were

$$548 \quad 209 \quad 534 \quad 198 \quad 789 \quad 633$$

Has there been a significant change in the variability of payments in 2011 as compared to 2010? State clearly all necessary assumptions. (*11 points*)

2) A random sample of size 30 coffee drinkers were each asked to taste a new brand of coffee. The responses are listed below with L: representing "like", and D: representing "dislike".

L	D	L	L	D	L	L	D	L	D
L	L	L	D	L	D	L	L	D	L
D	L	D	L	D	L	D	D	L	L

Do these data support the claim that more than half of all coffee drinkers like this new brand of coffee? State clearly all necessary assumptions. (*10 points*)

3) The owner of a gasoline station **A** wants to study gasoline purchasing habits by all motorists at his station. He decides to focus on two variables:

- The amount of gasoline purchased by motorists.
- Whether the motorists purchased premium – grade gasoline or not.

The results from a sample of 28 motorists during a certain week are as follows:

- Amount purchased: the mean = 8.9 gallons and the standard deviation = 2.40 gallons
- 14 motorists purchased premium – grade gasoline.

a) Is there evidence that the population mean purchase was different from 10 gallons? State clearly all necessary assumptions. (*10 points*)

The owner of a competing a gasoline station **B** wants to conduct a similar survey in his a gasoline station. He decides to sample 60 motorists and the results are

Amount purchased: the mean = 11.3 gallons and the standard deviation = 3.10 gallons

24 motorists purchased premium – grade gasoline.

b) Do you think that there is a difference between the percentages of the motorists who purchased premium – grade gasoline in the two stations? Test using the p – value approach. State clearly all necessary assumptions   (*10 points*)

c) Do you think that there is a difference in the variability of the amount purchased in both gasoline stations? State clearly all necessary assumptions   (*9 points*)

4) A study taken in 1995 reported that 24% of the respondents paid for a specific type of purchase with a credit card, whereas a similar study in 2005 indicated that 32% paid for it with credit card. Suppose that a new survey taken in 2010 indicated that 27% paid with credit. Suppose that each of the three studies used sample of size 400.

   a) (*10 points*) Is there evidence of a significant difference between the years in the proportion of respondents who paid for a specific type of purchase with a credit card?

   b) (*10 points*) If appropriate, use the Marascuilo procedure to determine which years are different.