Prince Sultan University
First Major Examination
First Semester 2014/2015, Term 141

First Name: _____

Last Name: _____

ID Number: _____

Time Allowed: 90 minutes

Question	Max points	Student's Points
1	6	
2	9	
3	9	
4	4	
5	6	
6	6	
Total	40	

Important Instructions:

1. You may use CASIO scientific calculator that does not have programming or graphing capabilities.

2. You may NOT borrow a calculator from anyone.

3. Mobile phones, notes and notebooks are not allowed.

4. You must fully explain all of your answers.

5. You may use the back of the pages for extra space, but be sure to indicate which question you are answering.

6. This examination consists of 6 questions and 5 pages including this one.

Q1. 6pts) Find the values for each.

*a.**2pts**)* $t_{\alpha/2}$ and *n* = 22 for the 99% confidence interval for the mean

*b. **2pts**)* $t_{\alpha/2}$ and *n* =19 for the 95% confidence interval for the mean

*c. **2pts**)* $t_{\alpha/2}$ and *n* =8 for the 98% confidence interval for the mean

Q2. 9pts) The average cost of owning and operating an automobile is $6233 per 10,000 miles including fixed and variable costs. A random survey of 40 automobile owners revealed a sample mean cost $\bar{x}$ = $6550. Assume a population standard deviation σ =$660.

a. **5pts**) Is there sufficient evidence to conclude that the mean cost is greater than $6233? Use α = 0.01.

b. **4pts**) Find the 99% confidence interval of the mean cost.

Q3. **9Pts**) The mean family size was reported as 3.18. A random sample of 30 families in a particular school district has a sample mean $\bar{x}$ = 3.79 and a sample standard deviation s= 1.42.

a. **5pts**) Is there sufficient evidence to conclude that the mean family size differs from 3.18 ? Use a α = 0.05.

b. **4pts**) Find the 95% confidence interval of the mean family size

Q4. 4 Pts) A survey of 940 respondents found that 278 students paid for their education by student loans. Find the 95% confidence of the true proportion of students who paid for their education by student loans.

Q. 6pts)
Using the *z* table (Table E), find the critical value (or values) for each.

*a.**2pts**)* α = 0.04, two-tailed test

c. **2pts**) α = 0.05, left-tailed test

d. ***2pts**)* α = 0.01, right-tailed test

Q6. 6pts)
Using the t table (Table F), find the critical value (or values) for each.

a. ***2pts)*** α = 0.05, two-tailed test , n=12

b. ***2pts)*** α = 0.01, left-tailed test , n=9

c. ***2pts)*** α = 0.005, right-tailed test , n=23