



Prince Sultan University
STAT 271
First Examination
First Semester 2011/2012, Term 111
Wednesday, 12th October 2011
Dr. Bahaa El-din Abdalla

Time Allowed: 90 minutes

Maximum points: 40 points

Name: _____ **ID Number:** _____
(First) (Middle) (Last)

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. You do NOT get special consideration if you forget your calculator.
4. Don't use notes or any notebook.
5. There should be NO talking during the examination.
6. Your exam will be taken immediately without any warning if your mobile is seen or heard.
7. You must show all your work beside the problem. Be organized.
8. You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.
9. This examination has **9** problems, some with several parts. Make sure that your paper has all these problems.

Problem	Max points	Student's Points
1,2,3,4	16	
5,6,7	12	
8,9	12	
Total	40	

Q1 (4 points) Find the critical value(s) in each case.

1. z test, $\alpha = 0.08$, two-tailed test.
2. t test, $\alpha = 0.025$, $n = 19$, left-tailed

Q2 (4 points) Determine the P -value in each case.

1. $t = -2.145$, $n = 15$, two-tailed
2. $z = 1.51$, two-tailed

Q3 (6 points)

1. Find $Z_{\alpha/2}$ for the 88% confidence interval.
2. Find $t_{\alpha/2}$ for the 98% confidence interval when the sample size is 40.
3. Find χ^2_{left} for $\alpha = 0.05$, $n = 27$.

Q4 (2 points) A study of 30 golfers showed that their average score on a particular course was 92. The standard deviation of the population is 9. Find the best point estimate of the mean.

Q5 (4 points) If the variance of a national accounting examination is 900, how large a sample is needed to estimate the true mean score within 5 points with 99% confidence?

Q6 (4 points) A survey found that out of 200 workers, 168 said they were interrupted three or more times an hour by phone messages, faxes, etc. Find the 90% confidence interval of the population proportion of workers who are interrupted three or more times an hour.

Q7 (4 points) Find the 90% confidence interval for the variance and standard deviation for the lifetimes of inexpensive wristwatches if a sample of 24 watches has a standard deviation of 4.8 months. Assume the variable is normally distributed.

Q8 (6 points) A special cable has a breaking strength of 800 pounds. The standard deviation of the population is 12 pounds. A researcher selects a sample of 20 cables and finds that the average breaking strength is 793 pounds. At $\alpha = 0.01$, can he reject the claim that the breaking strength is 800 pounds? Use the P -value method.

Q9 (6 points) A recent survey found that 68.6% of the population own their homes. In a random sample of 150 heads of households, 92 responded that they owned their homes. At $\alpha = 0.01$ does that suggest a difference from the national proportion? Use the traditional method.

Q10 (4 points extra) In a study, 67% of 1055 adults said that they believe members of a certain political party favor the rich. If the margin of error was 2 percentage points, what was the confidence level used for the proportion? Round the confidence level to the nearest percent.