Department of Mathematics and Statistics KFUPM
STAT 319-05 Quiz#4, Time: 40 mins

Instructor's Name: (Abbas)

Student's Name: _____ ID: _____ Section#: 05

Two suppliers manufacture a plastic gear used in a laser printer. The impact strength of these gears measured in foot-pounds is an important characteristic. A random sample of 10 gears from supplier 1 results in $\bar{x}_1 = 321$ and $s_1 = 22$, while another random sample of 16 gears from the second supplier results in $\bar{x}_2 = 290$ and $s_2 = 12$.

1) Use the critical region approach to test that the average impact strength of gears by supplier2 is greater than 300.

2) Construct a 99% confidence interval for the mean impact strength of gears by supplier1. Using this confidence interval, test the hypothesis that the mean impact strength of gears by supplier1 is equal to 350. What is the value of α you used?

3) Provide the point estimate for the difference between mean impact strength of gears by the two suppliers.

4) What is standard error for the difference between mean impact strength of gears by the two suppliers?

5) What is pooled estimate of standard deviation?

6) Test that there is no difference between mean impact strength of gears by the two suppliers, using

   a. Critical region (table value) approach

   b. P-value approach

c. Confidence interval approach

7) What assumptions did you make while solving part (6)?