Department of Mathematics and Statistics KFUPM STAT 319-02 Quiz#4, Time: 50 mins

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Q.No1:-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 $s_2 = 12$.

i. Construct a 99% confidence interval for the mean impact strength of gears by supplier1. Also write down the assumptions you made.

- ii. Provide the point estimate for the difference between mean impact strength of gears by the two suppliers.
- iii. What is standard error for the difference between mean impact strength of gears by the two suppliers?

iv. What is pooled estimate of standard deviation?

v. Construct a 99% confidence interval for the difference between mean impact strength of gears by the two suppliers

vi. What assumptions did you make while solving part (v)?

Q.No.2:- An automobile parts distributer found 34 packages containing defective brake linings in a sample of 200 taken at random from a shipment containing 1000 packages. From another shipment of 1000 packages, he selected a random sample of 250 packages and found 31 packages containing defective brake linings. Construct a 98.5% confidence interval for the difference between proportions of packages containing defective brake lining brake