STAT-319-Term 162-Sec.06
Quiz #5

Name: **ID**

Q 1. An electrical firm manufactures light bulbs that have a length of life that is normally distributed. If a sample of 20 bulbs has an average life of 780 hours, and a standard deviation of 38.75 hours.

1. Form a 95% confidence interval estimate for the true average of all bulbs produced by this firm.

2. Depend on your conclusion above, is there any evidence to conclude that the average length of life is different from 770 hours?

Q 2. A machine in a certain factory must be repaired it produces more than 10% defectives among the large lot of products in a day. A random sample of 100 items from the day's production contains 10 defectives, and the supervisor says that the machine must be repaired. Using the *p-value approach*, Dose the sample support his decision at 0.01 level of significance.

Q 3: A textile fiber manufacturer is investigating a new drapery yarn, which the company claims has a mean thread elongation of 12 kg with a standard deviation of 1.5 kg. The company wishes to test the hypothesis $H_0: \mu = 12$ against $H_1: \mu < 12$ using a random sample of four specimens.

a. What is the type I error probability if the critical region is defined as $\bar{x} < 11.5$ kg.

b. Find β for the case in which the true mean elongation is 11.35