King Fahd University of Petroleum & Minerals
Department of Mathematics & Statistics
STAT-319-Term173
Quiz #5-01/08/2018

Name: *ID:* *Serial:*

Q1: A quality control engineer is interested in the mean length of sheet insulation being cut automatically by machine. The desired length of the insulation is 12 feet. A sample of 20 cut sheets yields a mean length of 12.14 feet with standard deviation in cutting length is 0.15 feet.

a. Obtain and interpret a 99% confidence interval for the mean length cut by machine.
b. Using the confidence interval, can we say the machine is working properly? Why?
c. Do you need any assumptions? If yes, what, if no, why?

Q2: A pelletizing process is said to be in control if the mean crushing strength is 250 kilograms. It is known that the crushing strength measurements are normally distributed with standard deviation of 40 kilograms. A random sample of size 10 are taken from this process and the process is said to be "out of control" if the sample mean is less than 230 kilograms

a. Find the probability that, if the process under control, a randomly selected sample will indicate that it is not under control.
b. Using the p-value approach, at 3% level of significant, can you say that the process is in control?