**Assignment-9 (Hypothesis Testing)**

**EXERCISE 1.**The hourly wages in a particular industry are normally distributed with mean $13.20 and standard deviation $2.50. A company in this industry employs 40 workers, paying them an average of $12.20 per hour. Can this company be accused of paying substandard wages? Use an α = .01 level test.

Null hypothesis: H0: µ0 = $13.20

Alternative hypothesis: Ha : µ0 < $13.20

wage\_bar = $ 12.20

P(-2.53) = 0.0057 which is a smaller value than the significance level - α (0.01)

**So, the null hypothesis is rejected.**

**EXERCISE 2.**Shear strength measurements derived from unconfined compression tests for two types of soils gave the results shown in the following document (measurements in tons per square foot). Do the soils appear to differ with respect to average shear strength, at the 1% significance level?

significance level, α = 0.01

Null hypothesis: H0: µ1 = µ2

Alternative hypothesis: Ha : µ1 ≠ µ2

Soil1\_avg = 1.6918 Soil2\_avg = 1.4171

=5.194

z = 5.194 – this is a highly unlikely result. This means, P is almost zero, which makes it smaller than significance level. **So, the null hypothesis is rejected.**