STAT 614 CHAPTER 6 **CLASSWORK**

Tests of Significance (Hypothesis Testing)

**1**) The “fun size” of a Snickers bar is supposed to weigh 20 grams. Because the penalty for selling candy bars under their advertised weight is severe, the manufacturer calibrates the machine so that the mean weight is 20.1 grams. The quality-control engineer at M&M – Mars, the Snickers manufacturer, is concerned about the calibration. He obtains a random sample of 11 candy bars, weights them, and obtains the data given below:

19.6 20.66 19.56 19.98 20.65 19.61 20.55 20.36 21.02 21.50 19.74

The engineer conducts the one-sample t test at the α = 0.01 level of significance

The engineer is trying to determine if the machine delivers a weight of 20.1 or not.

*Assume that the standard conditions for executing a t test are satisfied*

a) State the appropriate null hypothesis and alternative hypothesis

b) Show and use R code to create a vector for the data set.

c) Show and use R code to run the one sample t test.

d) What is the t statistic, the p value, and the 95% confidence interval

e) Should the null hypothesis be rejected? Why or Why not?

**2**) Use and show R code to execute a significance test for proportions for each case. Identify the p value and determine if you should reject or fail to reject the null hypothesis

a) Ho : π = .6 vs Ho : π < .6 , n = 250 , x = 124 , α = .01

b) Ho : π = .45 vs Ho : π > .45 , n = 68 , x = 30 , α = .05

c) Ho : π = .9 vs Ho : π ≠ .p , n = 500 , x = 440 , α = .05

**3**) True or False

A Type One Error is committed when the null hypothesis is rejected when it is in fact true.

(Use your book or google)