**Statistics for Psychology - PSYCH-UH 1004Q**

**Homework #9**

(The homework assignments will never require you to use R unless the problem explicitly says “use this R code”. For other problems, can use R if you find it useful, they should be completed easily by hand.)

1. a. Imagine that you designed an experiment with 4 conditions. How many pairwise comparisons are there in your design? (1 point)

b. Imagine that you will test all of the pairwise comparisons in this design. What is the probability that your experiment will contain at least one type I error if you set the alpha criterion to .05 and you do not perform any corrections? (2 points)

c. Now imagine that you decide to use the Dunn correction (a.k.a. Bonferroni correction) to control the experiment-wise error rate. You decide that you want to hold the experiment-wise error rate to .05. What should you set your alpha criterion to? (2 points)

d. Here are 3 of the *p*-values that you obtain from your pairwise comparisons: .0063, .0415, .0123 (this is not all of the *p*-values, that would give away the answer above!). Based on the alpha criterion that you calculated in (c), which of these *p*-values would be statistically significant? (3 points)

2. a. Imagine that you designed an experiment with 5 conditions. How many pairwise comparisons are there in your design? (1 point)

b. Imagine that you will test all of the pairwise comparisons in this design. What is the probability that your experiment will contain at least one type I error if you set the alpha criterion to .05 and you do not perform any corrections? (2 points)

c. Now imagine that you decide to use the Dunn correction (a.k.a. Bonferroni correction) to control the experiment-wise error rate. You decide that you want to hold the experiment-wise error rate to .05. What should you set your alpha criterion to? (2 points)

d. Here are 3 of the *p*-values that you obtain from your pairwise comparisons: .0081, .0045, .0112 (this is not all of the *p*-values, that would give away the answer above!). Based on the alpha criterion that you calculated in (c), which of these *p*-values would be statistically significant? (3 points)