1. Consider an experiment with 4 groups and 10 observations per group, calculate the following CVs:

1.1 Find Bonferroni's CV for a family of 7 two-sided t tests, for a family of 8 two-sided t tests, for a family of 9 two-sided t tests, and for a family of 10 two-sided t tests. Show the calculation of df and the α' levels. For accuracy, if you use the online calculator, retain at least five digits after the decimal for upper Q tail probability as input.

1.2 What is Scheffe's CV for two-sided t tests?

1.3 Compare to the Scheffe CV to the Bonferroni CVs. For how many pre-planned comparisons should you use Bonferroni method and for how many should you use Scheffe?

2. Consider the following contrasts in an experiments with four groups and $n = 15$: $\mu_1 - \mu_2$, $\mu_2 - \mu_3$, $\mu_3 - \mu_4$ and $\mu_1 - \mu_4$. Consider only the following methods in this problem: Bonferroni, Holm, HSD, LSD, Fisher-Hayter, SNK, REGWQ, Dunnett and Scheffé.

2.1. Suppose you are interested in whether these comparisons are significant in two-sided tests. Among the listed methods, which are applicable? Why are the remaining methods not applicable? Among the applicable methods, which can be eliminated without calculating CV? Explain your answers.

2.2. If you would like to build simultaneous CIs for the four contrasts. Among the listed methods, which are applicable? Why are the remaining methods not applicable? Among the applicable methods, which can be eliminated without calculating CV? Explain your answer. For the ultimate candidates, calculate their critical values (FWER controlled at 0.05) and decide which one should be used.