Data Analysis 5D (final exercise)   Date __09/02/2020_____

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1. When or where are non-parametric tests for two samples used? __**Where we have ordinal data or interval level data from populations which are not normally distributed**____(124)
2. For non-parametric tests, what type of central tendency values are more appropriate to use for your summary statistics? __**Median values**_____ (124)
3. In non-parametric testing, which test is used for analysis of independent samples? __**Mann-Whitney U test**_____ (124)
4. What does the Wilcoxon signed test use for its analysis? __**It uses information on the direction of differences between data in pairs, and by ranking the data.**_____(124)
5. Regarding ranking data, when two or more values are the same in the list to be ranked, what value is given within the list? __**Each value is given the mean of the ranks they occupy.**___ (129)
6. When using the Mann-Whitney U non-parametric test for independent data, what restrictions if any are required for sample sizes? __**The test may be conducted with unequal or equal sample sizes.**___ (130)
7. For analysis of variance (ANOVA), what differentiates it from other tests relative to how we design an experiment? __**We design an experiment with multiple comparisons because there are several treatments or conditions that we want to compare with a control.**___ (135)
8. At what stage of designing an experiment where a number of different treatments are applied, should an appropriate statistical test be considered? __**The planning stage**_____ (135)
9. When we state that we have set the level of significance for our test at 5 percent, what does this mean regarding the probability of an event occurring? __**This means that we accept the probability of an event occurring by chance alone is 5% or less.**_____ (136)
10. What happens when a type II error occurs as a result of our concentrating only on avoiding a type I error (incorrectly reject H_0)? __**A significant difference may be missed.**
11. For what type of comparisons is one-way analysis of variance applied? __**One-factor comparisons**___ (137)
12. What type of test would we need to use to compare differences in variables when we have multiple comparisons to make and we do not want to make a Type I error? __**A multiple range test**__ (139)
13. What are the names for three different types of multiple range tests? __**Tukey, Scheffe, and Least significant difference (LSD)**__ (139)
14. What situation must exist regarding number of samples per treatment for a least significant difference (LSD) test to be applied? __**There must be an equal number of samples in each treatment**___ (139)
15. What is the first step done when conducting a multiple range test- LSD means test? __**Calculate the standard error of the samples in each treatment**___ (140)
16. What do we examine when using two-way analysis of variance with replication? __**The effects of two treatments with replication in each treatment**_____(142)

17. How would a null hypothesis be stated when two treatments are being investigated? __ **The null hypothesis would be stated that there will be not be any significant difference in either of the two treatments used.** (143)
18. For a two-way analysis of variance, what statement indicates alternative hypotheses? **There are two alternatives that can be considered. Either one or both may be found to be true if the test demonstrates a significant difference.**
19. With reference to as two-way analysis of variance without replication, what is meant by a block? **A block is a set of data that has been grouped by an experiment to allow little variation within the block before being randomized to treatments.** (146)
20. When is a Chi-squared (x^2) test used? **Wen data from one or more samples has been placed into categories** (148)
21. What do we usually want to know as the basis for the Chi-squared test? **WE want to know if there is a difference between observations that have been recorded and sorted into dfferent categories.** (148)
22. For Goodness if fit testing of genetics experiments, for what purpose is the Chi-squared test considered invaluable? **When determining if the outcome of a breeding experiment is in keeping with predicted Mendelian ratios.** (151)