1. Test for whether a sample mean is significantly different from zero.
2. Test whether two sample means are significantly different?
3. What is the difference between the z-statistic and the Student-t statistic?
4. Test for difference in variance.
5. What are the five steps in statistical testing of hypotheses?
6. What is a non-parametric, or distribution-free statistical test?
7. Explain the difference between a priori and a posteriori statistical significance testing?
8. Give an example, not from the notes, of making an error by using a priori statistics.
9. Give an example of modifying or elaborating the hypothesis and explain why it is wrong.
10. Make up an example of a compositing study, not from the notes.
11. What general criteria would you use in evaluating the validity of a compositing or superposed epoch analysis?
12. Explain how EOF analysis is like regression analysis. Explain how it is different.
13. Compute the significance limits on the true correlation coefficient, given a sample determination of it.
14. Explain why correlation between predictors can lead to instability of regression equations when applied to new data.
15. What does the correlation coefficient measure? What does it not measure?
16. What information does the Singular Value Decomposition of a matrix give?
17. Interpret the SVD of a specific matrix.
18. What is EOF/PC analysis?
19. Under what conditions is EOF analysis appropriate? Not appropriate?
20. What is the North, et al. Test on the eigenvalue spectrum, and what does it mean when it is passed?
21. How do you determine how many degrees of freedom that a data set has?
22. Why would you use PCs in a prediction scheme, rather than raw data?
23. Show the relationships between EOF analysis and SVD of a data matrix using matrix manipulations.
24. Use binomial probability distribution, or the normal approximation to it, to estimate the probability of complex events.
25. Use Bayes theorem to reverse a conditional probability.