First Exam

Write all answers in your blue book and show all work there. Return your exam and printout(s) in your blue book.

12 pts.
1) a) Prof X says that his sample is stratified. What does this mean?
   b) Write an equation that shows how the mean is calculated when you have a stratified random sample.
   c) What is the advantage of such sample?

20 pts.
2) Suppose that we have a trivially small population of (2,4,12).
   a) Find μ and σ.
   b) Are the data skewed? Why? Find SK.
   c) Show the sampling distribution when we take a sample of 2 without replacement.
   d) Find the EV of the mean and say if it appears to be unbiased.
   e) Use the sampling distribution to find the standard error of the mean and use this to confirm that our standard formula for this seems to work.

14 pts.
3) Mrs Y wants to estimate average income in her state and she wants to be 95% sure that her estimate is correct. She has a sample of 100 with a mean of 50000 and a standard deviation of 15. Use this information to give a point estimate. Are we 95% sure about this? Why? If not, give an estimate that we can be 95% sure about.

14 pts
4) Computer Problem. Use the NYSEStocks file in the Chapter 8 folder of the 2216 files to construct a 99% confidence interval for mean P/E Ratio. Use either Excel or SPSS and print your results with your name typed into it.

20 pts.
5) a) If \( \bar{x} = 500 \) is this convincing evidence that \( \mu < 600 \) if \( s = 300 \) and \( n = 25 \) and \( \alpha = .01 \). Show all steps to the test.
   b) What do you need to assume about the population for your part a procedures to be valid?
   b) If the real mean is 500, what is \( \beta \) for this test?

OVER
6 Mr. Z thinks that 30% of voters want him to run for office. A sample of 300 has 100 that feel this way. Based on this, would you say he’s right if $\alpha$ is .05. Show all steps to the test.

I have neither given nor received unfair aid on this test nor am I aware of anyone else who has. ________________________________