Statistics 13
Sample
Midterm II

Instructions: 1. WORK ALL PROBLEMS. Please, give details and explanations and SHOW ALL YOUR WORK so that partial credits can be given.
2. You may use two pages of notes, tables and a calculator but no other reference materials.

Points
1. The average cholesterol content of a certain brand of egg is 210 milligrams, and the standard deviation is 35 milligram. A random sample of 100 eggs is selected.
   a. What is the sampling distribution of the sample mean?
   b. Find the probability that the mean of the sample will be larger than 216.
   c. Find the 95th percentile of the sample mean.

(35)

2. The following data represent the amount of time spent by seven randomly selected students to complete a computer programming task. Find a 99% confidence interval for the average time it takes a student to complete this programming task.

   12, 15, 11, 18, 20, 17, 21

   What is the meaning of this confidence interval?

(30)

3. The lead content of measurements taken at six Napa Valley wineries are:

   0.08, 0.22, 0.34, 0.31, 0.39, 0.25

   The recommended maximum level of lead set by the state is 0.20 mg/liter. Can we conclude that the wineries, on the average, exceed the state limit?

   a. State the null and alternative hypotheses.
   b. Test at 0.01 level of significance.
   c. Find the p-value.

(35)