Be sure to show your work on the essay-style questions. Numerical answers should be stated to at least three decimal places.

**1.** The following data show samples of three chain stores in three different locations in one town and the amount of dollars spent per customer per visit.  Management wishes to test whether each shopper is spending an equal amount of money at each store.    
Store A           Store B           Store C  
14                26                9  
48                32                13  
36                34                8  
31                8                 22  
42                37                14  
43                16  
   
Perform a one-way analysis of variance on these data, assuming ^a = 0.05:  
State the null and alternate hypotheses  
Calculate the sums of squares SS(total), SS(factor), and SS(error)  
Calculate the degrees of freedom df(total), df(factor), and df(error)  
Calculate the mean square for factor, and the mean square for error  
Calculate the F-statistic, Determine the critical value(s)  
State your decision: Should the null hypothesis be rejected?

2.  A corporate CEO reviews the earnings of three divisions over the last eighteen months.  Each division reports its earnings quarterly.  Based on the earnings below, is there sufficient evidence to conclude, at the 99% level of confidence, that one of these divisions is more profitable than the others?      
Division I        Division II       Division III  
45                4                 18  
17                40                25  
32                3                 22  
53                16                12  
10                39                26  
60                22                1  
   
State the null and alternate hypotheses  
Calculate the sums of squares SS(total), SS(factor), and SS(error)  
Calculate the degrees of freedom df(total), df(factor), and df(error)  
Calculate the mean square for factor, and the mean square for error  
Calculate the F-statistic  
Determine the critical value(s)  
State your decision: Should the null hypothesis be rejected?

**3.** In a one-way ANOVA, there are three treatments with n1  
= 10, n2 = 7 and n3 = 9. The rejection region for this test at the 97.5% level of significance is:   
       39.4   
       39.5   
       4.29   
       4.35