Name _____________________________

ORGANIC CHEMISTRY CH 351-03 (Wilson)
Exam #2
October 7, 2004

Problem 1 _______ (24)
Problem 2 _______ (26)
Problem 3 _______ (26)
Problem 4 _______ (24)
E. C. _______ (4)

TOTAL _______ (100)

“Children’s talent to endure stems from their ignorance of alternatives.” —Maya Angelou, poet
1. Given the structure of Keflex, an antibiotic, answer the questions below.

a. How many stereocenters are present in this compound? (2 pts) How many possible stereoisomers could there be? (2 pts)

b. On the drawing above, label each stereocenter R or S. (10 pts)

c. Draw the enantiomer of Keflex. (5 pts)

d. Draw a diastereomer of Keflex. (5 pts)
2. Give the product or products of the next two reactions. (6 pts each)

a. \[
\begin{array}{c}
\text{H}_3\text{O}^{\oplus} \\
\downarrow \\
\text{H}_2\text{O} \\
\end{array}
\]

b. \[
\begin{array}{c}
\text{2 H-I} \\
\downarrow \\
\text{H}_2\text{O} \\
\end{array}
\]

c. Choose only ONE of the reactions above and give a complete arrow pushing mechanism to account for the product or products you have shown. (12 pts)

3. For the following problem consider cis-1-n-butyl-3-methylcyclohexane.

a. Draw the compound as a “flat” representation. (4 pts)
b. Draw both chair conformations of this compound. (10 pts)

c. Circle the most stable (lowest energy) conformation in your drawing above. (4 pts)

d. Draw a Newman projection of either chair conformation. Be sure to choose a perspective that gives maximum information in order to receive maximum points. (8 pts)

(24) 4. Identify the relationship between six of the seven of the following pairs of compounds. You may choose from: same thing; different compound; resonance structures; constitutional/structural isomers; enantiomers; diastereomers; and geometric isomers. (4 pts each)

a. and bicyclo[4.3.2]undecane

b. and 8,8-dimethyl spiro[5.4]decane
c. and cis-1-bromo-4-methylcyclohexane

d. and

e. and

f. and

g. and

(4 pts) Extra Credit. Given the recall of Merck’s Vioxx this past week and the huge impact this is having on the pharmaceutical industry, name one other drug which advertises on television (1 pt). Name the company that manufactures the drug you have named (3 pts).