

CHEM 341 Test #2

Dr. Burns

10/26/15

120 points possible

Page # Points

2 17

3 17

4 ~~22~~ 23

5 10

6 25

7 28

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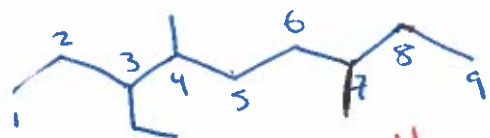
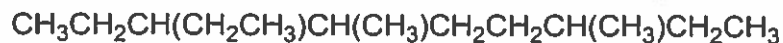
Total pts

KEY

Signature:

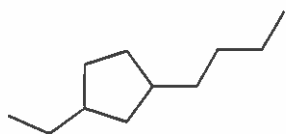
Printed Name:

1) Give the IUPAC name for the following compound. (4 pts)



3-ethyl-4,7-dimethylnonane
+1 +1 +1

2) Give the IUPAC name for the following compound. (4 pts)



1-butyl-3-ethylcyclopentane
+1 +1 +1

3) Draw the most stable conformer of 1-methyl-4-isopropylcyclohexane. (4 pts)



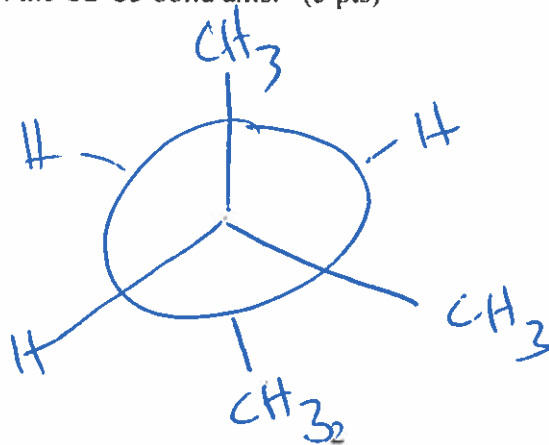
+4

or



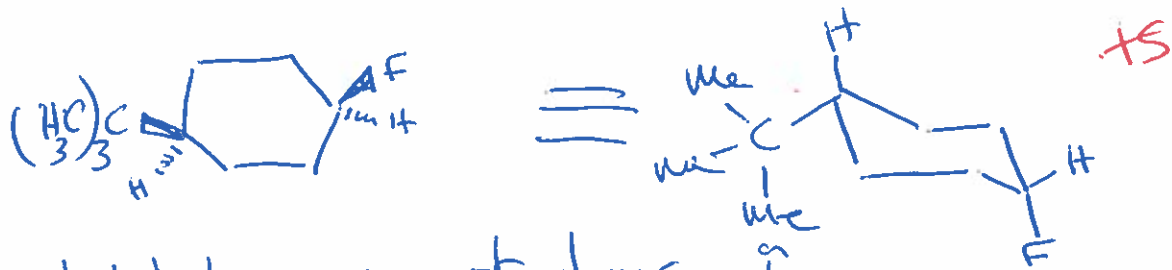
Both substituents in the equatorial position!!

4) Using a Newman Projection draw the most stable conformation of 2-methylbutane looking down the C2-C3 bond axis. (5 pts)



+5

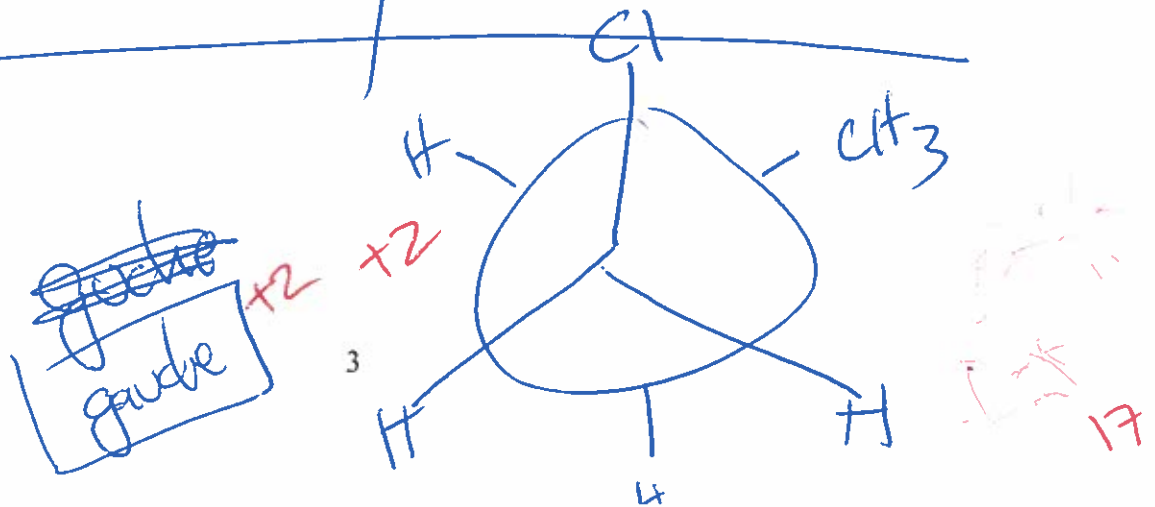
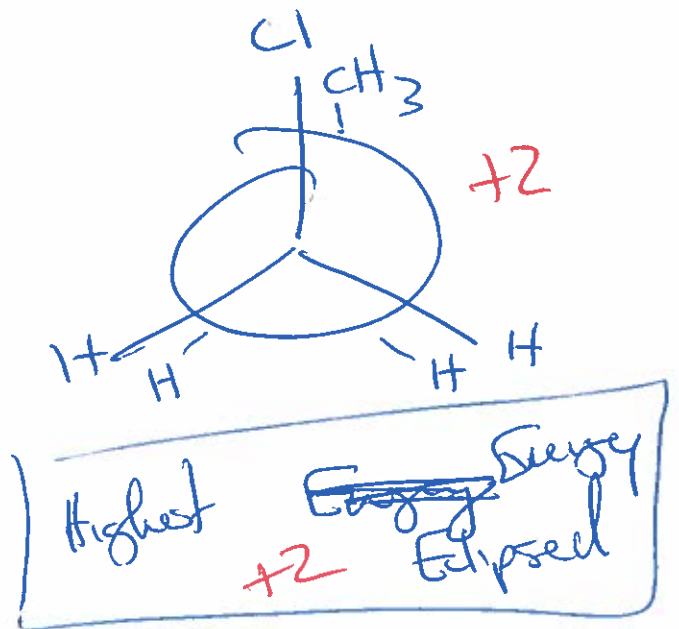
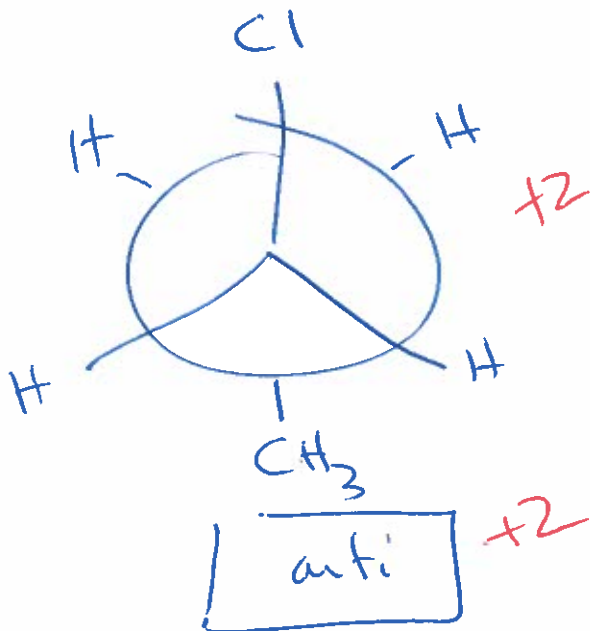
5) Draw the most stable conformer of cis-4-tert-butyl-1-fluorocyclohexane. (5 pts)



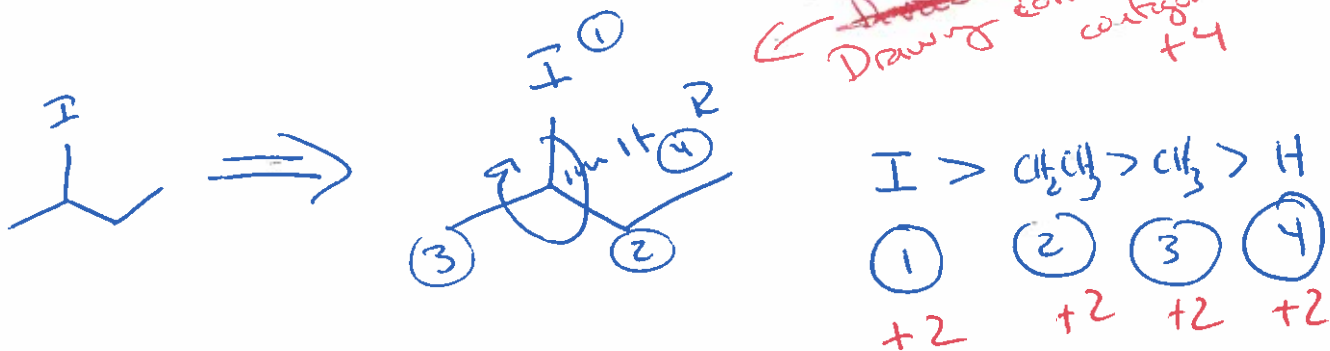
t-butyl group must always be equatorial so F is axial to keep cis conf.

6) Consider 1-chloropropane. Using Newman Projections draw and label the anti, highest energy eclipsed, and the gauche conformations of 1-chloropropane looking down the C1-C2 bond axis. (12 pts)

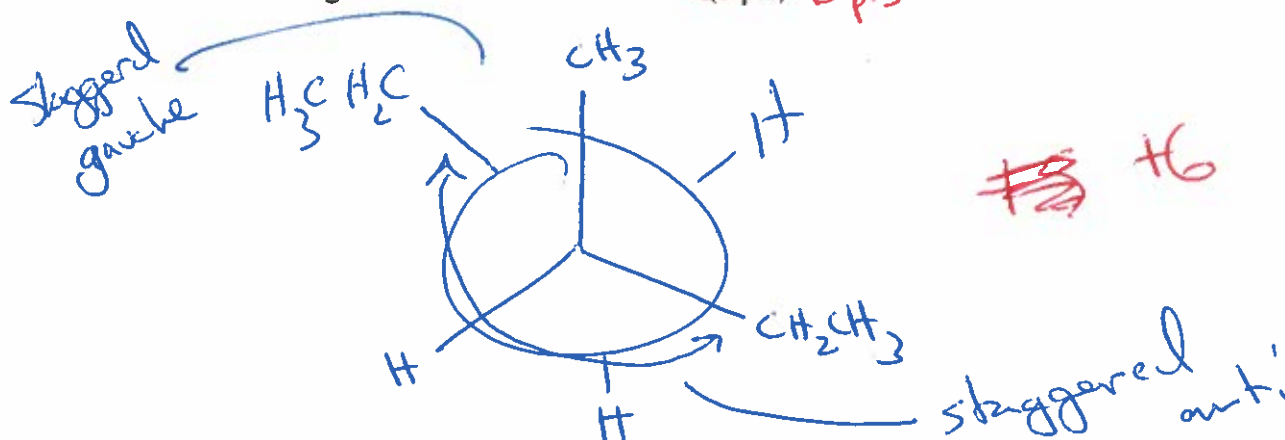
1-chloropropane



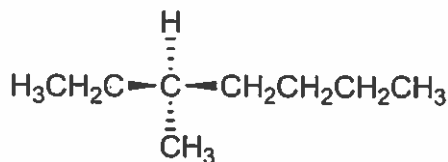
7) Draw the correct 3-dimensional structure for (2R)-2-iodobutane. Assign priorities and rank the four substituents attached to the chiral carbon. (12 pts)



8) Using a Newman Projection draw the most stable conformation of 3-methylhexane looking down the C3-C4 bond axis. ~~(5 pts)~~ 6 pts



9) Give the proper IUPAC name for the compound below. (5 pts)



+2 +1 +1 ~~+1~~ +1

5-3-methyl heptane

or

(3S)-3-methyl heptane

+2 +1 +1 +1

10) Label each stereogenic center as *R* or *S*. (6 pts)

(a)



(b)



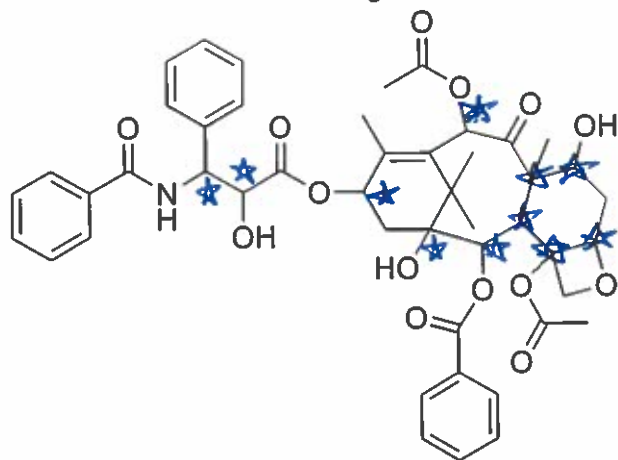
(c)



11) A meso compound is an achiral compound that contains stereogenic centers. Why is a meso compound achiral? (4 pts)

A meso compound has a plane of symmetry +4

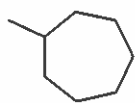
12) Taxol, an anticancer agent active against ovarian, breast, and some lung tumors, is drawn below. Label all the stereogenic centers in taxol with stars. (11 pts)



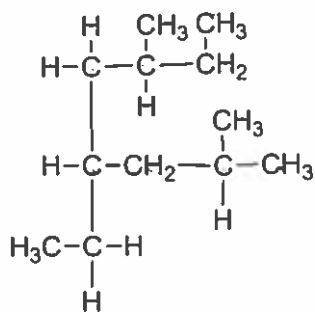
11 chiral centers

+1 for each identified

13) Give the proper IUPAC name for the two compounds below. (8 pts)

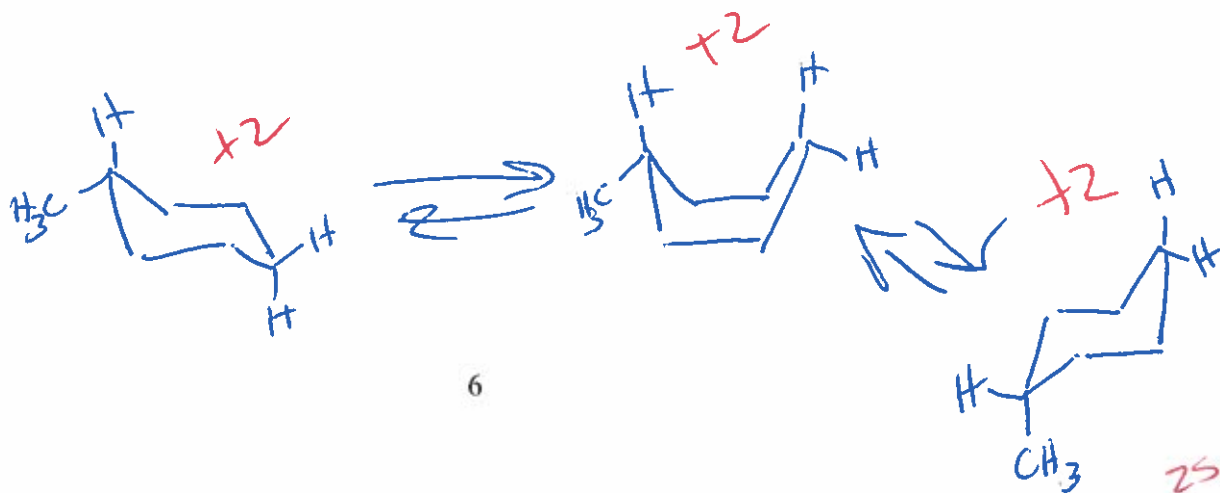


methylcycloheptane ~~7~~
+2 +2

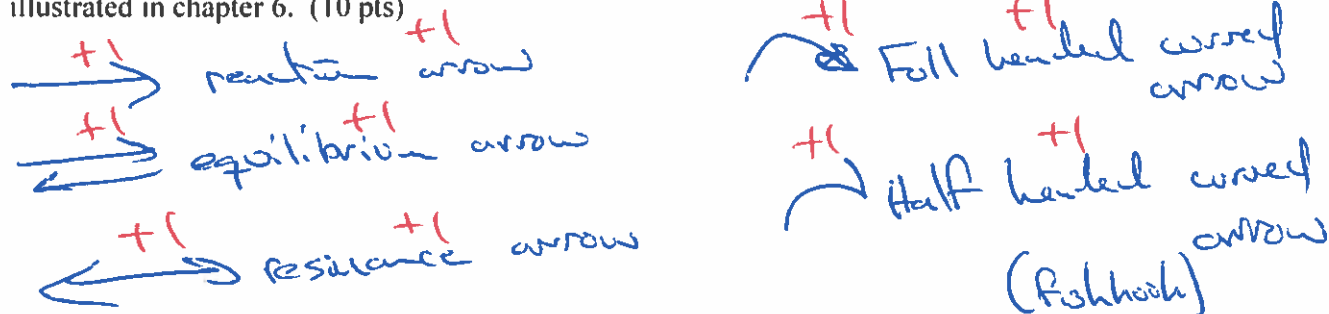


4-ethyl-2,6-dimethyloctane
+1 +1 +2

14) Draw both chair conformations as well as the boat conformation for methylcyclohexane. (6 pts)



15) Please draw and name the five arrow types used in chemical reactions that were illustrated in chapter 6. (10 pts)



16) List the 3 kinds of organic reactions discussed at the beginning of chapter 6. (6 pts)

Substitution +2
 Elimination +2
 Addition +2

17) Two types of bond cleavage were discussed in chapter 6. List them below. (6 pts)

$\overset{+3}{\text{Homolytic}} \rightleftharpoons \overset{+3}{\text{Heterolytic}} \text{ Cleavage}$

18) Draw and name the three reactive intermediates that result from bond cleavage of a C-Z bond that were discussed in chapter 6. (6 pts)

