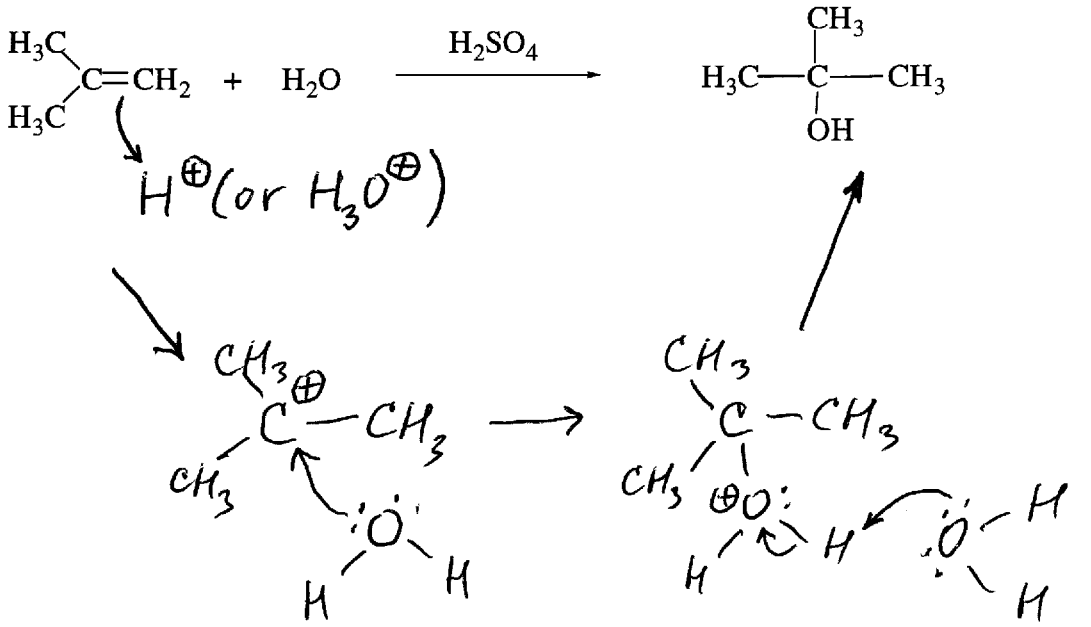
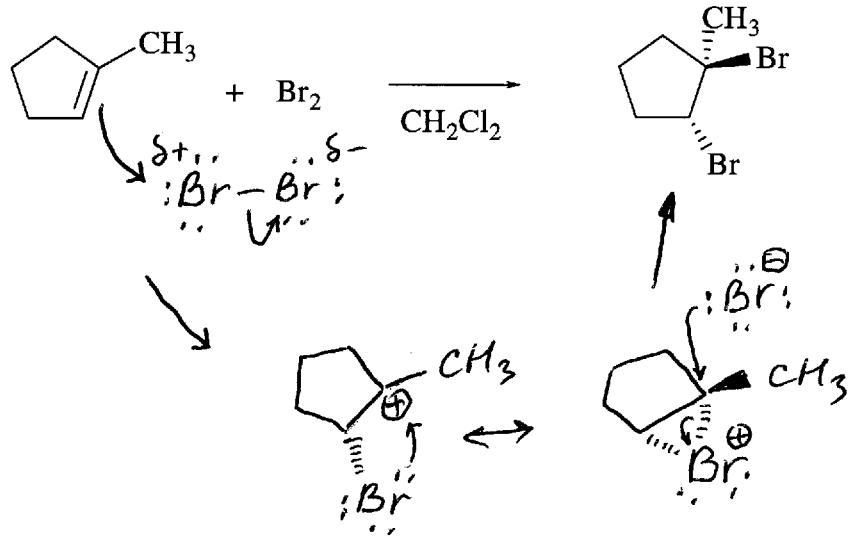
Chemistry 2521, Fall Semester 2001
Sample Midterm 2 Exam
Chapters 4, 5, 6 of Brown & Foote text

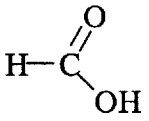
This exam has 5 problems on 4 pages. Make sure your copy is complete and correct.
Answer key is available in PDF format at: **www.d.umn.edu/~vzhdanki/2521/**

1. (22) Using **curved arrows** and showing the structure of the **intermediate**, write **mechanisms** that account for the products in the following reactions (11 pts each):

(a) 

(b) 

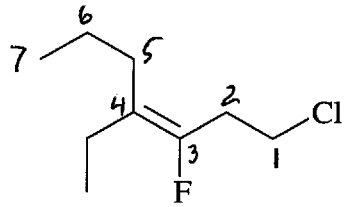
2. (9) Arrange the following compounds in order of decreasing acidity:

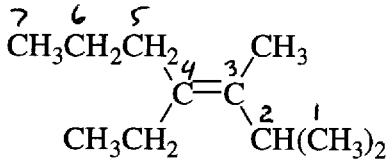
(1) $CH_3CH_2CH_3$ (2) CH_3CH_2OH (3) $CH_3CH_2NH_2$ (4) 

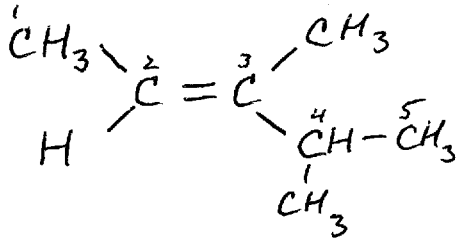
(4) > (2) > (3) > (1)

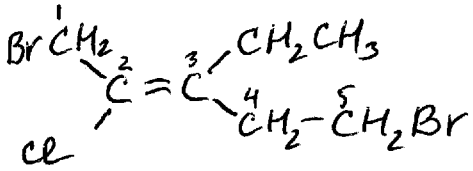
strongest Weakest

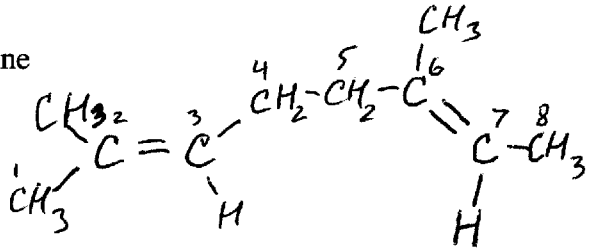
3. (18) Give either the **IUPAC name** (including *E, Z* designation) or the **correct structure** for each of the following compounds (3 pts each).

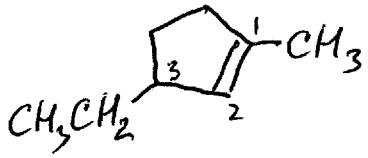
(a)  (E)-1-chloro-4-ethyl-3-fluoro-3-heptene

(b)  (E)-4-ethyl-2,3-dimethyl-3-heptene

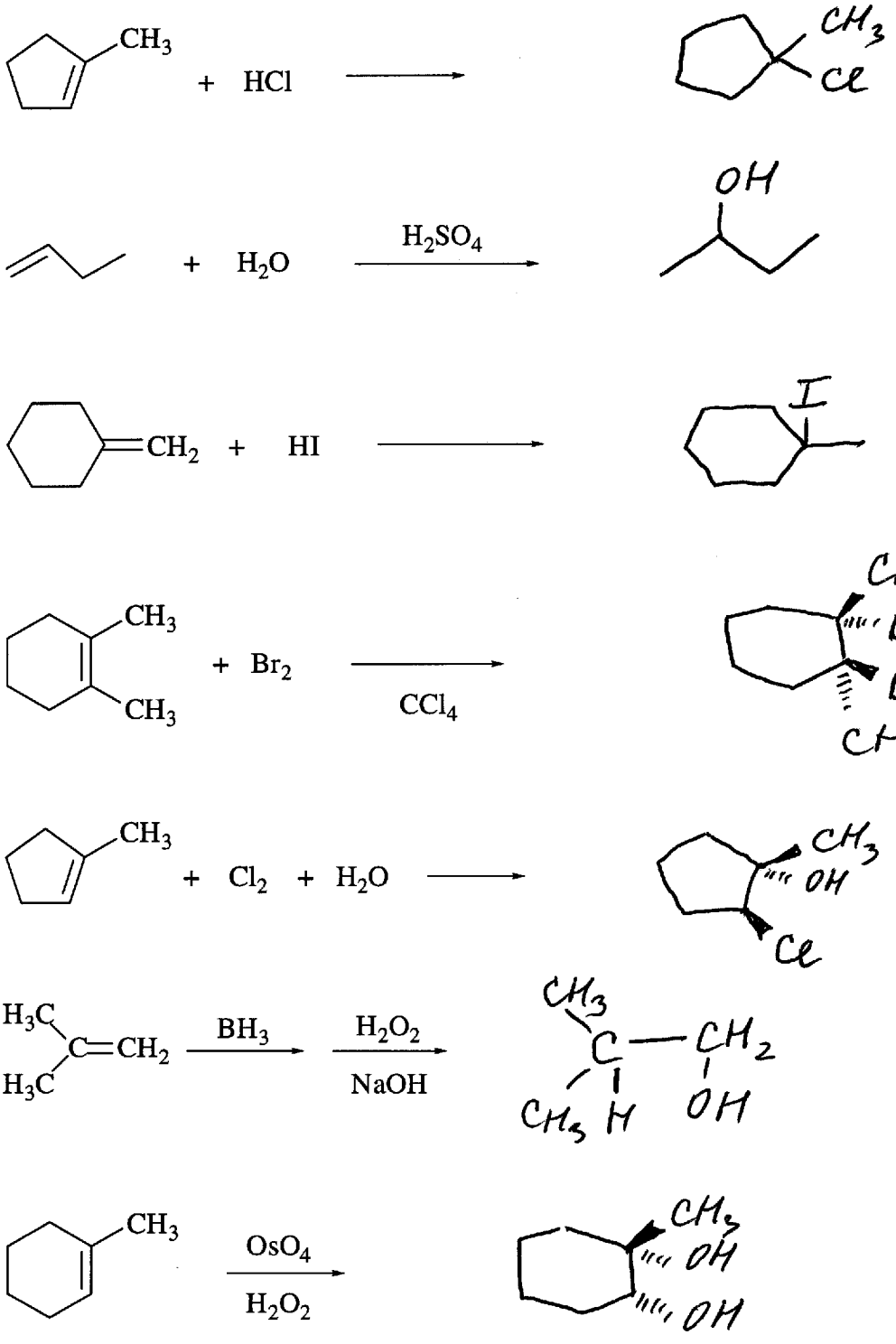
(c) *trans*-3,4-dimethyl-2-pentene 

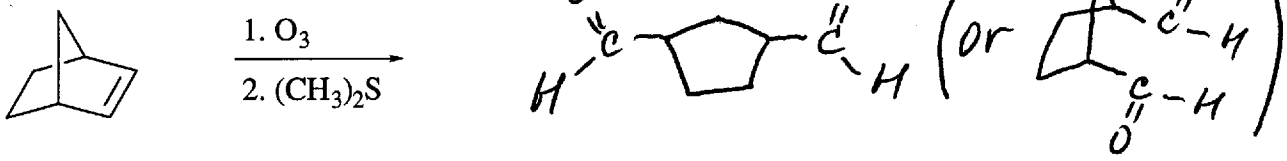
(d) (Z)-1,5-dibromo-2-chloro-3-ethyl-2-pentene 

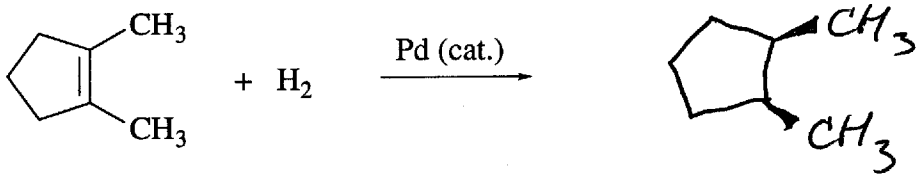
(e) (6*E*)-2,6-dimethyl-2,6-octadiene 

(f) 3-ethyl-1-methylcyclopentene 

4. (36; 4 pts each) Complete the following equations, showing the **stereochemistry** of the product when appropriate.

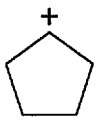
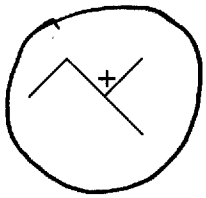
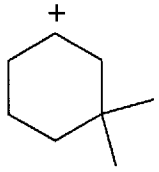






5. (15, 5 pts each) For each of the following questions (a)-(c) **circle** the item that is the correct answer.

(a) Which one of the following carbocations is the **most stable**?

$H_3C–CH_2^+$   H_3C^+ 

(b) Which one of the following compounds is the **strongest base**?

CH_3^- NH_2^- HO^- F^- Cl^- Br^- I^-

(c) Which one of the following alkenes is the **most stable?**

trans-2-pentene cyclopentene 1-methylcyclopentene *cis*-2-pentene

1,3-dimethylcyclopentene 1,2-dimethylcyclopentene