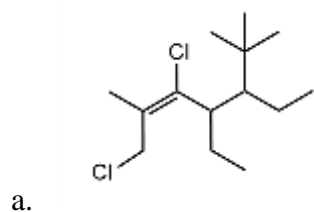
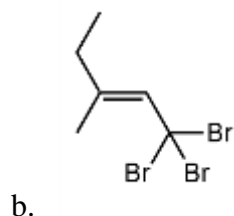


## Chem 236- Midterm 1

1. Provide the IUPAC name for the following compounds or convert the name into a structure (4 pts each)

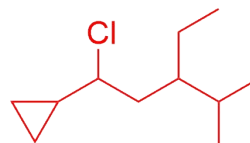


(E)-1,3-dichloro-4,5-diethyl-2,6,6-trimethylhept-2-ene

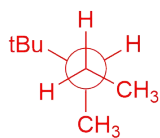
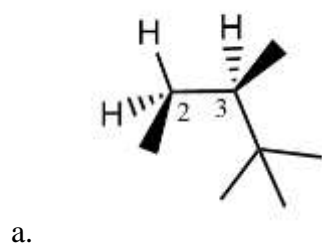


(E)-1,1,1-tribromo-3-methylpent-2-ene

- c. (1-chloro-3-ethyl-4-methylpentyl)cyclopropane

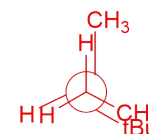


2. Draw Newman Projections of the lowest and highest energy conformation for each of the following molecules (look down the bond between carbons 2 and 3)



**Lowest**

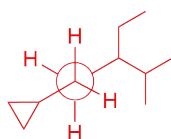
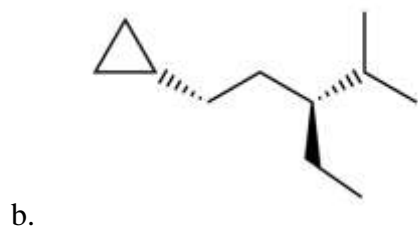
No gauche interaction with the larger tBu group



**Highest**

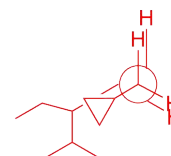
tBu and Me are eclipsed in this conformation

First name the molecule to identify which is C1 and C2 ((3-ethyl-4-methylpentyl)cyclopropane)



**Lowest**

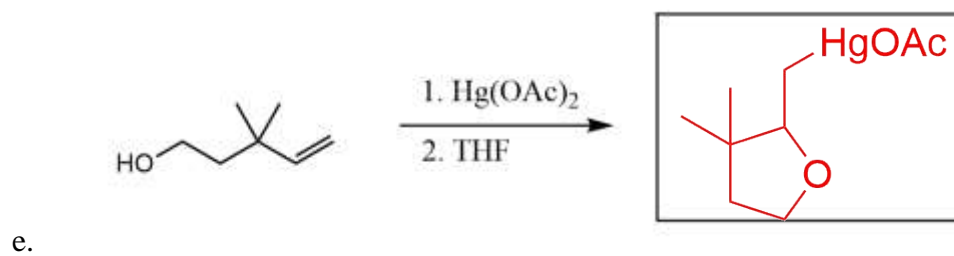
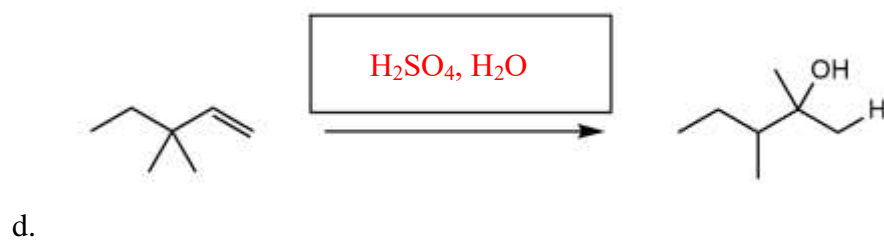
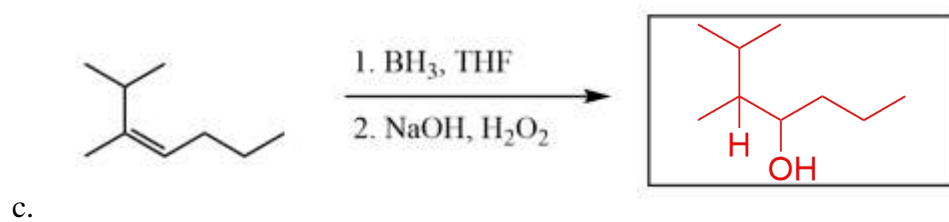
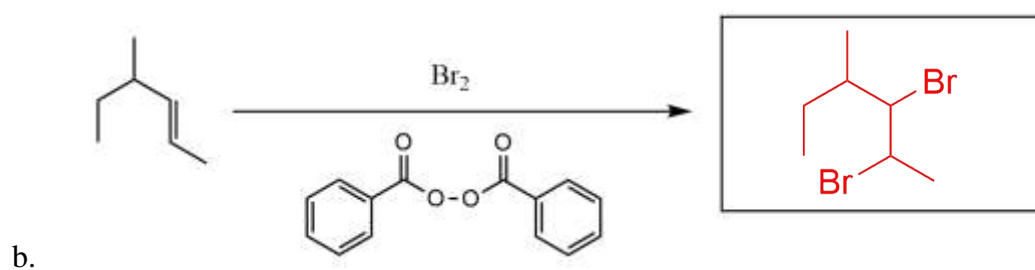
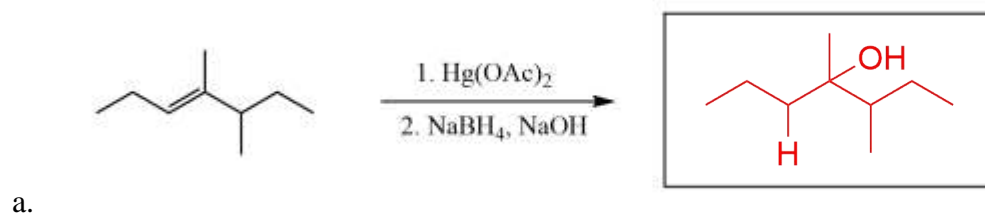
The two alkyl groups are anti to each other



**Highest**

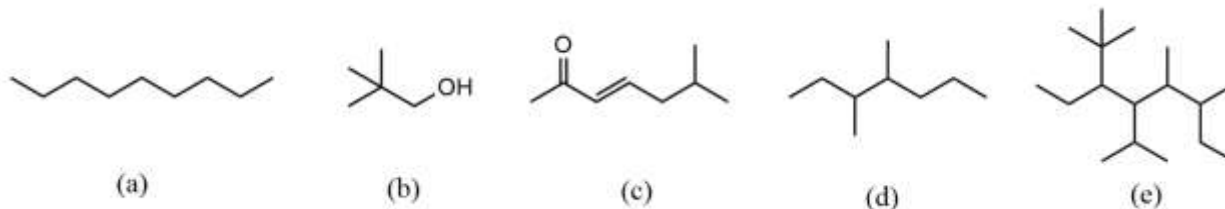
tBu and Me are eclipsed in this conformation

3. Fill in the boxes for the following reactions. Show stereochemistry where applicable (5 pts each).



## 4. Ranking/Trends

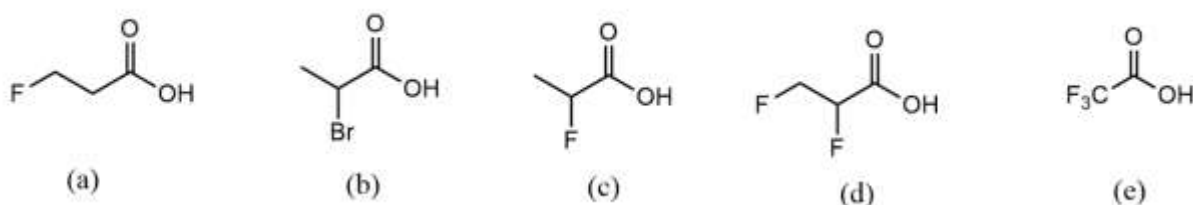
- a. Organize the following organic compounds in order of **decreasing** boiling point. Explain your answer in terms of the intermolecular forces in each compound.



We will eliminate b and c from this Q

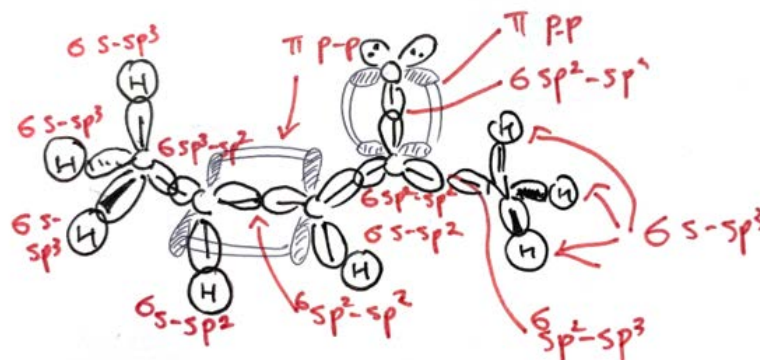
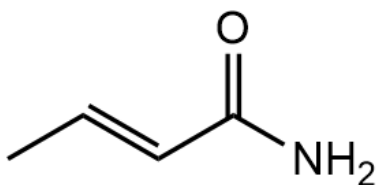
$d < a < e$  [d and a have the same formula but a packs better (more Van der Waal interactions). e is heavier]

- b. Rank the following in order of **increasing** acidity.

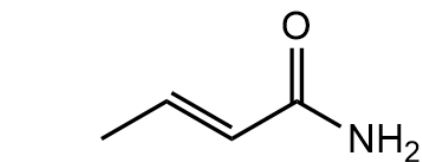


$a < b < c < d < e$

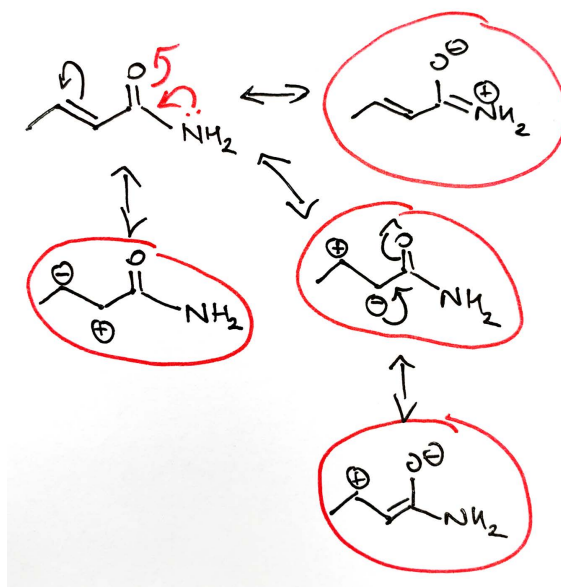
5. Draw the molecular orbital structure and label the bond types (10 pts).



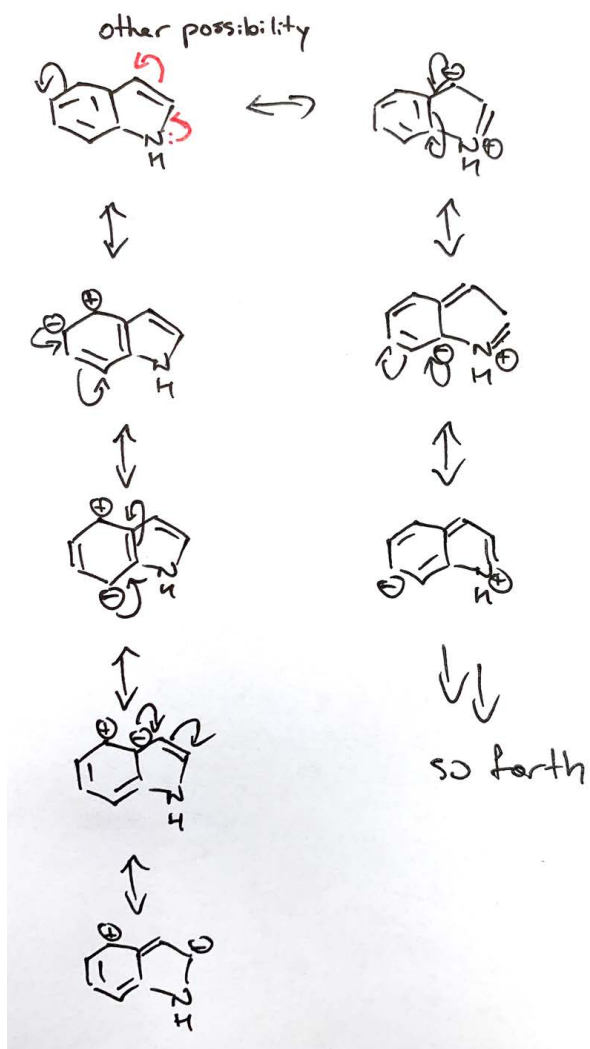
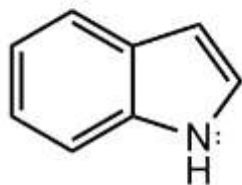
6. Draw all possible resonance structures for the following molecules (6pts each).



a.

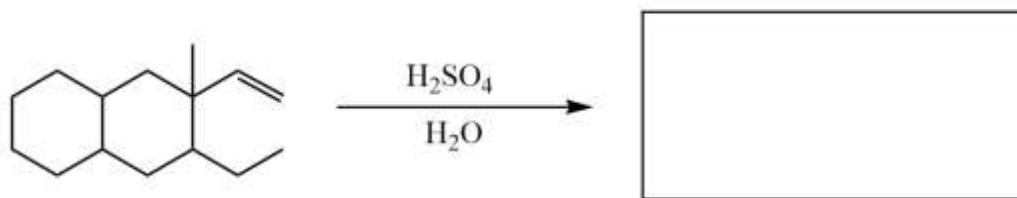


b.

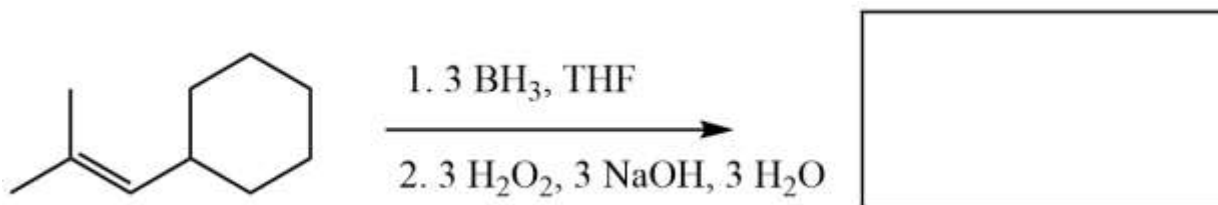
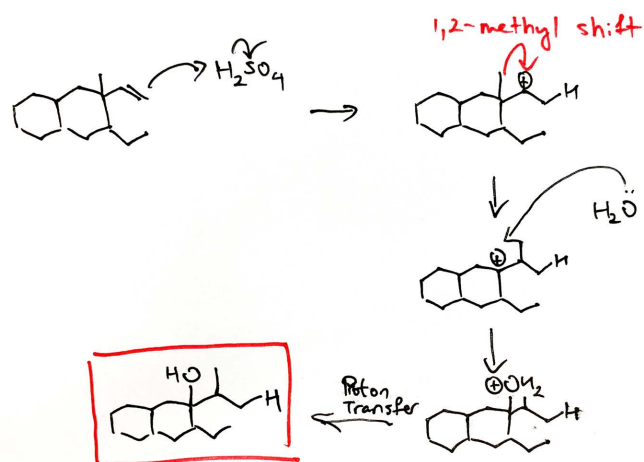


Full credit for 6b will be given if at least 6 viable resonance structures are identified

7. Draw the mechanism and the major product for the following reactions.



a.



b.

