



**Problem Set 4**

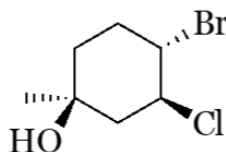
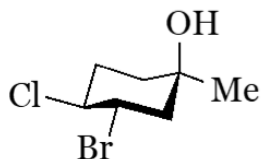
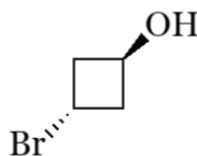
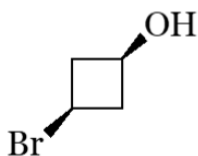
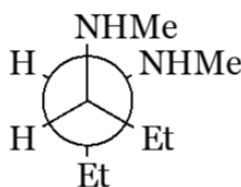
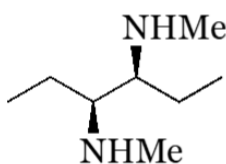
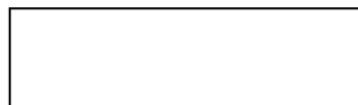
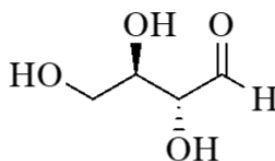
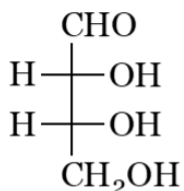
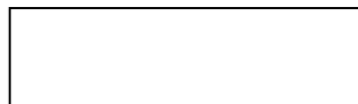
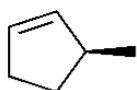
Organic Chemistry 1 (Greenberg)

Fall 2025

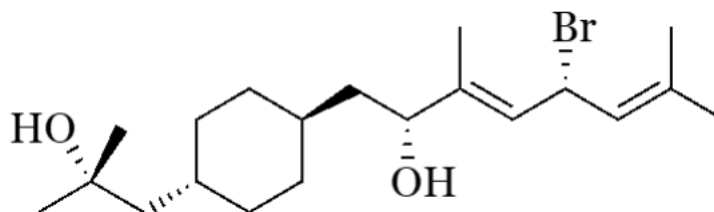
1. Define the following terms and give an example for each.

- a. Chiral center
- b. Conformational Isomers
- c. Constitutional Isomers
- d. Atropisomers
- e. Diastereomers
- f. Enantiomers
- g. Meso

2. Determine if the following pairs of molecules are enantiomers, diastereomers, constitutional isomers, or identical, and determine which molecule(s) is/are meso.



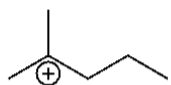
3. Consider the following molecule.



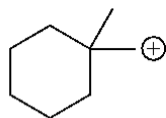
- a. Determine whether each chiral center is in the R or S configuration and assign E or Z to the appropriate double bond(s).

b. How many stereoisomers does this molecule have in total?

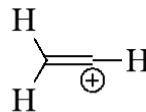
4. Consider the following carbocation containing molecules.



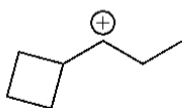
**A**



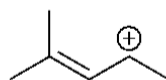
**B**



**C**



**D**



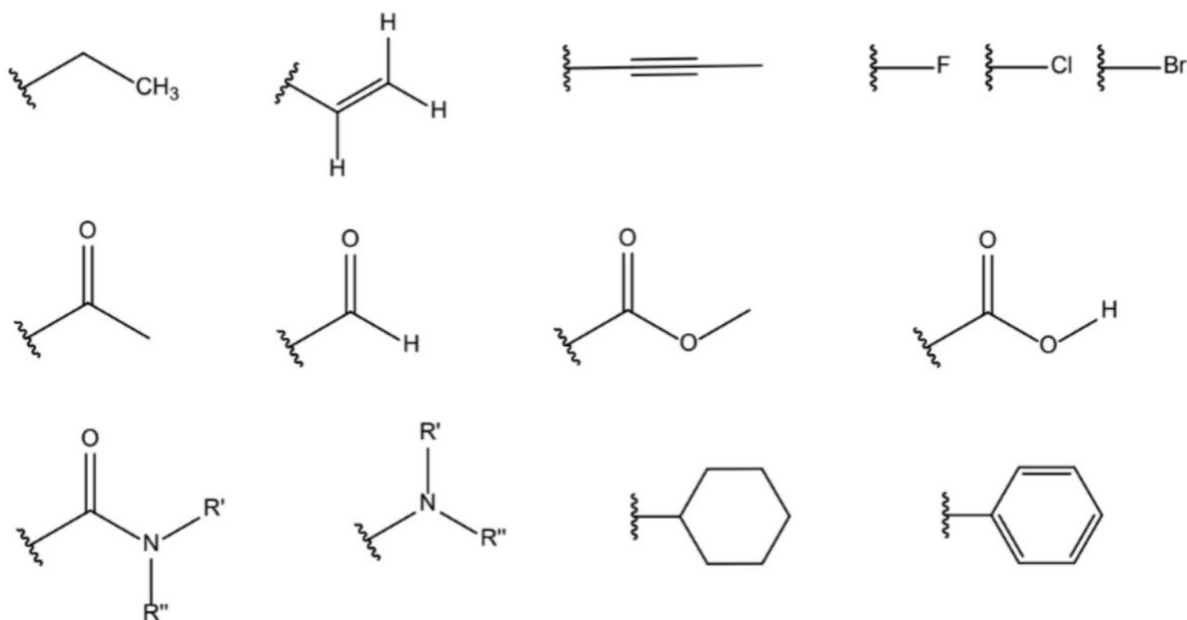
**E**

a. Rank the carbocations in order of DECREASING stability.

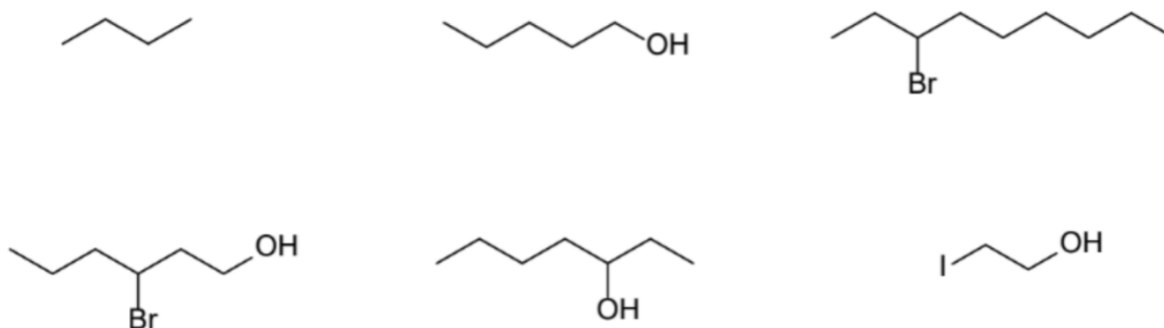
b. Provide two reasons why the least stable carbocation is the unstable and why the most stable carbocation is stable.

c. Identify the compounds above that can undergo a carbocation rearrangement. For each of these, identify which carbocation rearrangement is the most favorable (1,2-hydride shift, 1,2-methyl shift, or 1,2-alkyl shift) and draw the compound obtained after.

5. Name each of the following functional groups.



6. Name each of the following molecules.



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