

1. (10 pts.) Mark the following statements True or False

_____ Chiral molecules change the plane of polarization of polarized light.

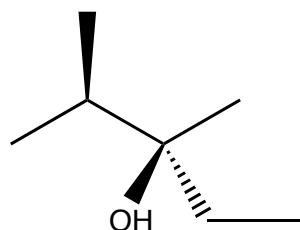
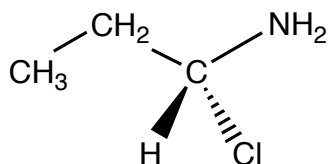
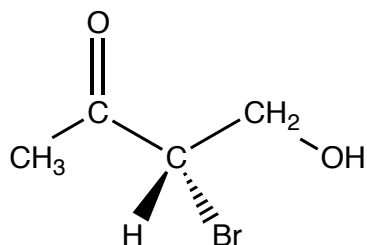
_____ A molecule must be chiral to have an enantiomer.

_____ Diastereomers are nonsuperposable mirror images of each other.

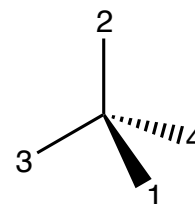
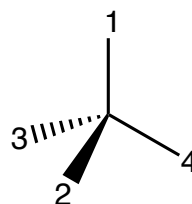
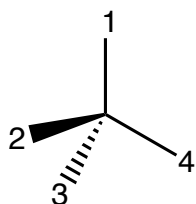
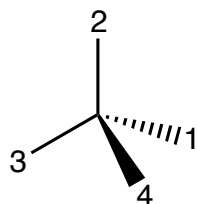
_____ Enantiomers typically have different melting points.

_____ Diastereomers typically have different boiling points.

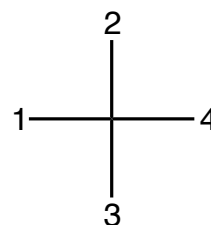
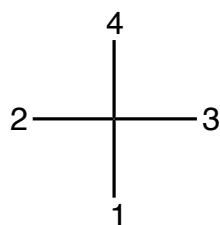
2. (12 pts.) Assign priorities to the groups/atoms bonded to the chirality centers in the following structures.



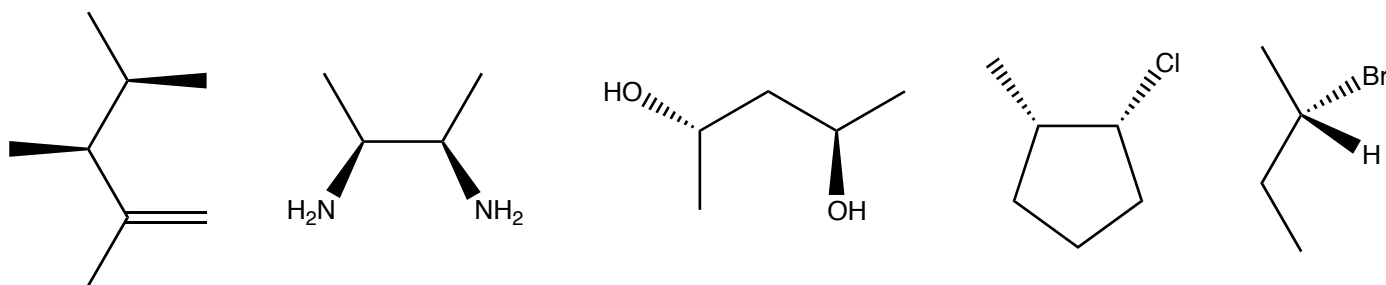
3. (8 pts.) Determine the configurations of the chirality centers drawn below. Priorities have been assigned to the groups (which are not shown).



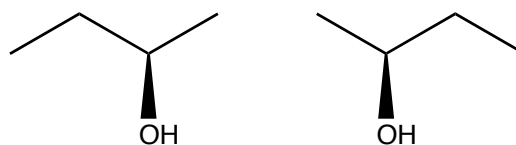
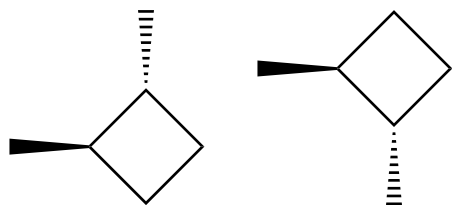
4. (4 pts.) Determine the configurations of the chirality centers on the Fisher projections drawn below. Priorities have been assigned to the groups (which are not shown).

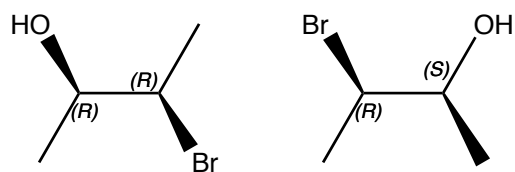
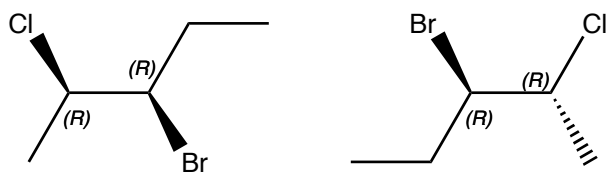


5. (10 pts.) Circle the chiral molecules.



6. (12 pts.) Determine whether the following pairs of structures are enantiomers, diastereomers, or different views of the same molecule.



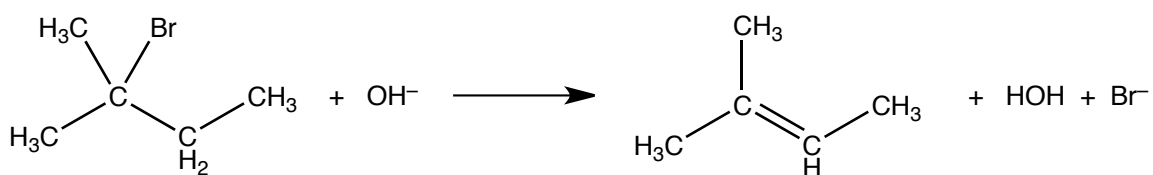
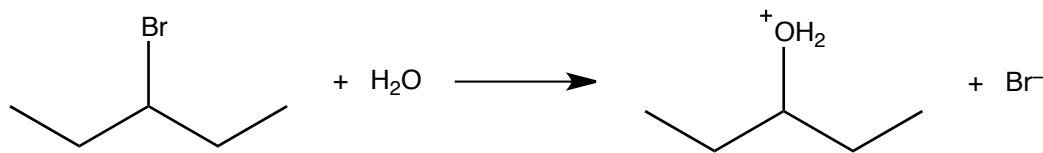
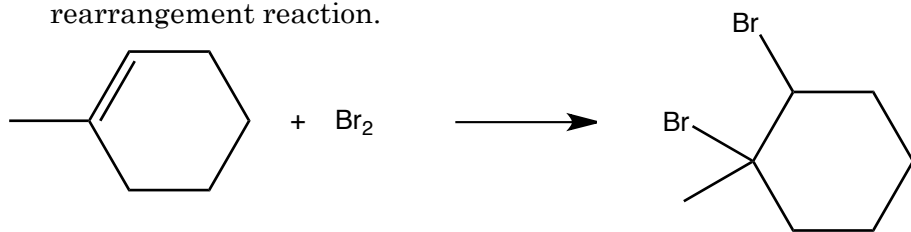


7. (6 pts.) Electrophiles are electron rich or electron deficient?

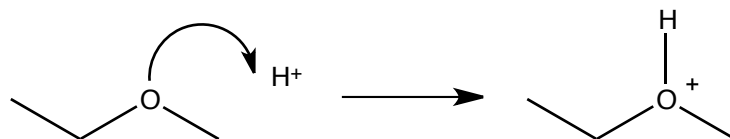
8. (12 pts.) Determine whether the following molecules/ions are likely to act as nucleophiles, electrophiles, or neither.

H^+		Br^-	H_2SO_4
$\text{CH}_3\text{CH}_2\text{CH}_3$		NH_3	Br_2

9. (9 pts.) Classify the following reactions as a substitution, an addition, an elimination, or a rearrangement reaction.



10. (10 pts.) Describe what the electron movement arrow means in the following reaction.



11. (9 pts) Draw electron movement arrow(s) for the following reactions.

