

12/14/11

## Exam #1

#1

Bonding + Antibonding

 $\sigma$  +  $\pi$  bonds

SMOGS

Nomenclature - alkanes, haloalkanes, alcohols  
no alkenes; common substituent names

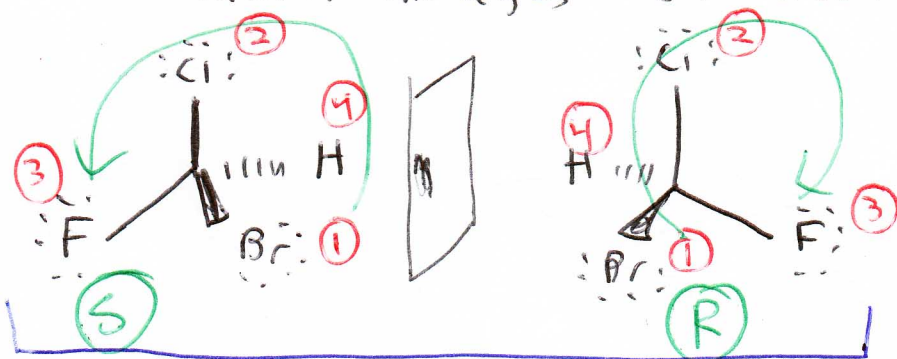
Functional groups - all

Rotomers - Newman projections, steric hindrance,  
energy diagram, terms

Cyclic compounds - angle strain

Cyclohexane - chair + boat; axial vs equatorial,  
cis + trans

Chirality; stereocenters; R + S

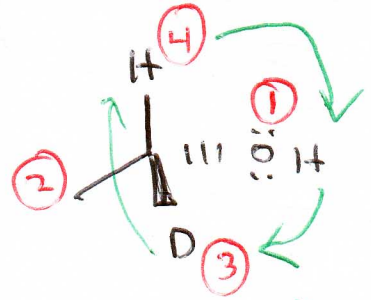
Chirality - the fact two molecules can have  
identical molecular structure but be  
mirror images of each other - "handedness"

white - hydrogen  
 blue - fluorine  
 green - chlorine  
 red - bromine

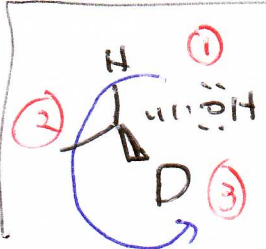
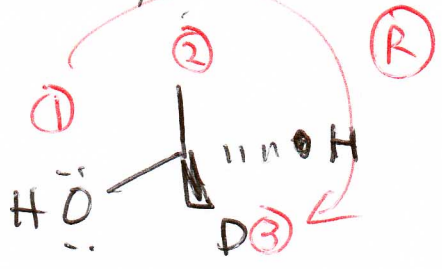
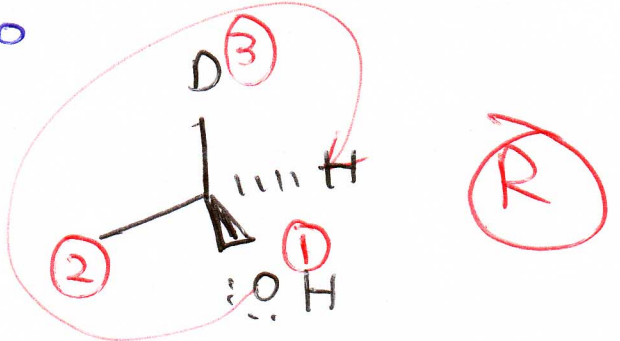
enantiomers - stereoisomers that are  
mirror images of each other.stereoisomers - molecules with identical bond  
connectivity but different spatial arrangement  
stereocenter - an asymmetric position ~~along~~  
molecule that produces stereoisomers

\* Ethanol and methanol do not require locants (position numbers) since only one substitution pattern is possible.

D = deuterio



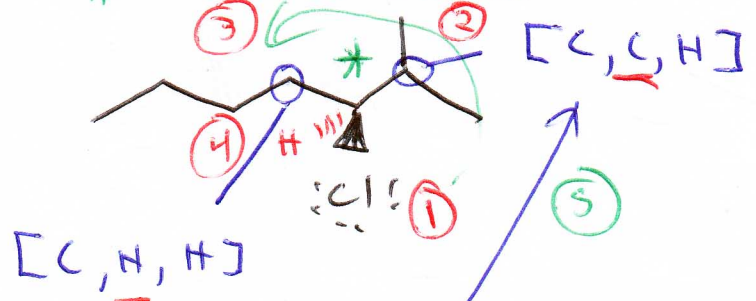
rewrite as a different rotamer



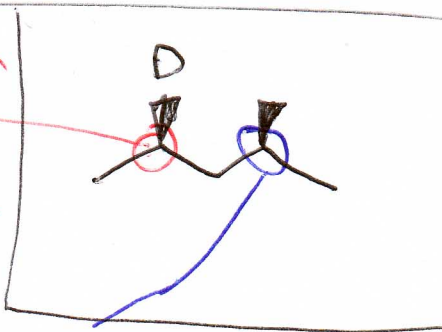
The way this molecule is drawn, it appears to be in an S configuration, but that is because it is not being visualized correctly. The H must be in back,

(R)-1-deuteroethanol

\* = stereocenter



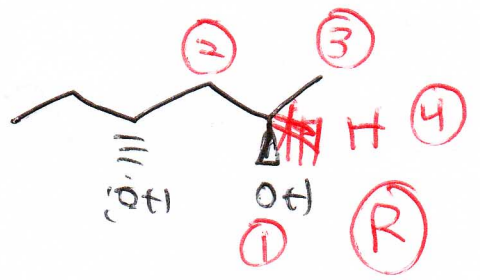
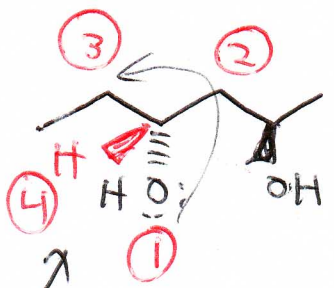
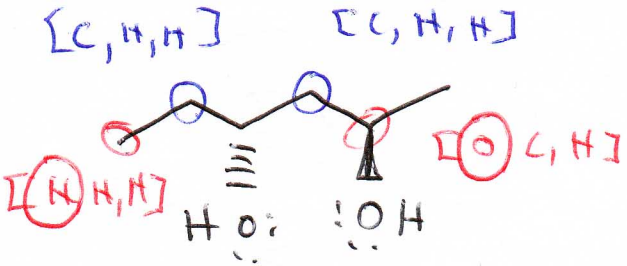
is a stereocenter since 4 groups are attached



is not a stereocenter since two substituents are identical.

This group is more important because it has a higher atomic # @ the first point of difference,

(S)-3-chloro-2-methylheptane



Since H is in front, visualizes  
 the stereocenter as is, then  
 invert the answer,  
 appears  $S \rightarrow R$

(2R, 4R) - hexane-2,4-diol