

10/14/11

Exam #1

#1

bonding + antibonding

 σ + π bonds

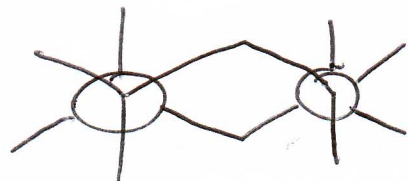
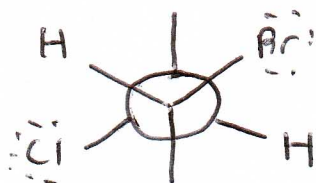
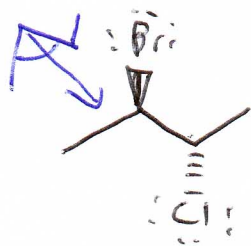
SMOGs

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

Functional groups - all

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

Cyclic compounds - angle strain

Cyclohexane - chair + boat; axial vs equatorial,
cis + transsyn
anti
gauche
stagg,
eclipsed

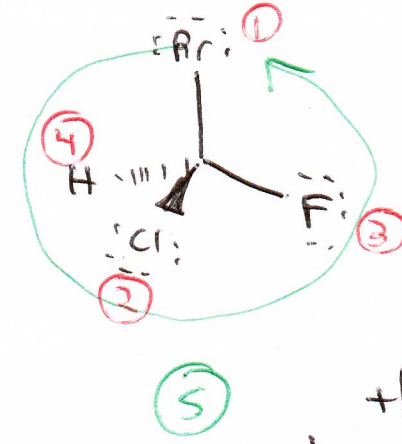
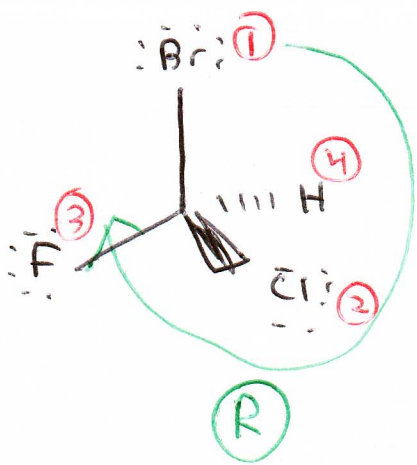
chirality; stereocenter; R + S

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

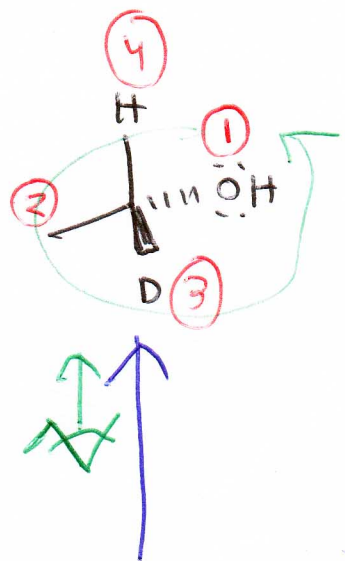
stereoisomers - molecules with identical bond connectivity but different spatial arrangement

stereocenters - asymmetric positions on a molecule that produce stereoisomers

chirality - the ~~the~~ fact that two molecules can have identical molecular structures but be mirror images of each other \rightarrow "handedness"



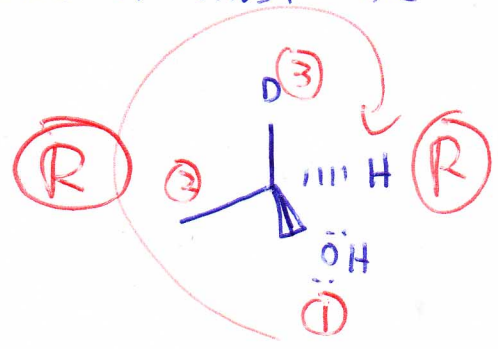
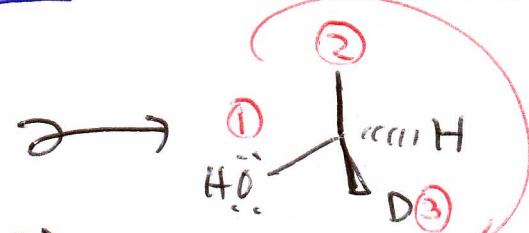
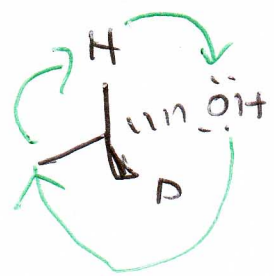
Absolute configurations
 - R + S - determined by orienting the lowest priority substituent away from the viewer then observing the relative order of the remaining substituents



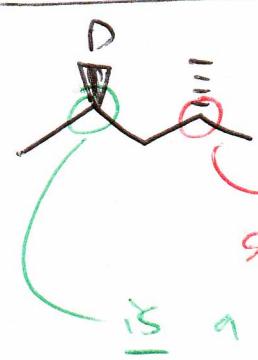
* Ethanol and methanol do not require locants (position numbers) since only one substitution pattern is possible. → atomic #

- ① highest Z takes priority
- ①a highest mass # takes priority

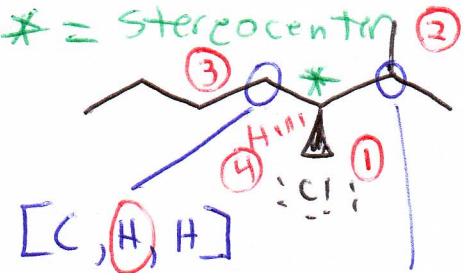
The way this molecule is drawn, it appears to be in the S configuration, but that is because it is not being visualized correctly. The H must be oriented away from the viewer.



(R)-1-deuteroethanol



A carbon is usually a stereocenter if it has four unique substituents,
 is not a stereocenter since two substituents are identical
 is a stereocenter since the substituents are all unique

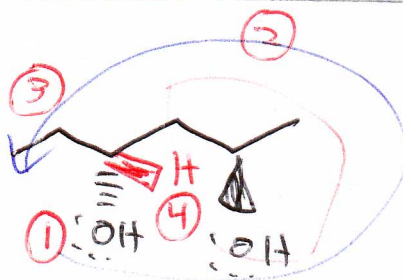
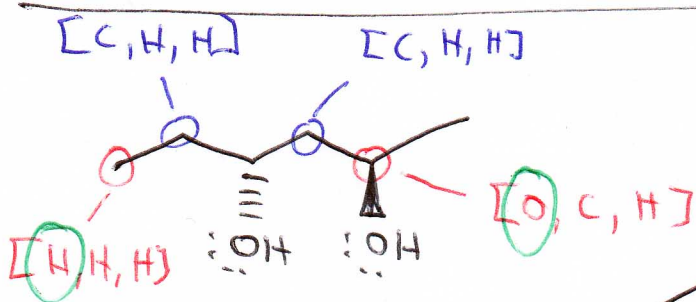
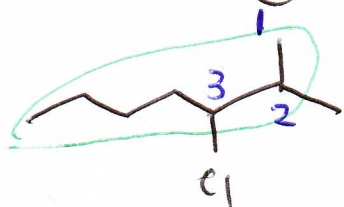


- ② If priority cannot be determined by the first point of attachment, it is determined by the first point of difference

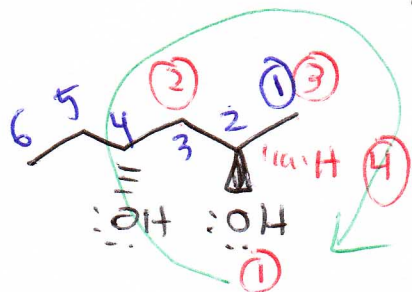


Ⓐ The isopropyl group is more important than the butyl group due to higher atomic # @ the first point of difference,

(S)-3-chloro-2-methylheptane



Since H is in front, visualize the stereocenter as is, then invert the answer; appears S → really R



R

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

(2R, 4R)-2,4-hexanediol



~~butane~~

buta-1,3-diene