

Overview of Topics

ATOM
• Orbitals \ddagger electron configuration
 $1s^2 2s^2 2p^2 \dots$
 $s \ddagger p$

• Lewis structure \ddagger valence e-

MOLECULES

• Valence Bond Theory $\sigma \ddagger \pi$ bonds

HYBRIDIZATION: sp^3, sp^2, sp
(overlap = σ) \swarrow \nwarrow delocalized
P sharing = π

• Lewis (line-bond) \rightarrow Condensed \rightarrow Skeletal/zig zag

Different representations of same molecule

• Geometry: tetrahedral, trig. planar, linear
 sp^3 sp^2 sp

• EN \ddagger Polarity \rightarrow (bond polarity) + (molecular geometry)

• Ionic vs. Covalent Bonds
M-NM NM-NM

\downarrow
* molecule polarity *
(dipole moment)

• Formal Charge

• Resonance + Arrow pushing

• Acid-Base \rightarrow ranking acids, predicting products?
direction of eq = m, arrow pushing
* pKa standards
to memorize

• Functional Groups → ID within structure
 Name & structure columns from 3.1 (handout), omit sulfide! sulfonide

• Alkane Nomenclature

1 Name ↔ 1 Structure

- Alkanes, Alkyl Halides, Cycloalkanes

• Conformational Analysis: Steric Strain + specific types

- Newman Projections (2C model?)

- Chairs (chair model?)

• Chirality

- ID chiral centers in molecule

L7 handout { - Assign R/S (1C model)
 - Determine relationship of compounds

* I recommend you only bring models to the exam if you know how to use them, otherwise confusing!