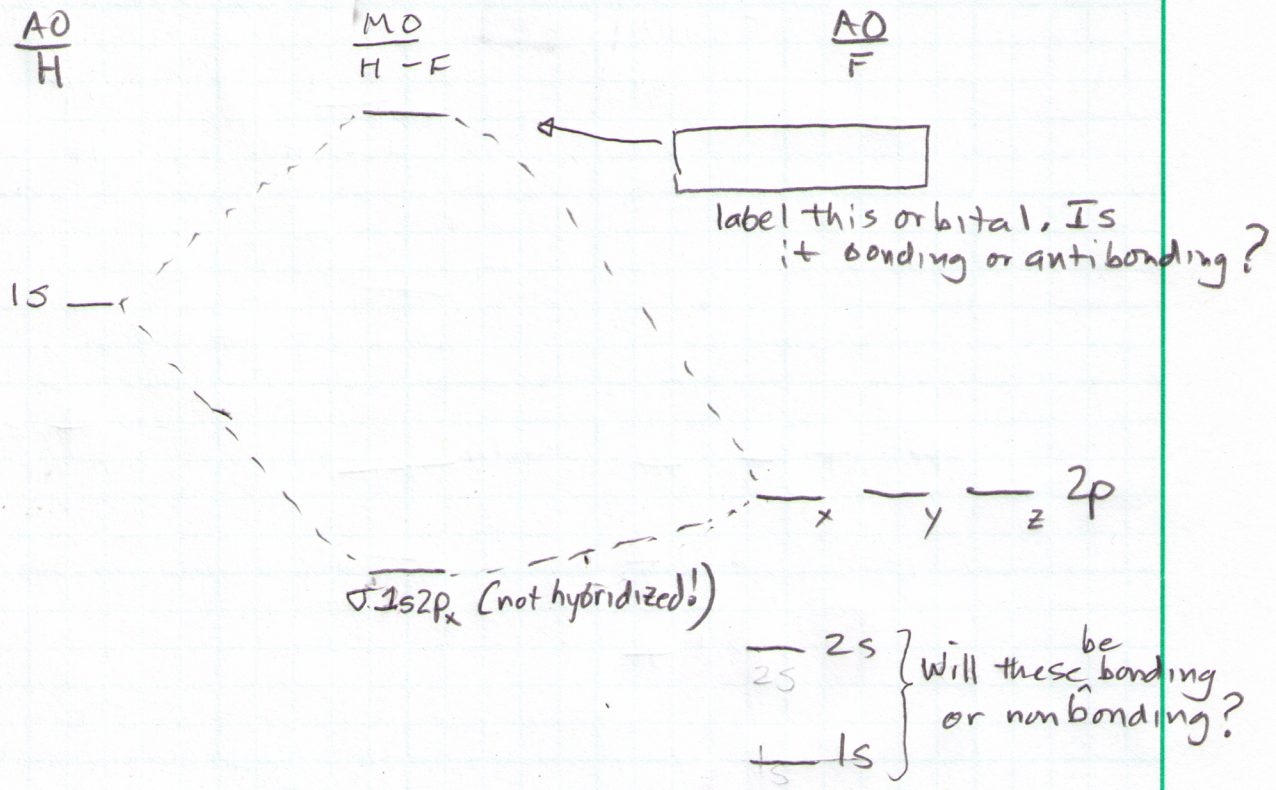
(1) Draw the molecular orbital energy digram for H-F from the given atomic orbital diagram. NOTE! H-F is diatomic therefore its MO will NOT use hybridize sp^n orbitals.

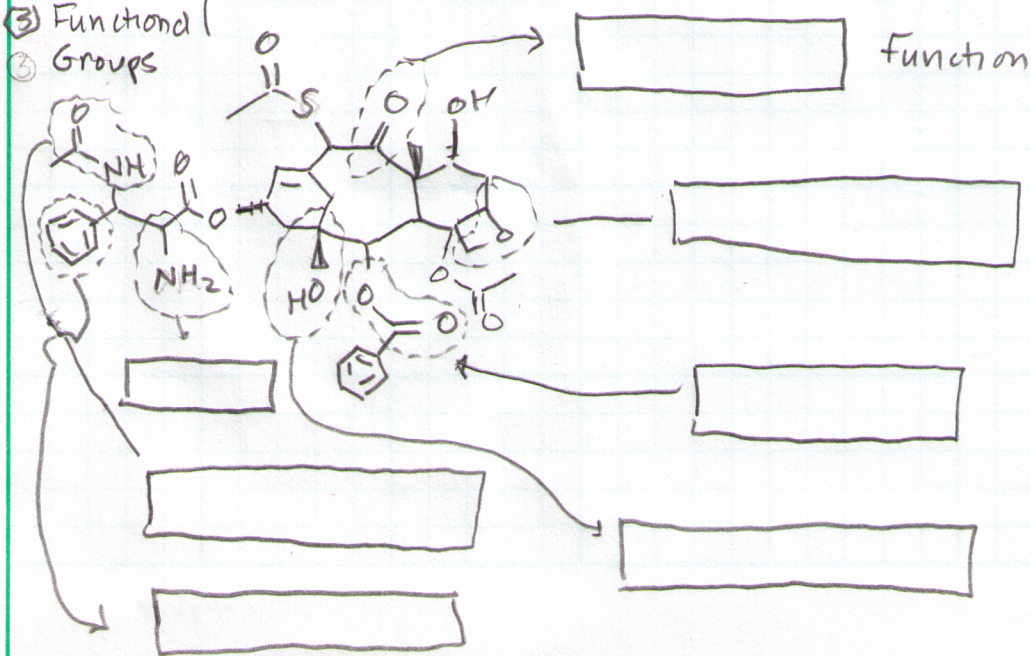
AO: atomic orbital

MO: molecular orbital

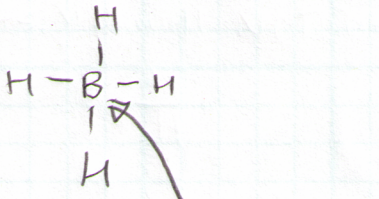


(2) Circle the valence electrons in the MO diagram (above) to explain where the non-bonding electron pairs around F reside in H-F: Which orbitals (MOs) contain the lone pair e⁻ around F?

(3) Functional Groups



④ Formal charge, hybridizat^n used to make σ bonds, and molecular geometry vs geometry of steric number (i.e. electron domains)



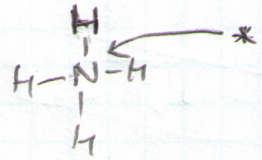
Formal charge

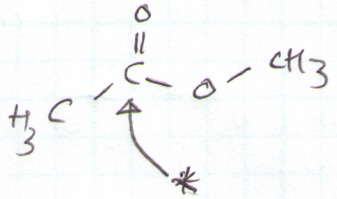
hybridizat^n

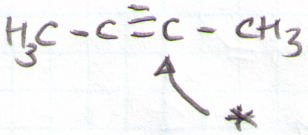
molecular geometry

electron domain geometry

Same questions for * atoms







⑤ Draw the curved arrows to show the sequential/cascade movement of e^- pairs that yields a resonance form where the arrowed carbon bears a (+) charge and the oxygen bears a (−) charge