

alcohol or hydroxyl red = bonds broken/formed...both are covalent, sigma bonds

Is the starting material of A or C a stronger acid? Why?

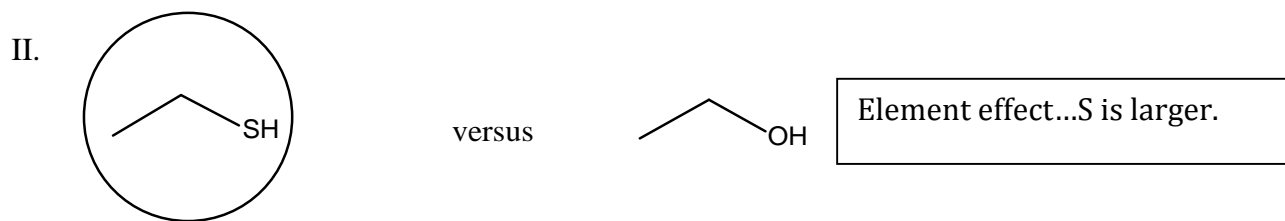
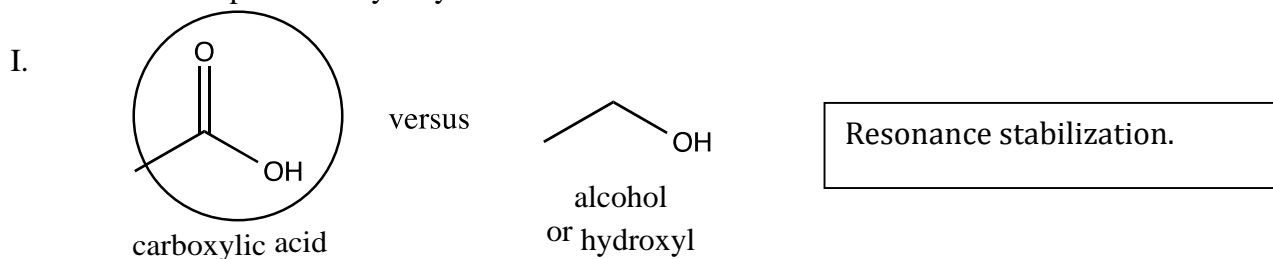
The starting material in A is a stronger acid because the conjugate base has more resonance forms, making it more stable.

2. Acid Strength

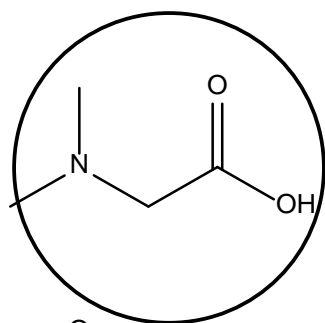
A. What are the four primary stabilization effects that determine acid strength?

- 1) Element effects (both electronegativity and atom size)
- 2) Resonance (this is usually more important than inductive effect)
- 3) Inductive effect (this only applies to atoms that aren't directly bound to the acidic proton)
- 4) Hybridization (not usually important, so expect that this question might show up later as a challenge problem)

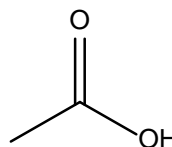
B. For each of the pairs below, label the functional groups and circle the stronger acid. Explain briefly why.



III.

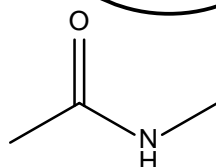


versus

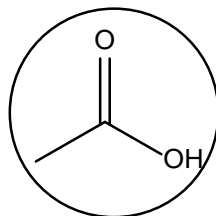


Inductive effect...N is electronegative.

IV.

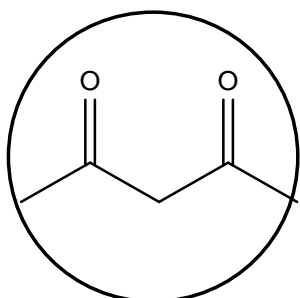


versus

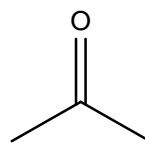


Element effect.

V.



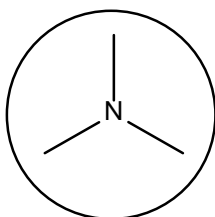
versus



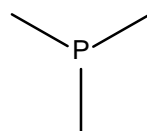
Resonance effect...remove a proton between the two ketones, and see how many resonance structures you can draw.

VI.

Base strength

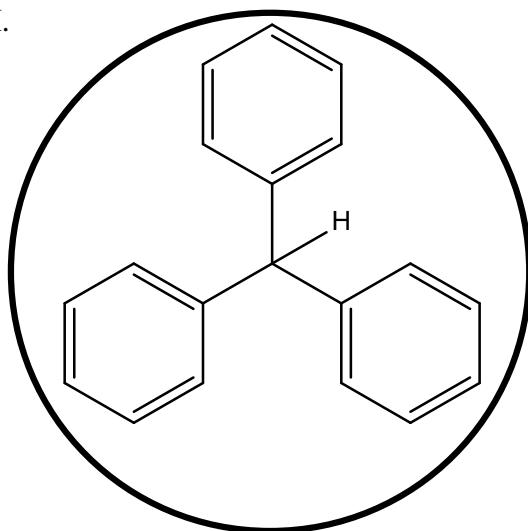


versus

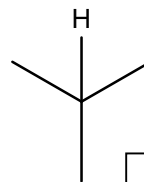


Element effect...if the larger atom (P) makes a better acid, the smaller makes a better base.

VII.



versus



Resonance effect...once you remove the proton that is shown, the negative charge can move through all of the benzene rings.