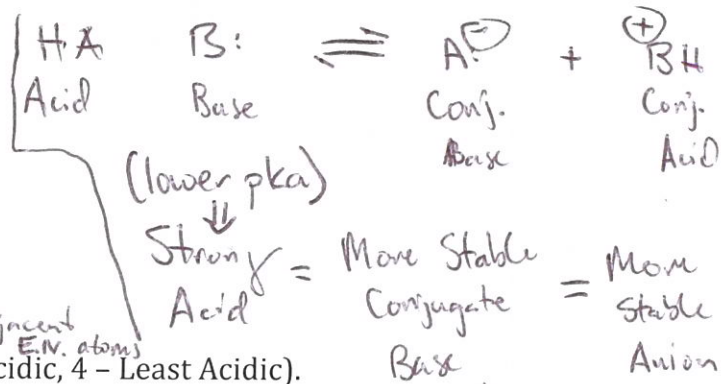


More Stable Anion is when negative charge is:

- On a more E.N. element
- On an atom w/ more s-character
- On a larger atom
- Stabilized by resonance delocalization
- Stabilized by inductive effects caused by adjacent E.N. atoms

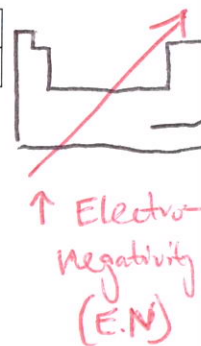


1. Rank the following in order of acidity (1 - Most Acidic, 4 - Least Acidic).

HA	H ₂ O (15.7)	CH ₄ ~51	NH ₃ 38	H ₂ S (7.04)
A ⁻	HO ⁻ 2	H ₃ C ⁻ 4	(-):NH ₂ 3	HS ⁻ 1

Stability ↑ for anions in same period (row) going from left to right: C → N → O

More EN atom ⇒ more stable anion



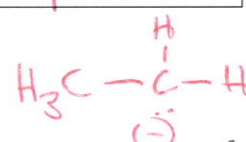
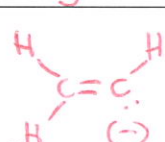
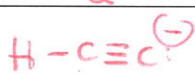
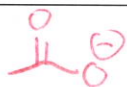
2. Rank the following in order of acidity (1 - Most Acidic, 4 - Least Acidic).

HF	HBr	HCl	HI
4	2	3	1
F ⁻	Br ⁻	Cl ⁻	I ⁻

Size here beats electronegativity

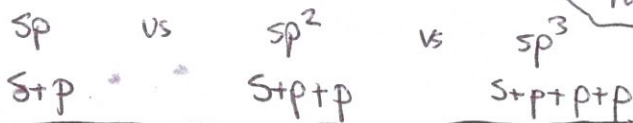
3. Rank the following in order of acidity (1 - Most Acidic, 4 - Least Acidic).

<chem>CC(=O)O</chem> 4.74 1	<chem>H-C#C-H</chem> 25 2	<chem>C=C</chem> ~40 3	<chem>H3C-CH3</chem> ~50 4
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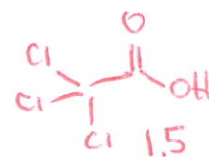
① Negative charge on O vs. C ⇒ Oxygen more E.N. (Same period/row)

② Hybridization of C atom

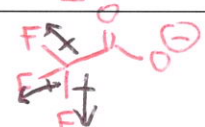
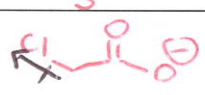
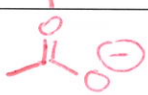
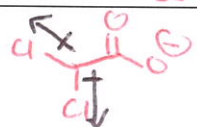


↑ contribution of s orbital
more "s" character, more E.N.
more stable anion

4. Rank the following in order of acidity (1 - Most Acidic, 4 - Least Acidic).



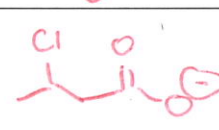
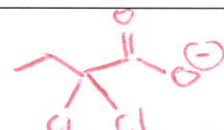
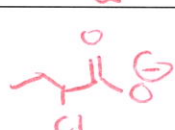
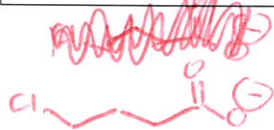
<chem>ClC(Cl)C(=O)O</chem>	<chem>CC(=O)O</chem>	<chem>ClCC(=O)O</chem>	<chem>FC(F)(F)C(=O)O</chem>
2	4	3	1



E.N. Halogens pull e^- density towards itself \Rightarrow spreading the e^- distribution \Rightarrow Inductive effect

5. Rank the following in order of acidity (1 - Most Acidic, 4 - Least Acidic).

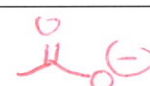
<chem>ClCCCC(=O)O</chem>	<chem>CCC(Cl)C(=O)O</chem>	<chem>CC(Cl)(Cl)C(=O)O</chem>	<chem>CC(Cl)CC(=O)O</chem>
4	2	1	3



Inductive effect decreases w/ greater distance
More E.N. atoms to spread \ominus charge

6. Rank the following in order of acidity (1 - Most Acidic, 4 - Least Acidic).

<chem>C[N+](C)(C)CCO</chem>	<chem>[O-]CCO</chem>	<chem>OCCO</chem>	<chem>CC(=O)O</chem>
2	4	3	1



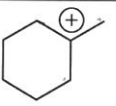
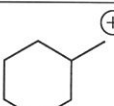
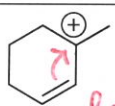
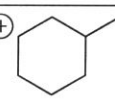
because \oplus charge it wants to pull e^- towards itself \Rightarrow Inductive Effect (Field Effect)

2 \ominus charges on same molecule is BAD!

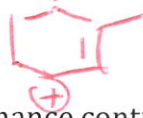
Resonance!

Resonance \approx Hyperconjugation
Carbocation Stability
 $3^\circ > 2^\circ > 1^\circ$

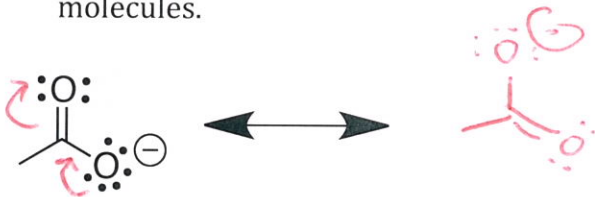
7. Rank the following in order of stability of the carbocation (1 - Most stable, 4 - Least stable).

 3°	 1°	 3° Resonance!	 2°
2	4	1	3

Hyperconjugation!



8. Draw the arrow pushing and the associated resonance contributing structure of the following molecules.



Resonance!
 \hookrightarrow often moving lone pairs \approx π bond

