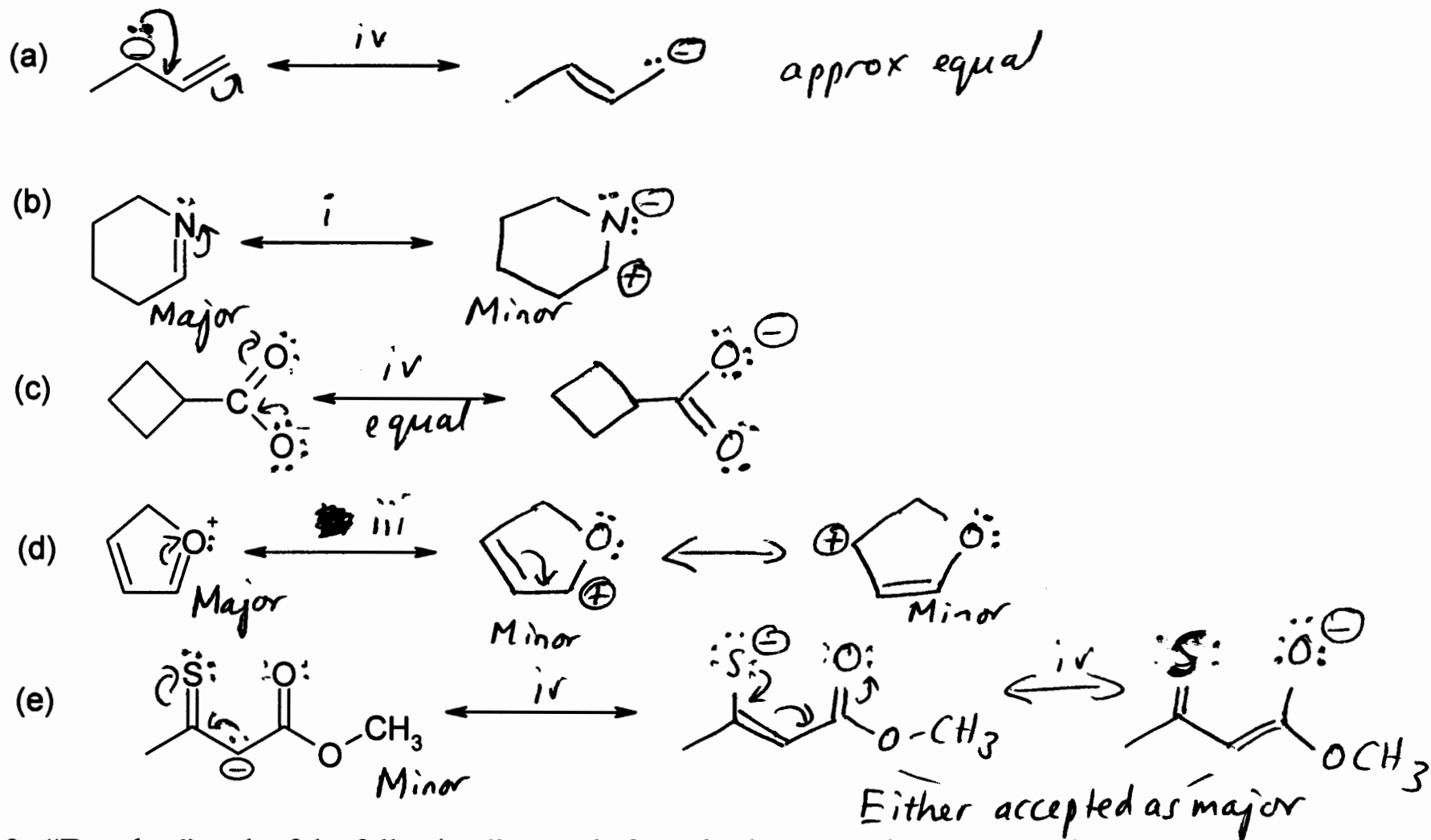
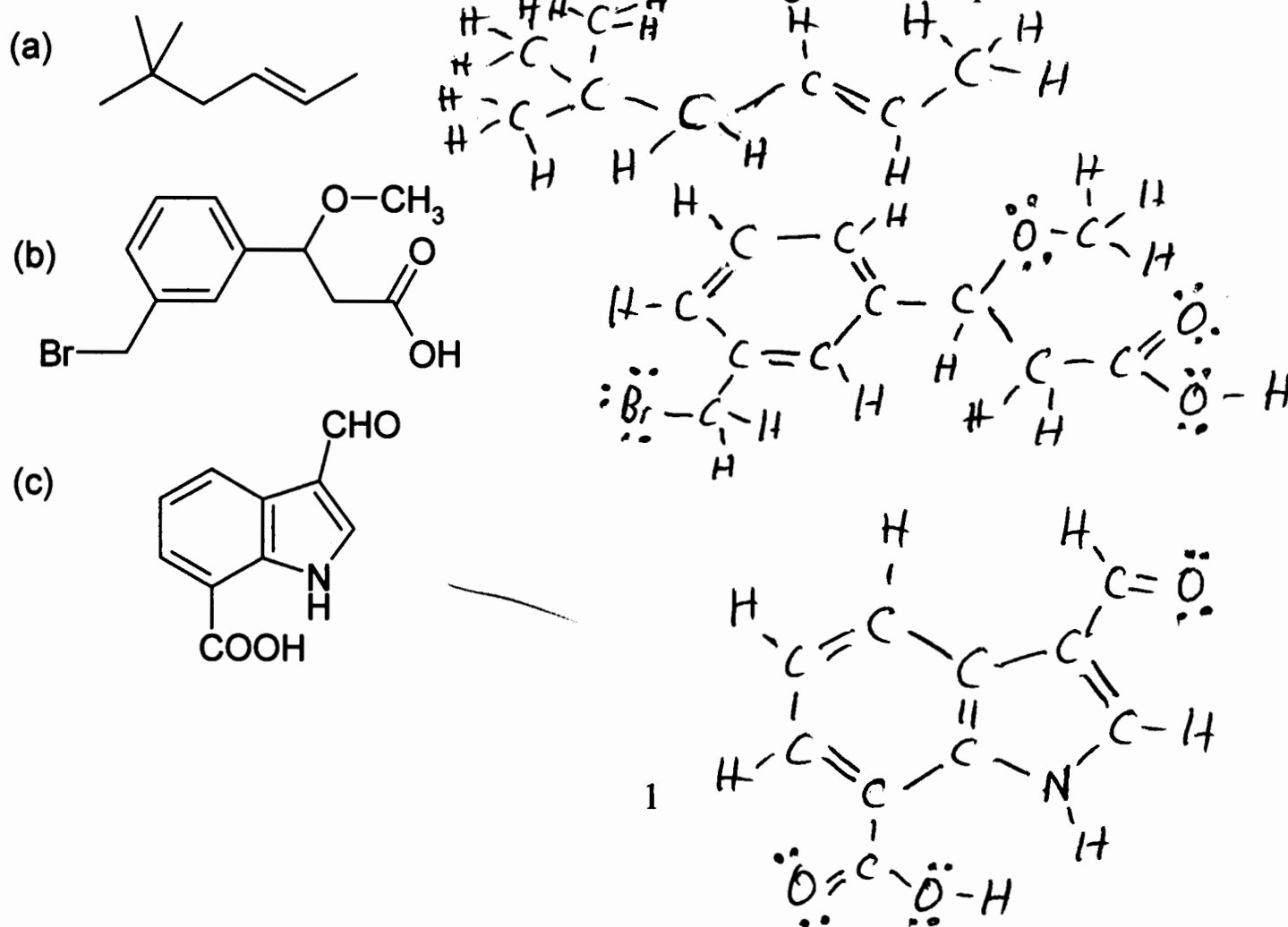


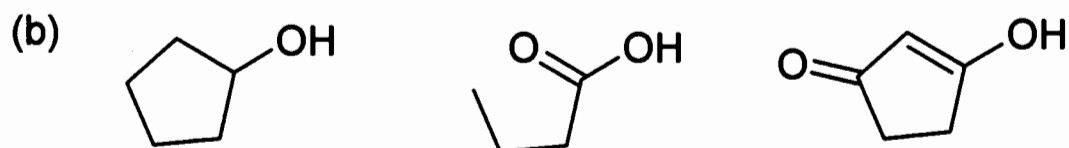
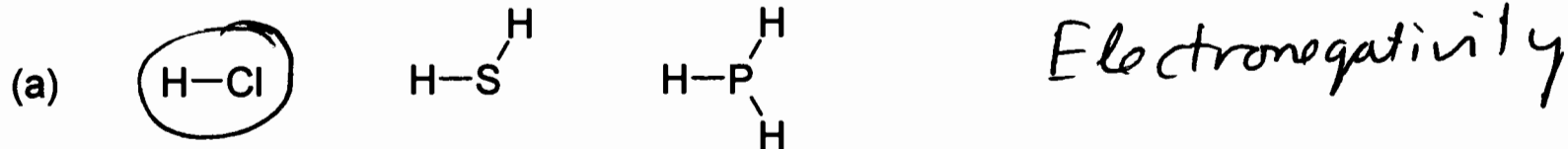
1. Draw all the significant resonance forms for the following structures, and indicate which are major and which are minor, or if you have two equally important forms, say so. There may be more than just two forms in some cases.



2. "Translate" each of the following line-angle formulae into a Lewis structure. Show bonds as stick bonds, and also indicate all formal charges and lone pairs.



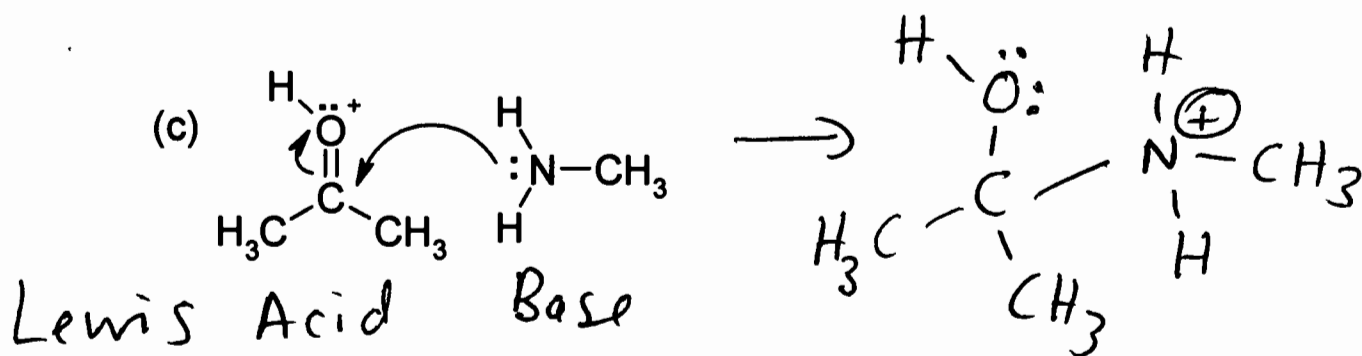
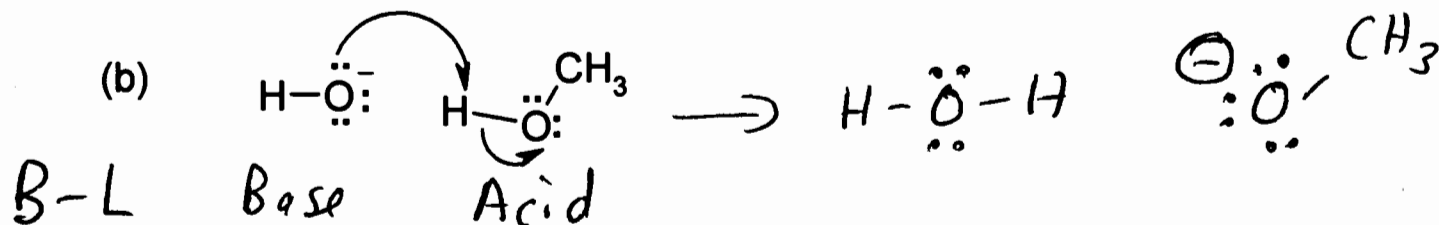
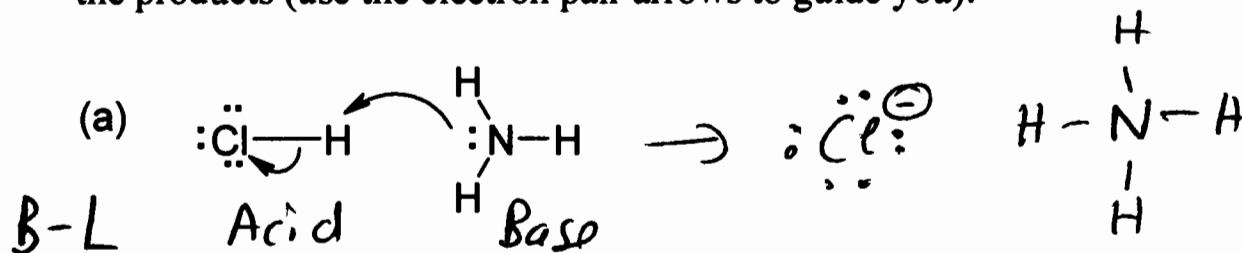
3. Rank the following in order of acidity. Mark the most acidic of each set as 1, and the least acidic as 3.



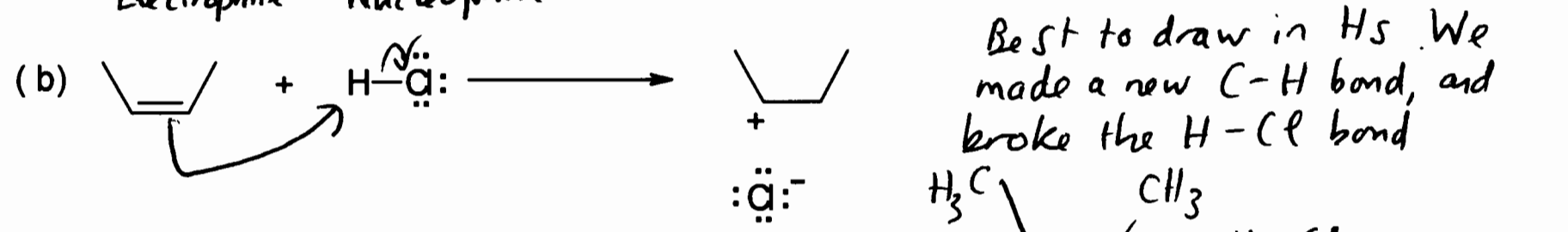
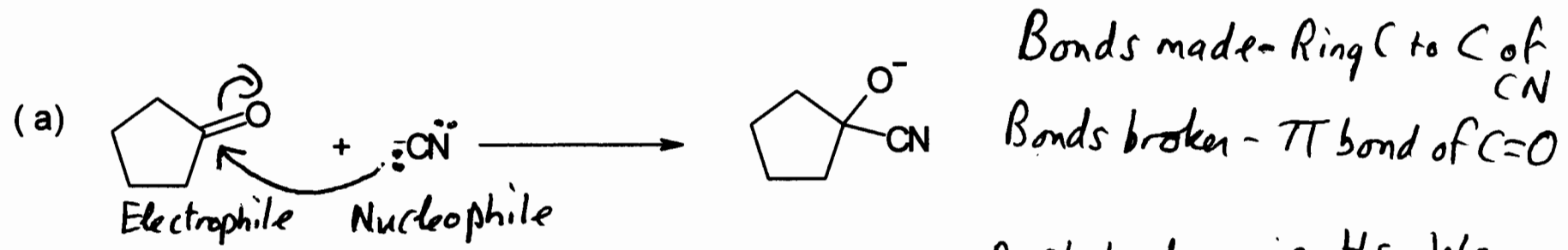
(No resonance  
poss for conj. base)

Either of those - resonance of conj. base  
accepted

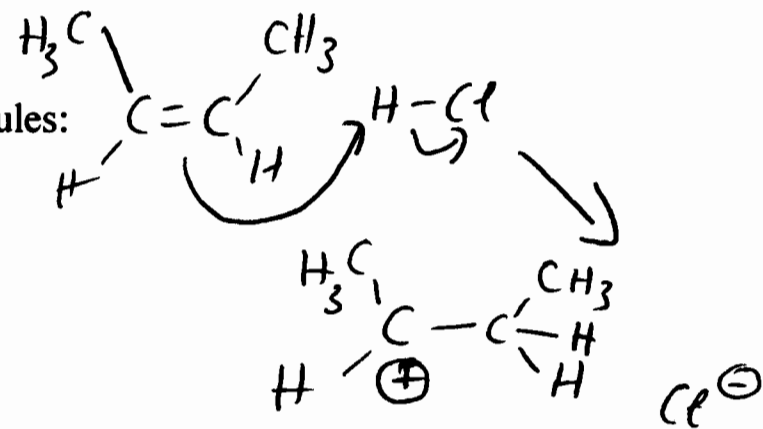
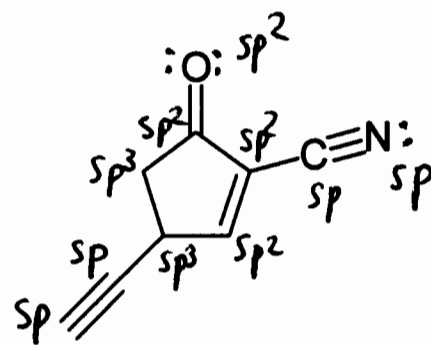
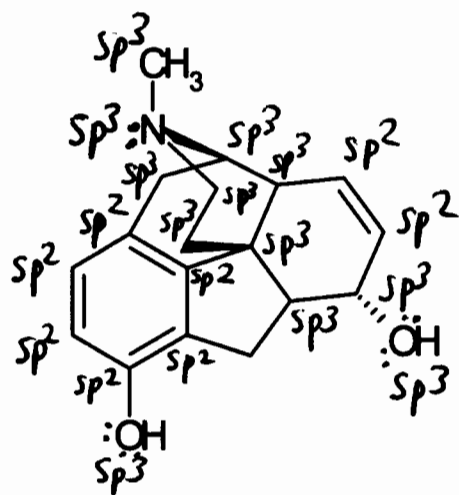
4. In each of the following acid-base reactions, indicate the acid and the base, and whether these are Bronsted-Lowry acid-base pairs, or Lewis acid-base pairs. Also draw the products (use the electron pair arrows to guide you).



5. Indicate the nucleophilic group and the electrophilic group in each of the following reactions. then draw curved arrows to show the electron flow:



6. Indicate the hybridization of each atom in the following molecules:



7. Draw an energy diagram showing the molecular orbitals in the triple C-C bond in ethyne, which has the structure shown below:

