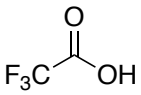
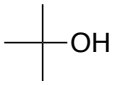
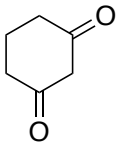
Organic Chemistry 2-Final Exam Review

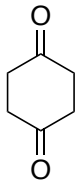
1. The following molecules all have some relatively acidic protons, Match the listed pKa values with the appropriate molecule by writing the pKa in the boxes.

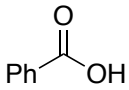
pKa 0.2, 4, 9, 16, 20, 40





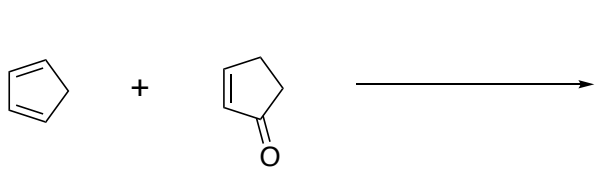




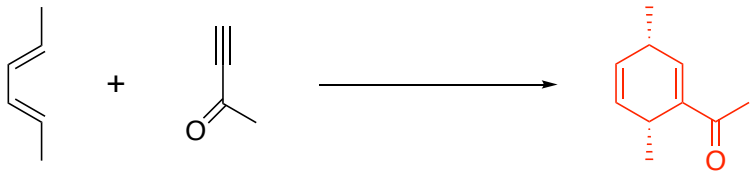


0.2 | 40 | 16 | 9 | 20 | 4

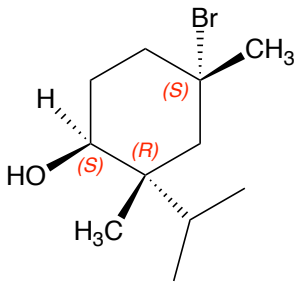
2. Draw the major product for the following Diels-Alder reactions.



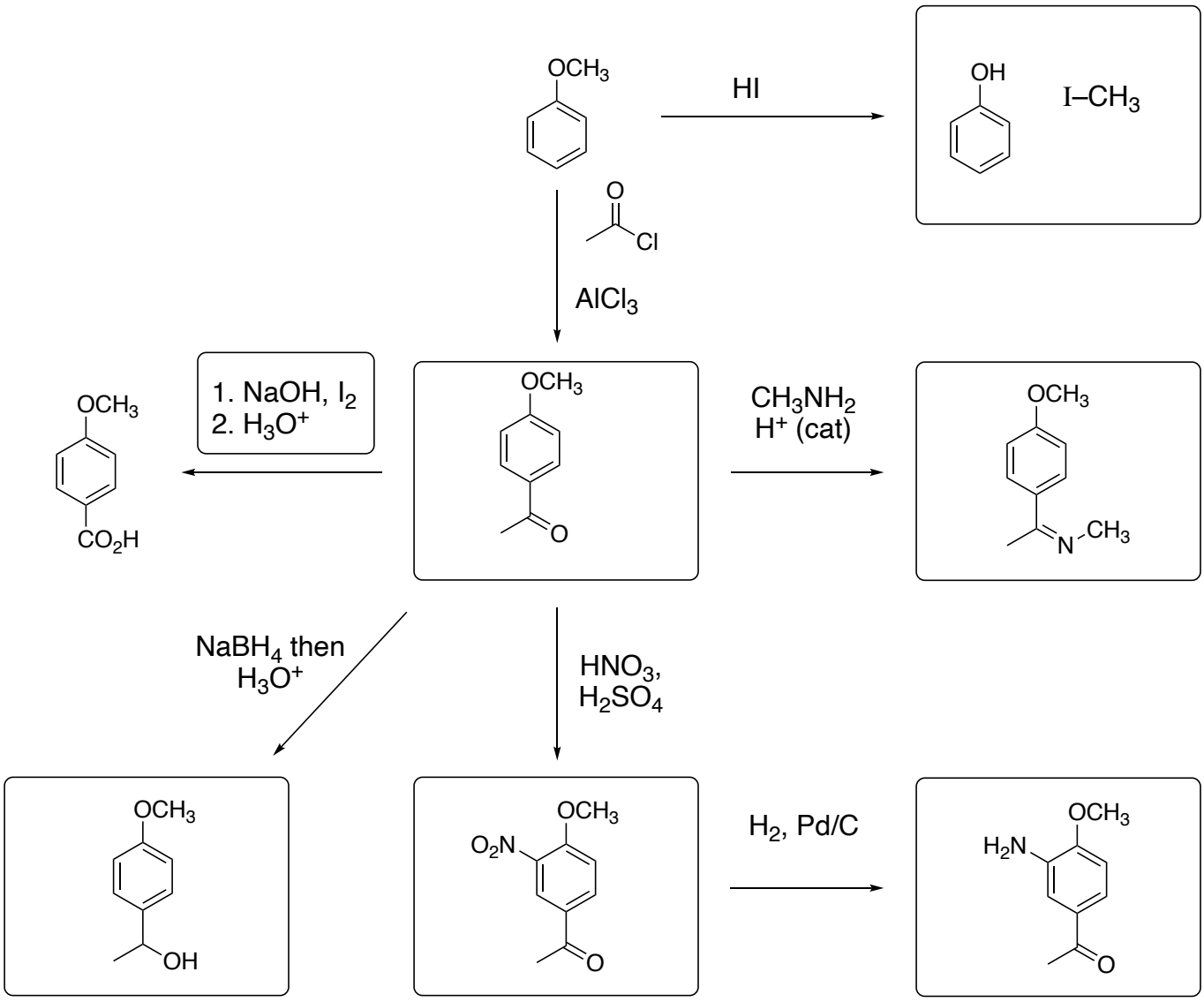
Remember the endo Rule!



3. Assign the absolute stereocheochemistry for the molecule below.



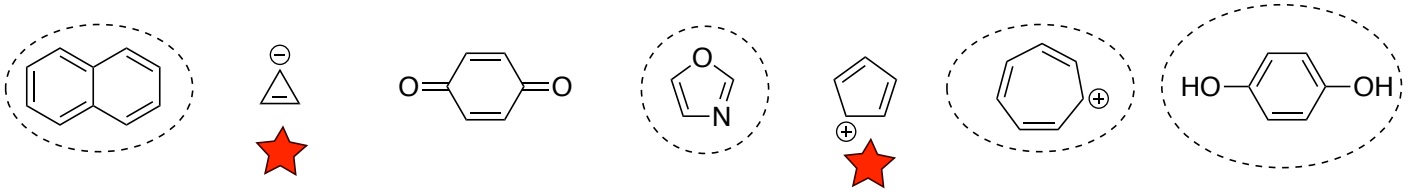
4. Provide the major product or reagents for the reactions below.



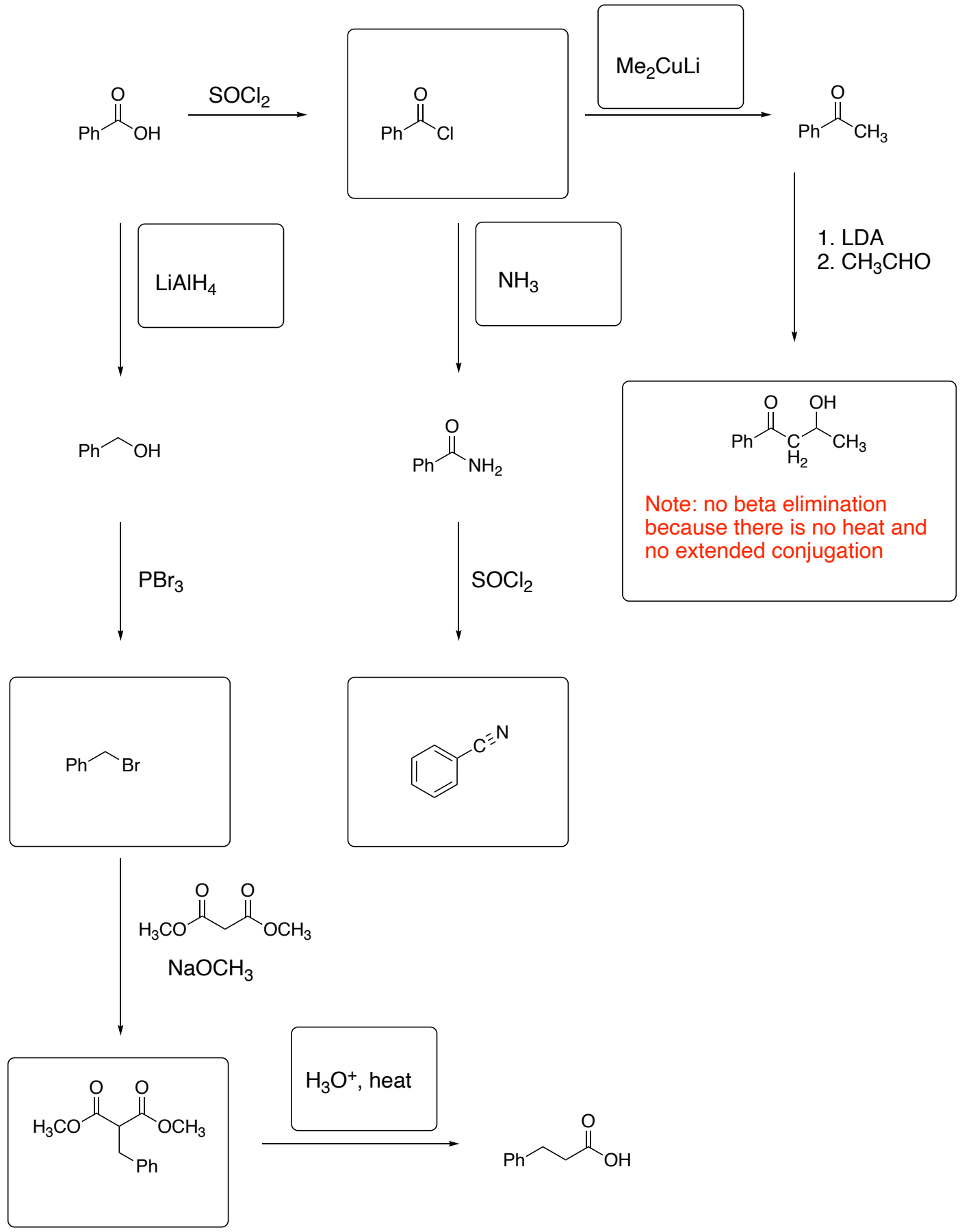
5. Order the following bases strongest (1) to weakest (6)

NaH	NaO*t*-Bu	Et_3N	NaOMe	*i*-Pr_2NLi (LDA)	CH_3CH_2MgBr
3	4	6	5	2	1

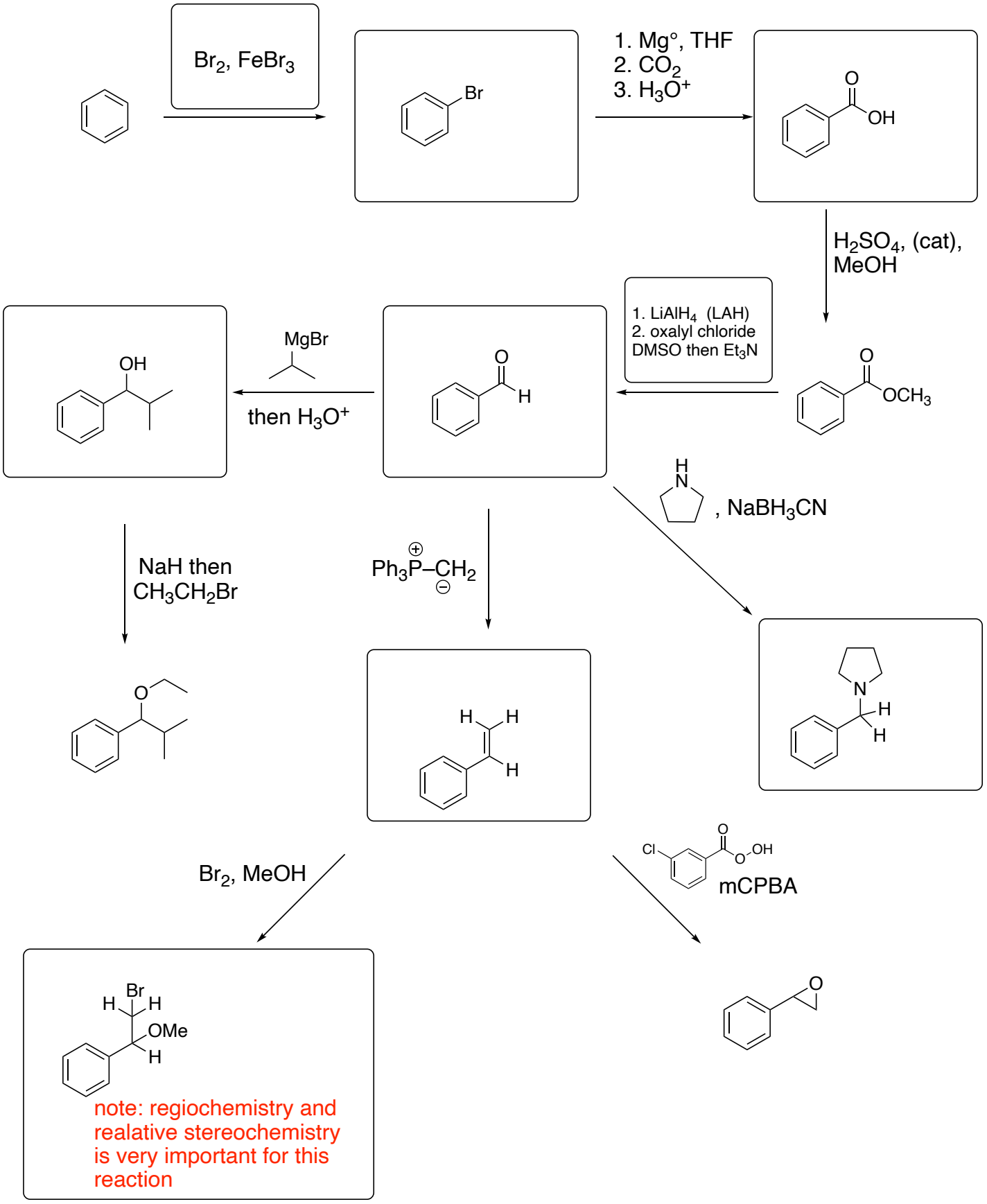
6. Circle the compounds below that are aromatic and star the ones that are antiaromatic.



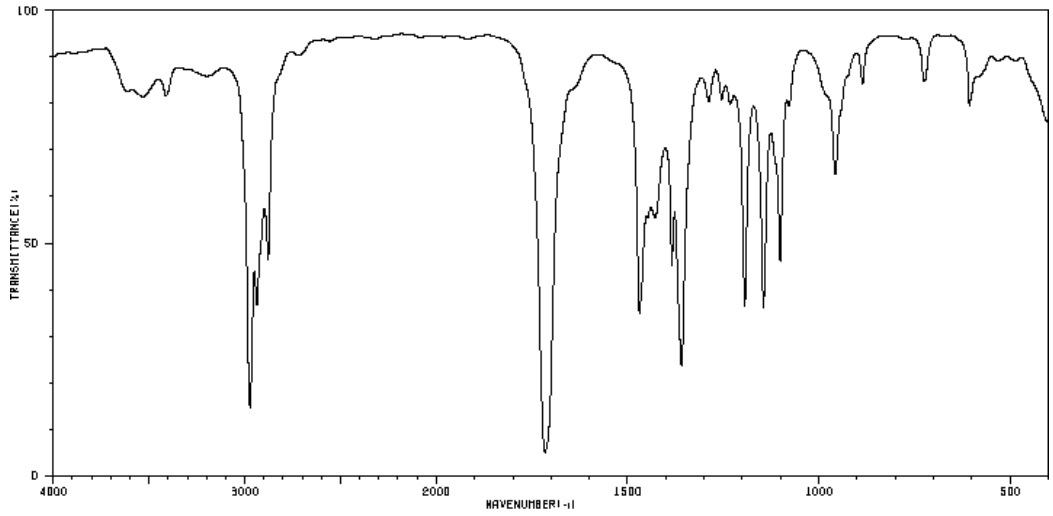
7. Provide the major product or reagents for the reactions below.

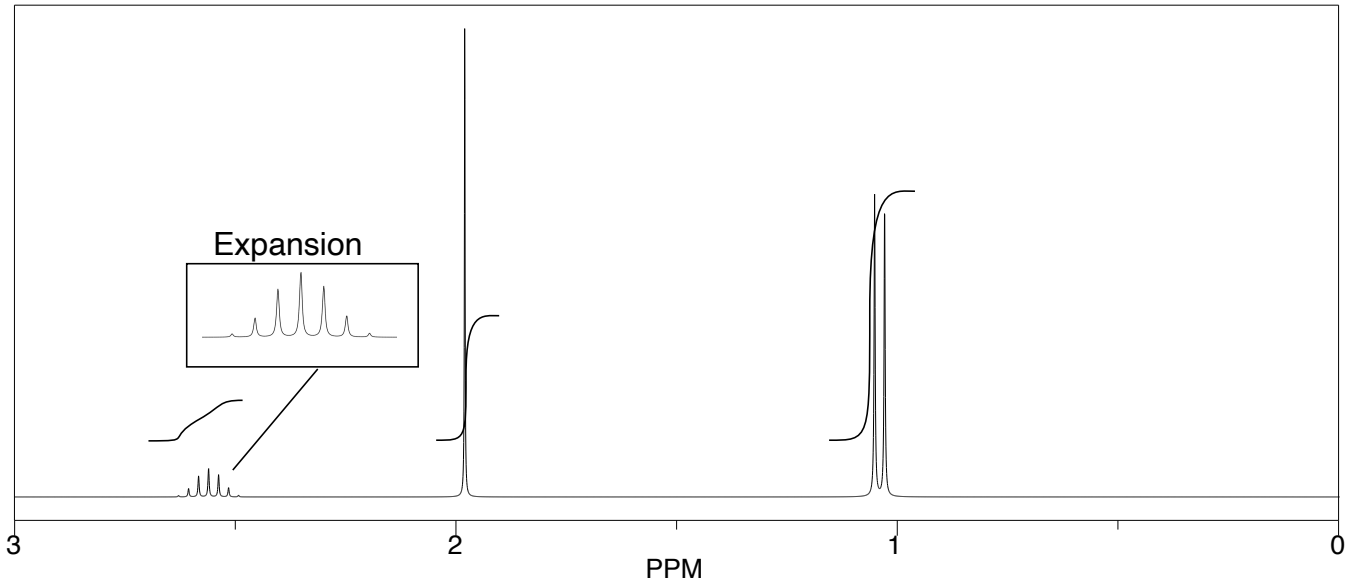


8. Provide the major product or reagents for the reactions below.



9. Answer the following questions about an unknown molecule with a molecular formula of $C_5H_{10}O$. The IR and 1H NMR spectra are shown below. The ^{13}C NMR shows resonances at 210, 41, 27, and 16 ppm.

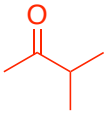




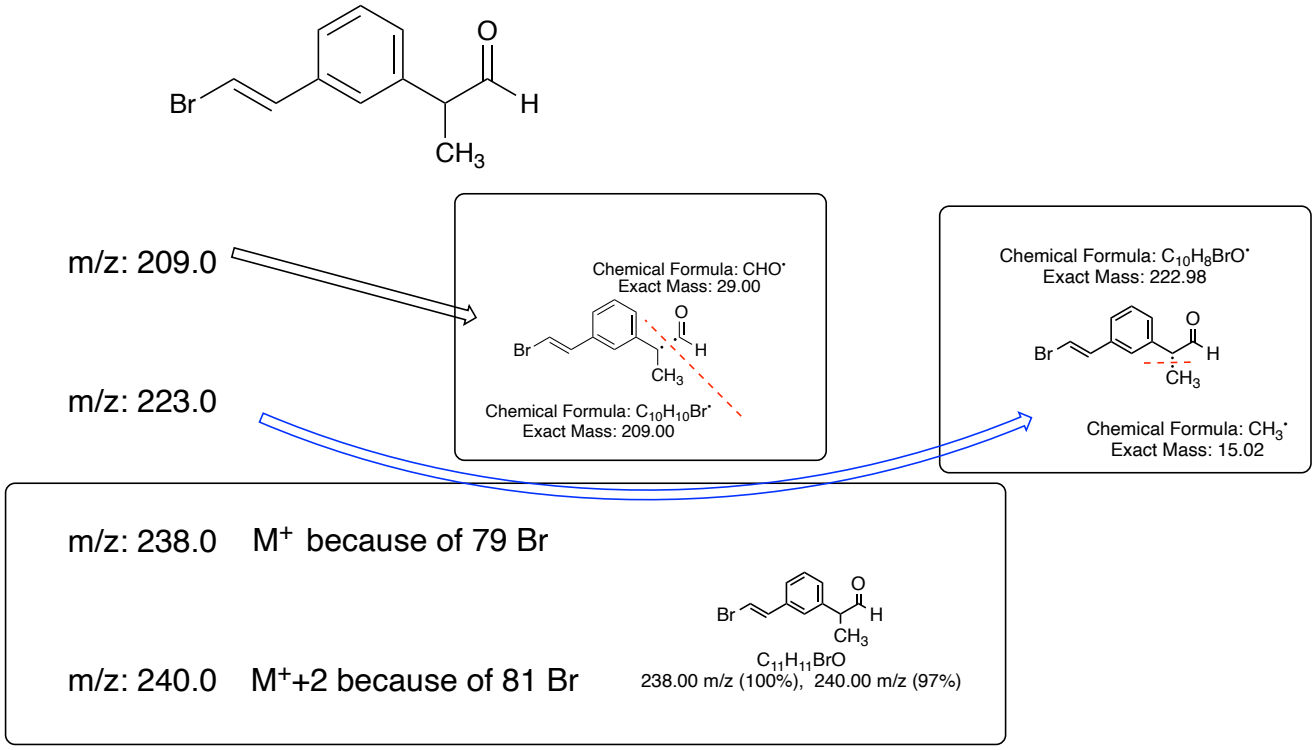
How many degrees of unsaturation does the molecule possess? 1

What type of functional group does the carbon resonance at 210 ppm represent? C=O (maybe of ketone?)

What is the structure of this compound?



10. The compound given has the following significant MS peaks. Indicate what these coorespond to in the structure.



11. Assign the ^{1}H NMR peaks in the following spectrum