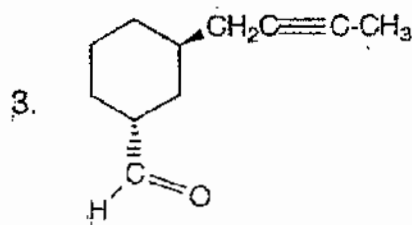
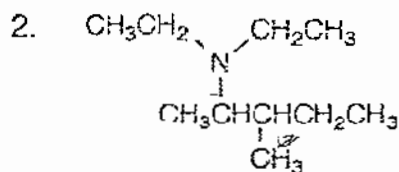
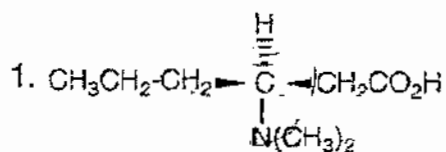


Final E  
Final Exam

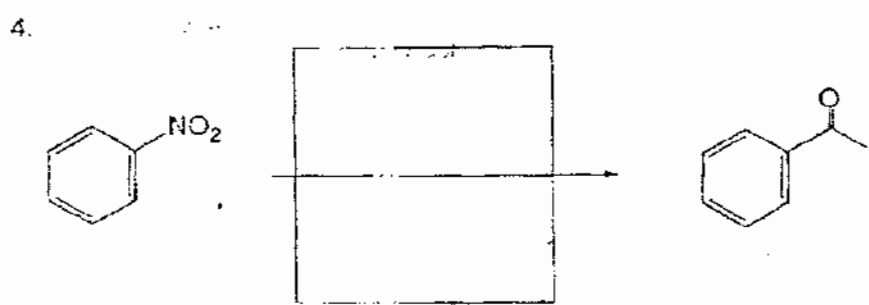
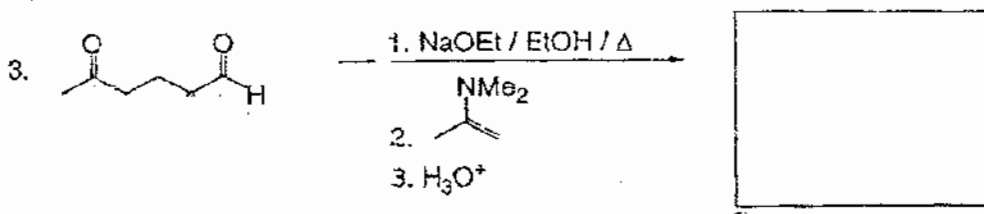
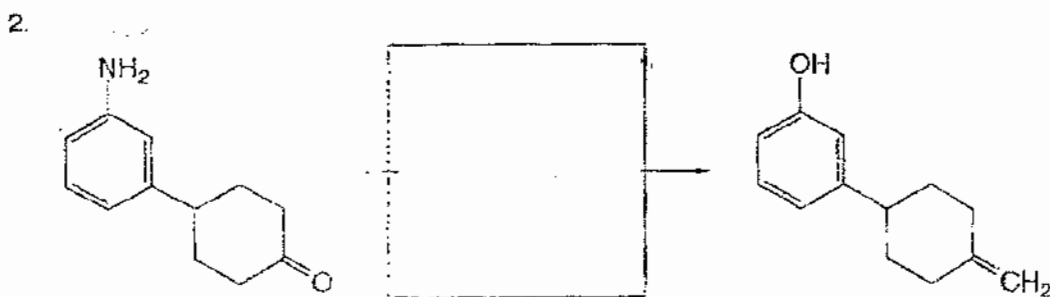
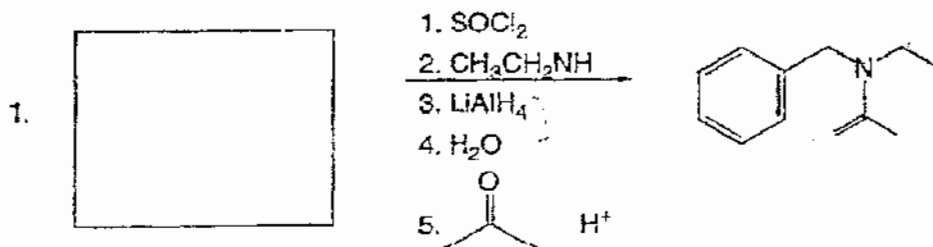
A. Nomenclature: Total = 9 points, 3 points each

Please provide an acceptable name for each of the following compounds, noting stereochemistry where appropriate.

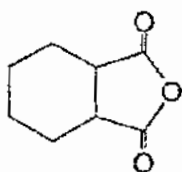


**B. Reactions (7 points each problem; 49 points total)**

Please provide the major product, or necessary reagents, or starting material in the box provided below. Be sure your drawing indicates stereochemistry if applicable.



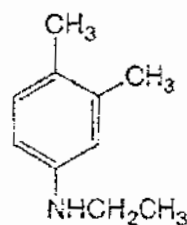
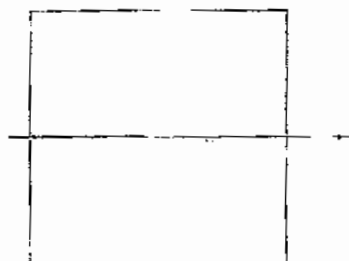
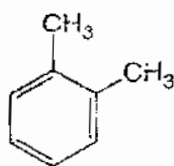
5.



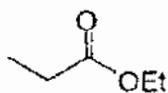
1.  $\text{H}_3\text{O}^+$
2.  $\text{SOCl}_2$  (xs)
3.  $\text{NH}_3$  (xs)
4.  $\text{Cl}_2$  (xs) /  $\text{NaOH}$  /  $\text{H}_2\text{O}$



6.



7.

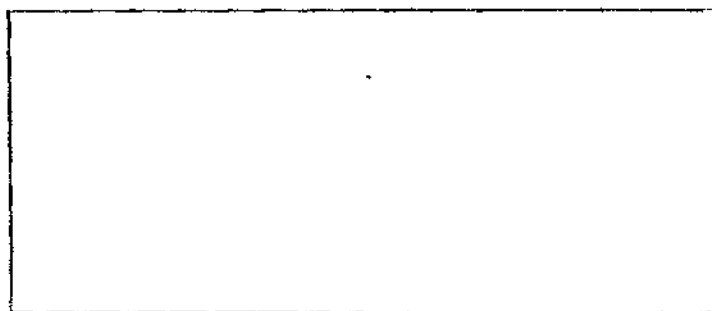
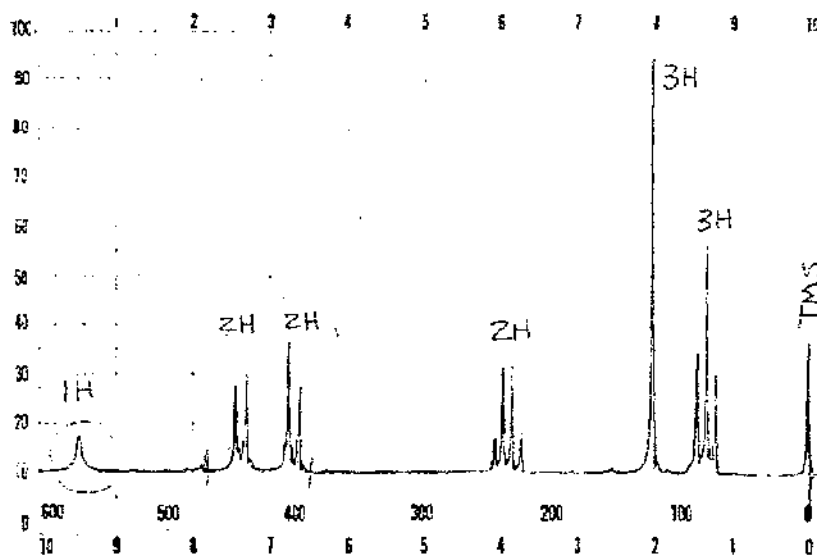
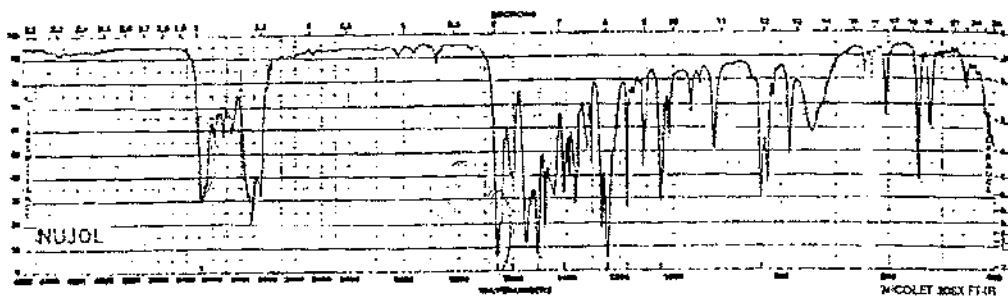


1.  $\text{NaOEt}$  /  $\text{EtOH}$
2.  $\text{H}_3\text{O}^+$
3.  $\text{NaOEt}$  /  $\text{EtOH}$
4.  $\text{EtBr}$
5.  $\text{H}_3\text{O}^+$  /  $\Delta$



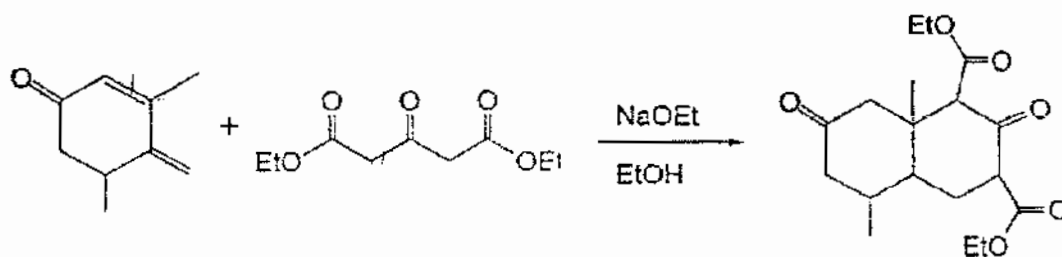
C. Spectroscopy: 10 points total

The spectra below were recorded on a compound whose molecular formula is  $C_{10}H_{13}NO_2$ . Please draw the structure of the substance in the box provided below.



D. Mechanism: (16 pts total)

1. Provide a clear mechanism for the following reaction. Use curved arrow notation to indicate "electron flow". Show all intermediates and all formal charges. (10 points)



**E. Synthesis: 16 Points**

Synthesize the molecule below using any of the following reagents: cyclopentane, benzene, toluene; alcohols, alkenes or alkynes of three carbons or less; any inorganic reagents; any oxidizing or reducing agents; and any peroxyacids.

