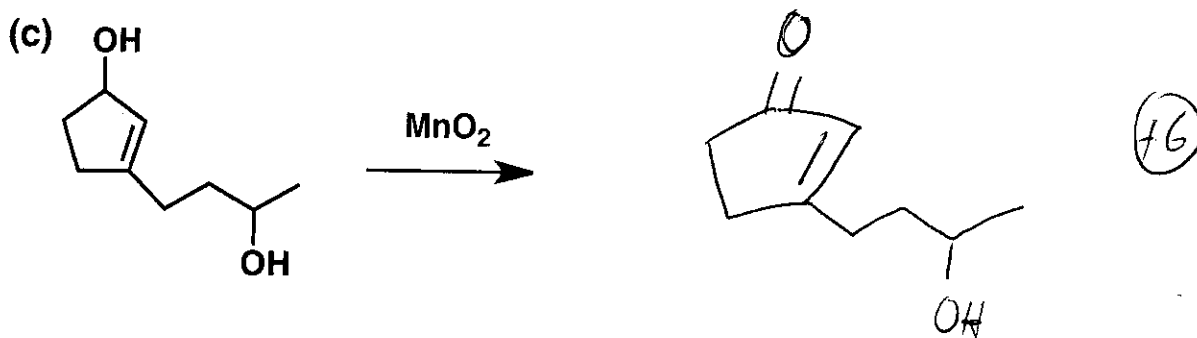
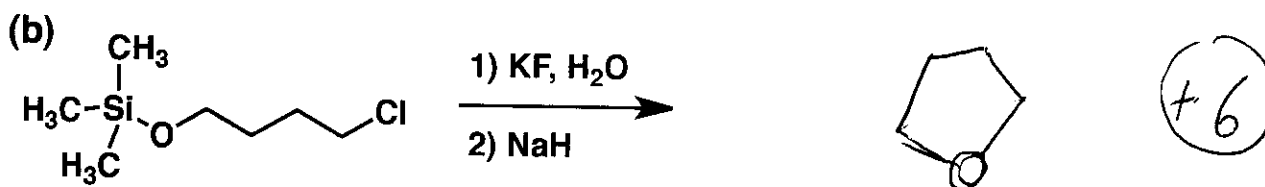
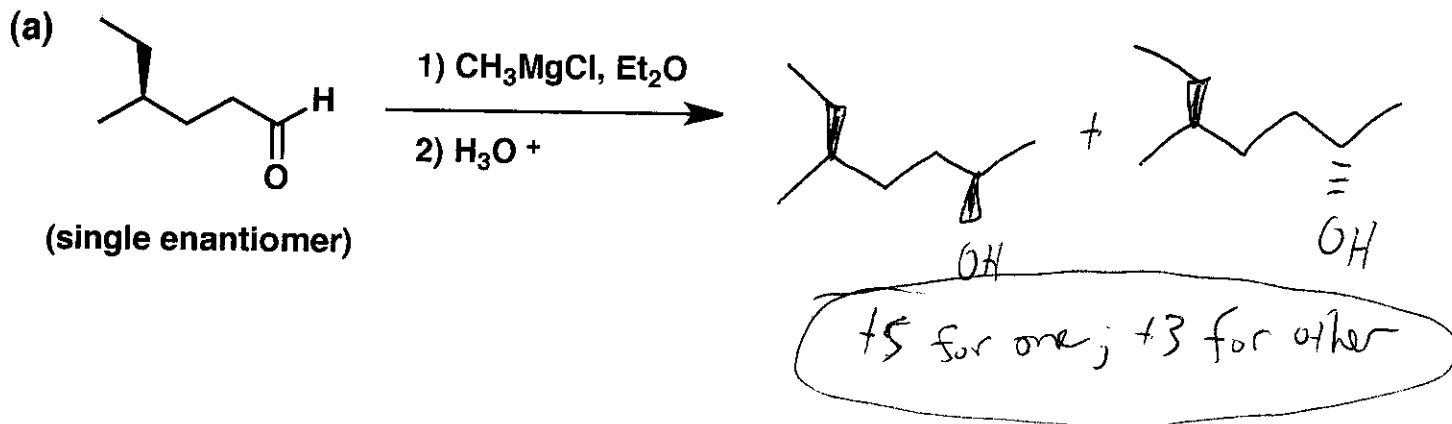


Last Name Answer

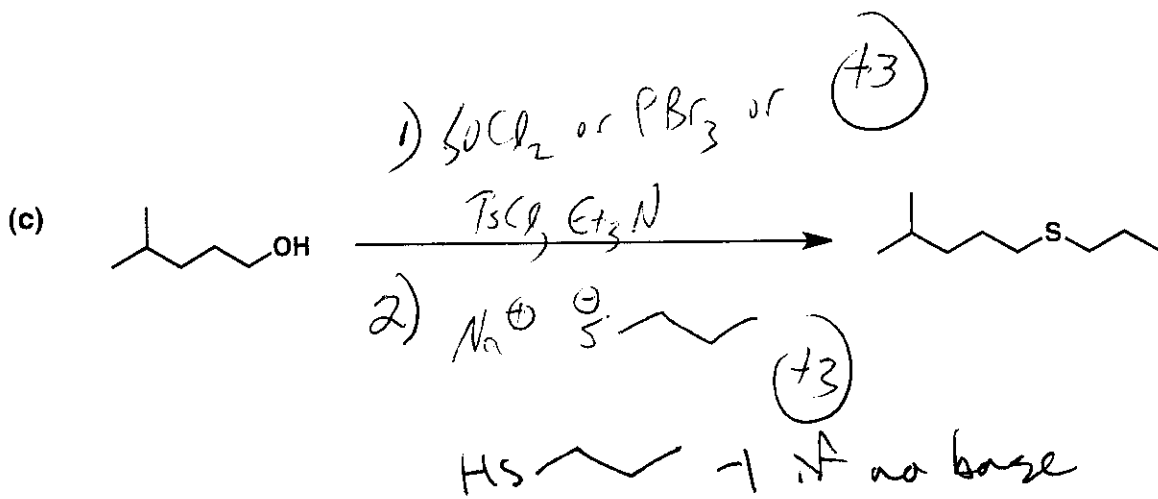
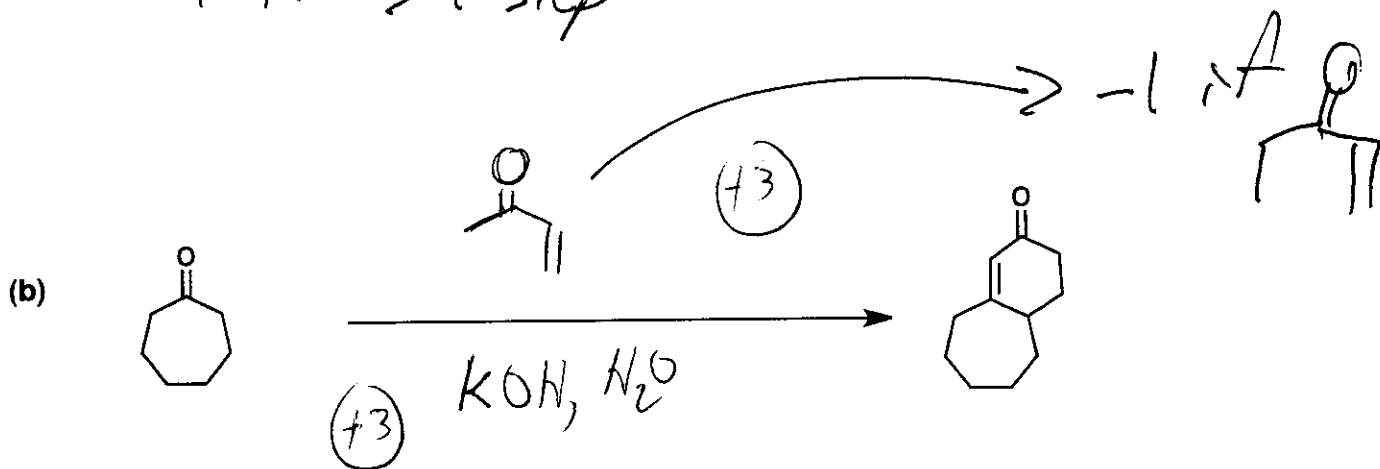
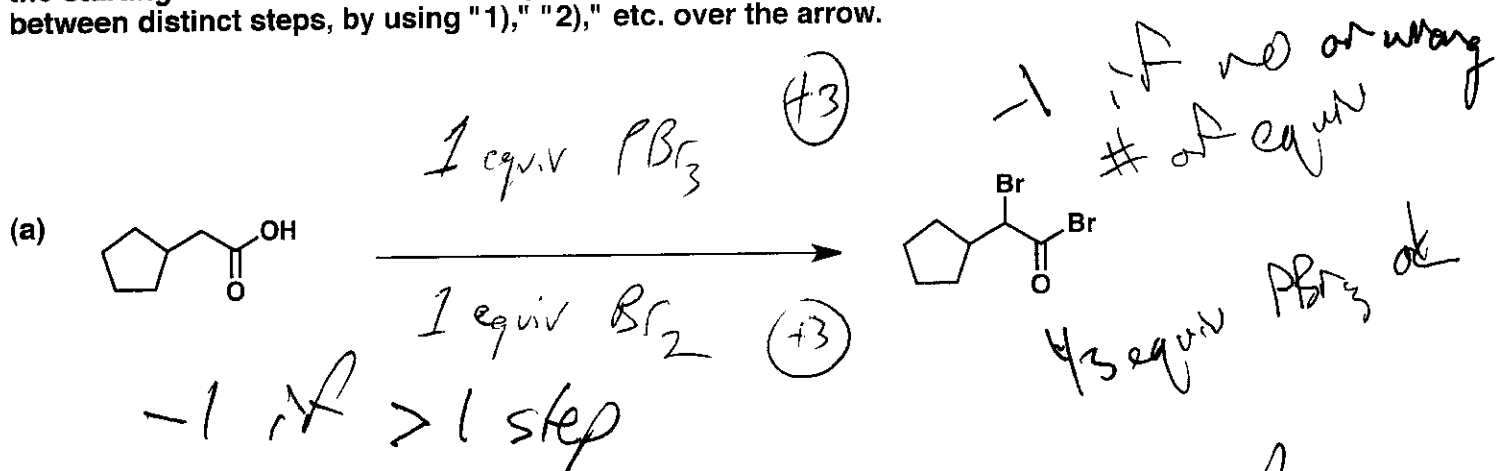
First Name Key

[Use scratch paper at back of exam to work out answers; final answers must be recorded at the proper place on the exam itself for credit.]

1. (20 points) Show the major product or products expected from each reaction.

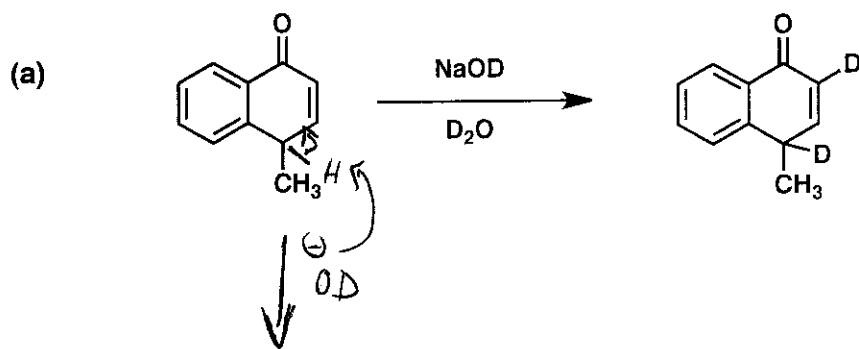


2. (18 points) Show the reagents and other organic molecules required to convert the starting material to the indicated product. Be sure to differentiate clearly between distinct steps, by using "1)," "2)," etc. over the arrow.

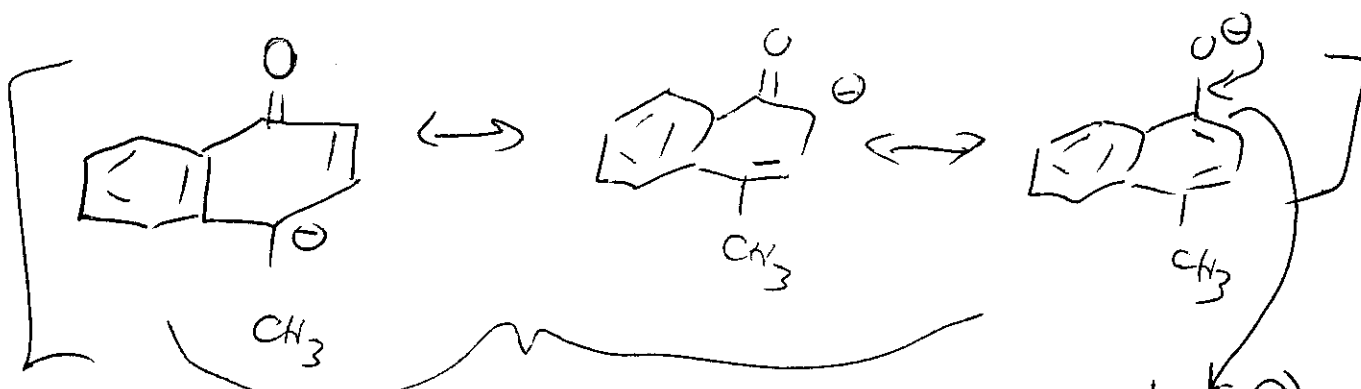


Handwritten note: HSCH\_2CH\_2CH\_3 if just thiol + 2

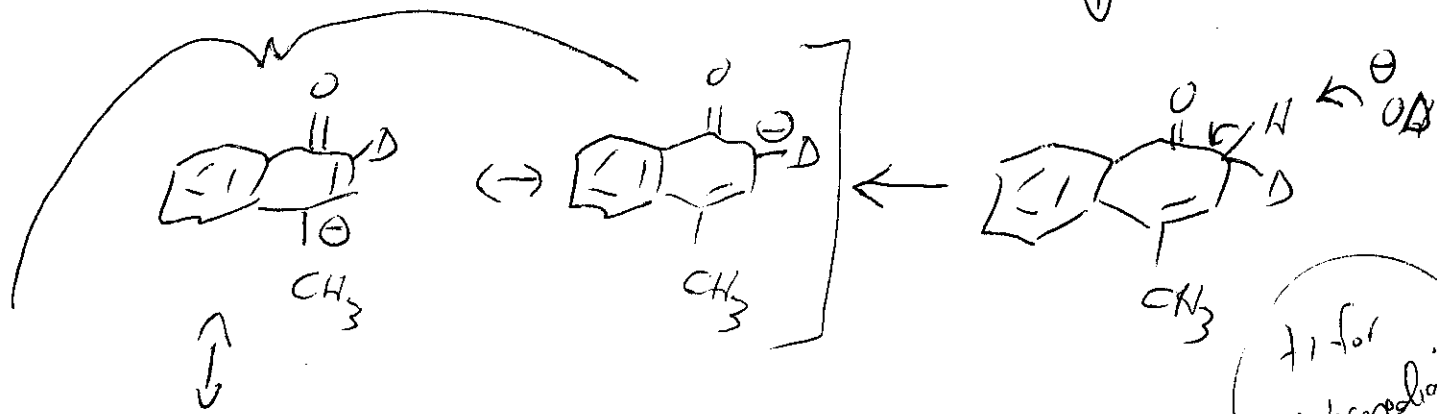
3. (20 points) Draw a complete mechanism (curved arrows) for each of the reactions shown below; be sure to show all important resonance forms.



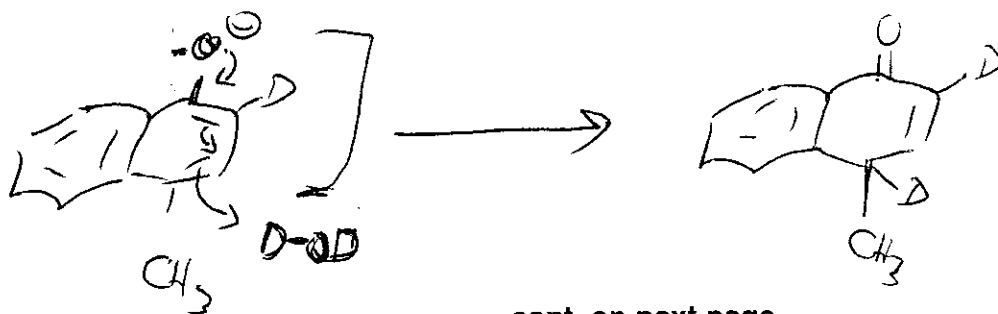
+1 for each set of mechanistic arrows [14 total]



+1 for each res. structure [16 total]



+1 for intermediate

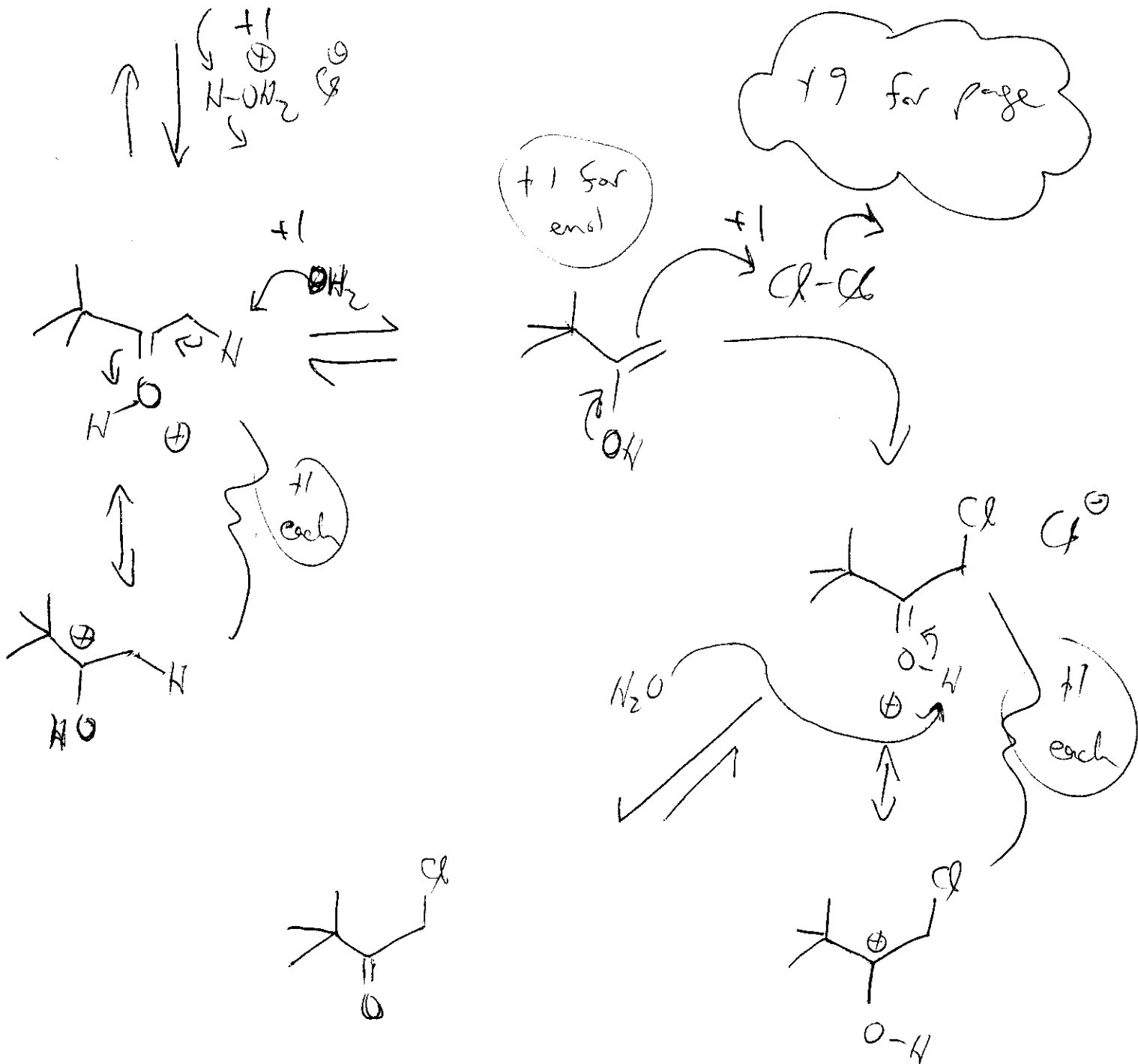
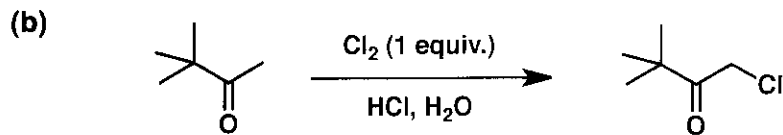


-- cont. on next page --

+11 total points

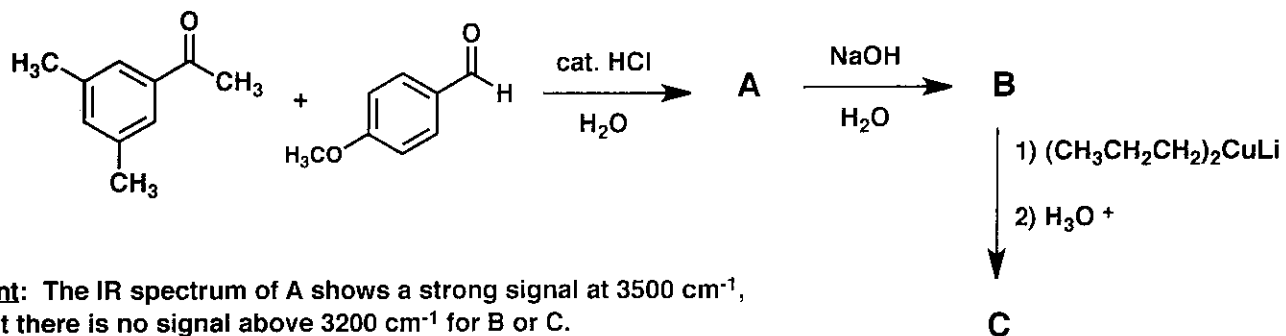
3. (cont.)

+1 for each set of mechanistic arrows [-4 total]



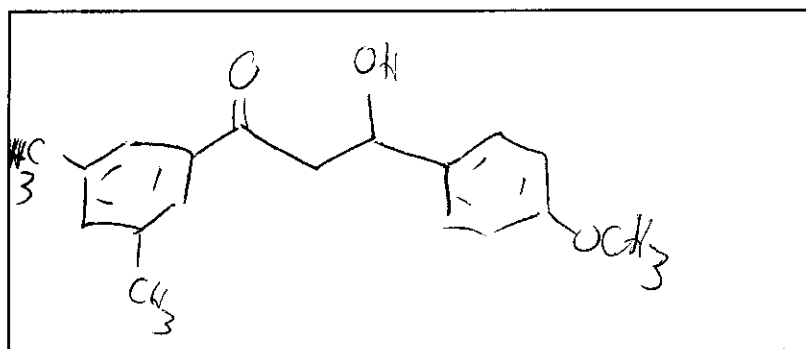
Name \_\_\_\_\_

4. (18 points) Show the structure of A, B and C in the appropriate boxes. The structures you propose should be consistent with the spectroscopic data provided.



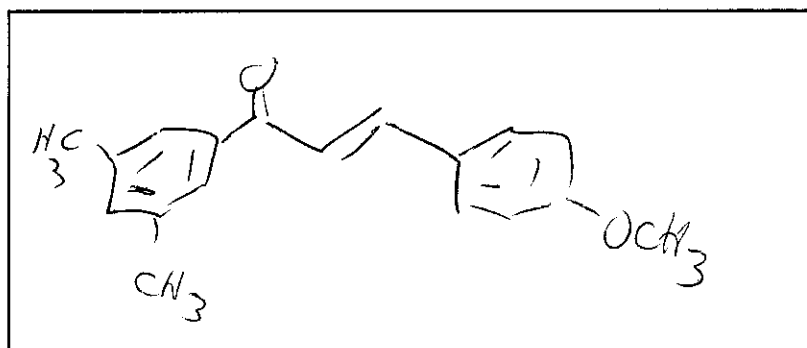
**Hint:** The IR spectrum of A shows a strong signal at  $3500\text{ cm}^{-1}$ , but there is no signal above  $3200\text{ cm}^{-1}$  for B or C.

A =



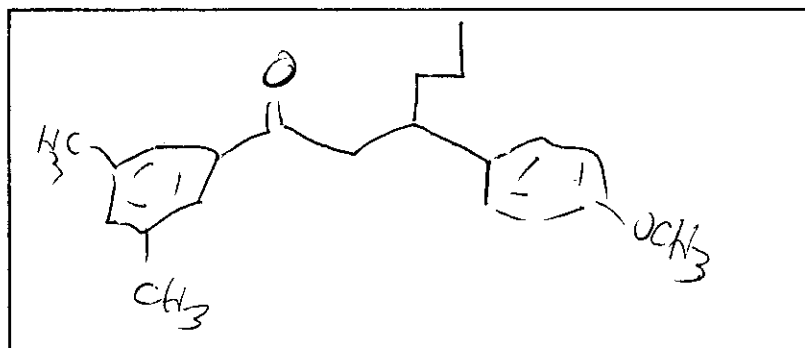
(+6)

B =



(+6)

C =



(+6)

Name \_\_\_\_\_

5. (24 points) Devise a synthetic beginning with the "starting materials" to generate the "target", using any necessary reagents.

