CHEM 330

Exam 1
October 19, 2015

Your name: _____

This exam contains a total of 5 pages

This a closed-notes, closed-book exam

You may use your set of molecular models

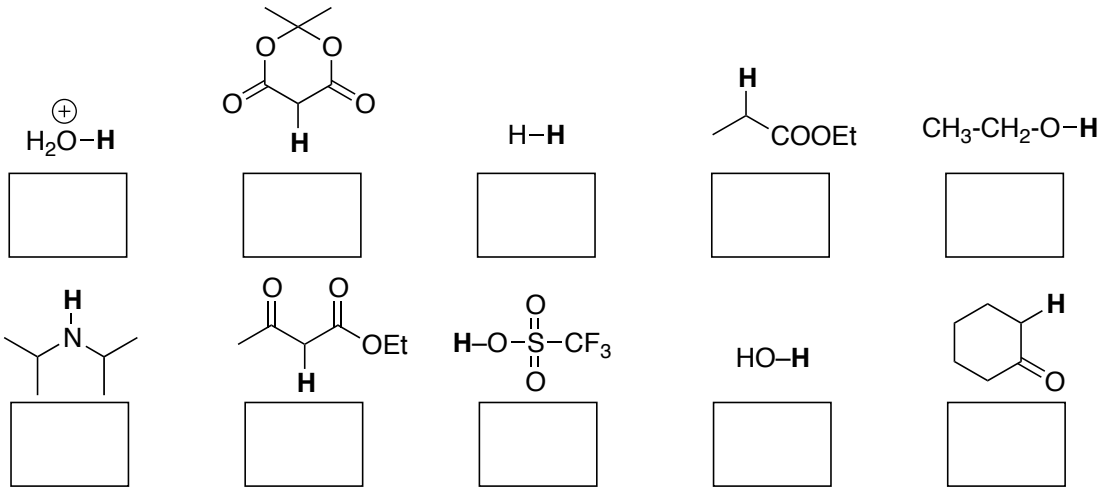
Time: 1.5 h

1. _____ / 20
2. _____ / 20
3. _____ / 20
4. _____ / 20
5. _____ / 20

TOTAL _____ / 100

This exam counts for 25% of your CHEM 330 final grade

1. (20 pts.) Indicate the approximate pKa for the protons in boldface in the following molecules (write your answers in the appropriate boxes):



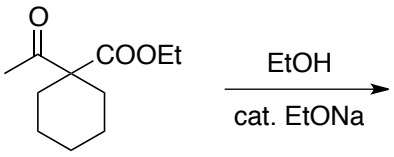
2. (20 pts.) Write a chemical equation to show an example of the following name reactions (**no need to write mechanisms**: just the reactions):

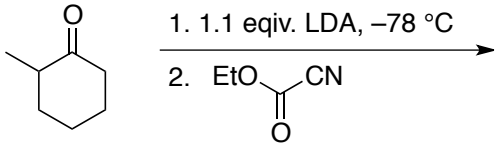
a. Yonemitsu reaction:

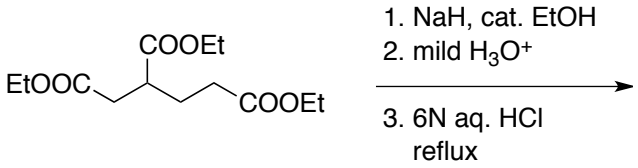
b. Miller reaction:

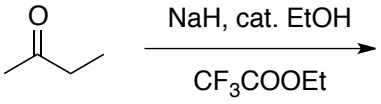
c. Krapcho reaction:

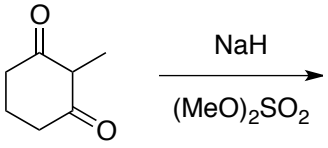
3. (20 pts.) Draw the structure of the major product expected from the reactions shown below. If no reaction is expected, answer "NO REACTION." **Note**: it is understood that each reaction is subject to a final aqueous workup.

a. 

b. 

c. 

d. 

e. 

4. (20 pts.) Propose a method to achieve the transformations shown below. In each case, a multistep sequence (= not just one reaction, but several) may be required. Indicate all requisite reagents, in the correct order, as a numbered list above/below the reaction arrow. **Aqueous workups after each step are understood and there is no need to specify them.**

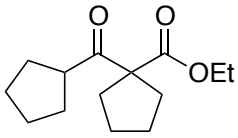
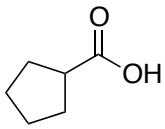
a. 

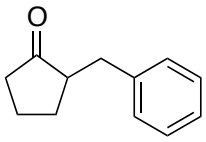
b. 

c. 

d. 

5. (20 pts.) Propose a method to synthesize the substances shown below starting from the indicated materials. Assume the availability of all reagents needed to convert the starting compound into the product (e.g, acids, bases, alkyl halides, etc.). Present your answer as a flowchart. **It is not necessary to draw mechanisms**. **Also, aqueous workups after each step are understood and do not need to be indicated.**

a.  starting from 

b.  starting from