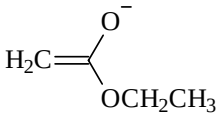
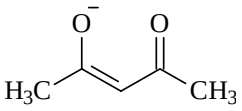
Chemistry 211 Name _____
Chapter 21 Quiz #1

1. Rank the compounds below in order of decreasing basicity.



A

B



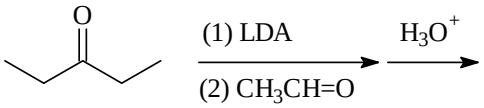
C

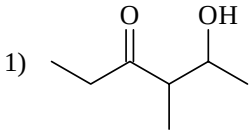
1) B>C>A 2) B>A>C 3) C>A>B 4) A>C>B

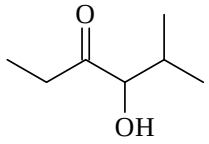
2. Which one of the following can give no Claisen condensation product?

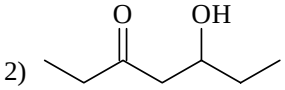
1) $(CH_3)_3CCO_2Et$ 2) $C_6H_5CH_2CO_2Et$
3) $H_2C{=}CHCH_2CH_2CO_2Et$ 4) $(CH_3)_2CHCH_2CO_2Et$

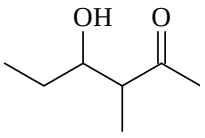
3. Which of the following is the product in the reaction shown below?



1) 

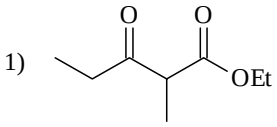
3) 

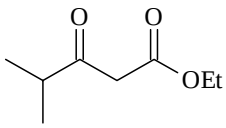
2) 

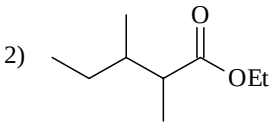
4) 

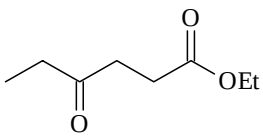
1) 1 2) 2 3) 3 4) 4

4. Which of the following is the Claisen condensation product of ethyl propanoate, $CH_3CH_2CO_2Et$?

1) 

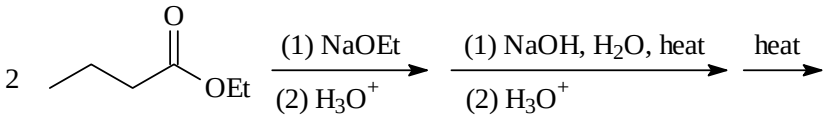
3) 

2) 

4) 

1) 1 2) 2 3) 3 4) 4

5. Which of the following is the product of the reaction sequence shown below?



1) 4-methyl-3-hexanone
2) 4-heptanone
3) 2-propylbutanoic acid
4) 2-ethylpentanoic acid

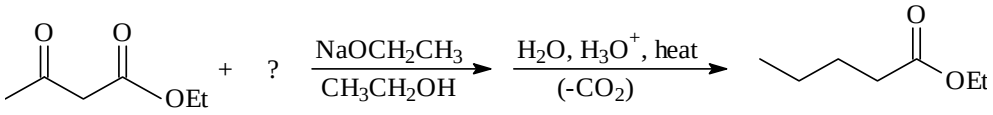
6. Heating butylmalonic acid, $CH_3CH_2CH_2CH_2CH(CO_2H)_2$, to 140^0C yields:

1) hexanoic acid
2) pentanoic acid
3) 2-methylpentanoic acid
4) 2-hexenoic acid

7. How many different Claisen condensation products are possible in the reaction of equal amounts of ethyl acetate (CH_3CO_2Et) and ethyl propanoate ($CH_3CH_2CO_2Et$)?

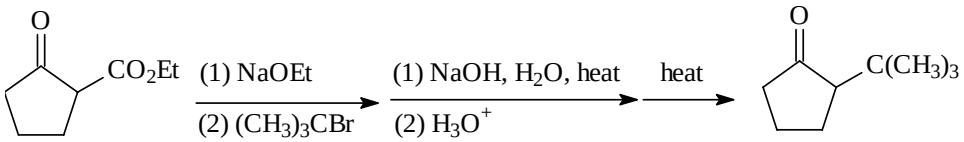
1) only one 2) two 3) three 4) four

8. Which of the following could be used as the missing reagent to carry out the following transformation?



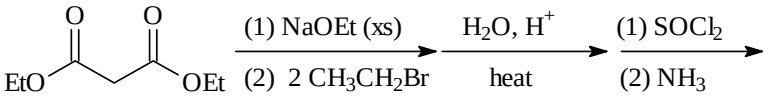
1) $CH_3CH{=}O$
2) $CH_3CH_2CH_2OH$
3) $CH_3CH_2CH_2Br$
4) $CH_3CH_2CH_2CH_2I$

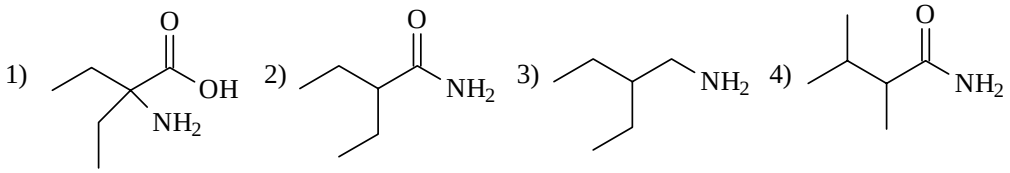
9. Consider the following synthetic scheme below. Which of the following best explains why the synthesis does not work?



1) Using NaOEt gives Claisen condensation instead of alkylation.
2) The alkyl halide used will lead to elimination rather than alkylation.
3) The keto-acid formed does not decarboxylate in the last step.
4) The base-promoted hydrolysis step does not work on the -keto ester intermediate.

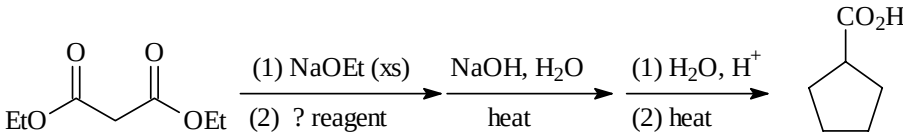
10. What is the product of the following reaction sequence?





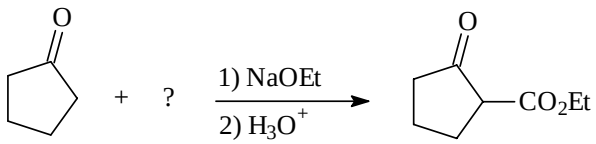
1) 1 2) 2 3) 3 4) 4

11. What is the missing reagent in the synthesis shown below?



1) bromocyclopentane
2) 1,4-dibromobutane
3) 1,5-dibromopentane
4) 1,1-dibromocyclopentane

12. Identify the missing reagent in the reaction shown below.



1) ethyl formate, HCO_2Et
2) diethyl carbonate, $(EtO)_2C=O$
3) diethyl oxalate, EtO_2CCO_2Et
4) ethyl acetate, CH_3CO_2Et