LeAP: Aldol Condensation

- Due Nov 7, 2024 at 11:59pm
- Points 5
- Questions 7
- Available Oct 6, 2024 at 12am - Nov 11, 2024 at 11:59pm
- Time Limit None
- Allowed Attempts 2

Instructions

Lecture Application Practices (LeAPs) serve as initial opportunities for students to apply the information they've gathered from the pre-lecture videos and in-person lectures/lecture videos.

Students are strongly encouraged to complete LeAPs on the same day that the corresponding topic is completed in class. However, to provide consistent due dates, sets of LeAPs will be due on Thursdays at 11:59 PM - Chicago time. See the Weekly Schedules or Course Calendar for specific due dates for each activity.

Each LeAP is worth 5 points. Credit will be awarded based on accuracy. There is no time limit. Students will receive two attempts for each assignment and the highest score will be recorded in the gradebook. LeAPs may consist of multiple-choice, calculation, ranking, choose all that apply, and fill in the blank type questions.

This quiz was locked Nov 11, 2024 at 11:59pm.

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	3 minutes	5 out of 5
LATEST	Attempt 2	3 minutes	5 out of 5
	Attempt 1	21 minutes	4 out of 5

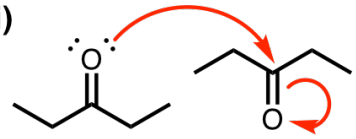
ⓘ Correct answers are hidden.

Score for this attempt: 5 out of 5
Submitted Nov 2, 2024 at 3:13pm
This attempt took 3 minutes.

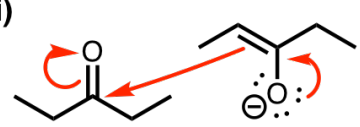
Question 1
0.5 / 0.5 pts

Which option best describes the arrow-pushing mechanism for the **addition** step in an aldol condensation reaction under **basic** conditions?

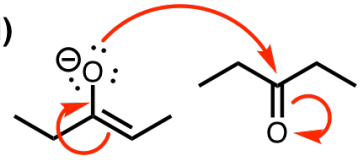
i)



ii)



iii)



iv)

- i
- ii
- iii
- iv

Question 2

0.5 / 0.5 pts

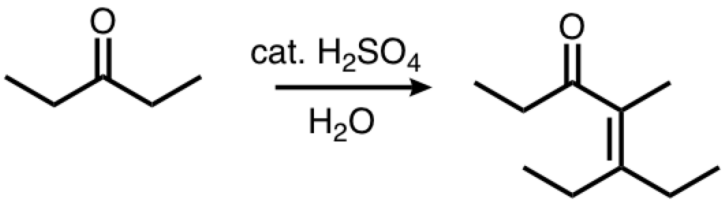
What **conjugate base** must be formed during the **E1cb mechansim** in an aldol condensation reaction running under **basic** conditions?

- enol
- enolate
- α,β-unsaturated carbonyl
- β-hydroxy carbonyl

Question 3

1 / 1 pts

Consider the mechanism for the aldol condensation shown below. Which of the following statements best describe the species that are found in the arrow-pushing mechanism?



- The nucleophile is an enolate, the conjugate base is an enolate, and the leaving group is hydroxide.
- The nucleophile is an enol, the conjugate base is an enol, and the leaving group is water.
- The nucleophile is an enolate, the conjugate base is an enol, and the leaving group is hydroxide.

- The nucleophile is an enol, the conjugate base is an enol, and the leaving group is hydroxide.

Question 4

0.5 / 0.5 pts

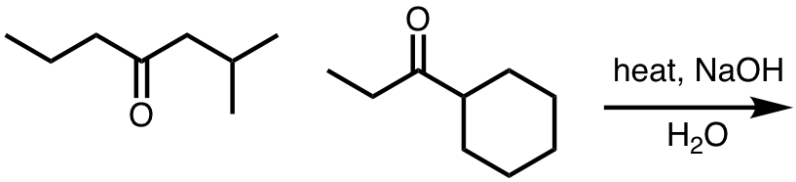
What is the name of the functional group that appears in the final product of the **aldol condensation** from the previous problem?

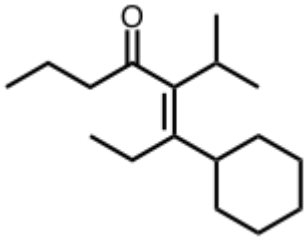
- enolate
- enol
- α,β-unsaturated carbonyl
- β-hydroxycarbonyl

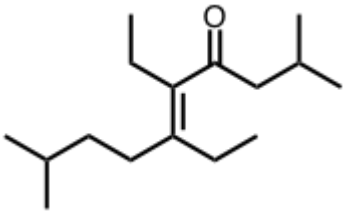
Question 5

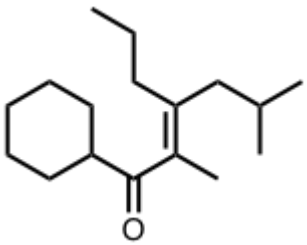
1 / 1 pts

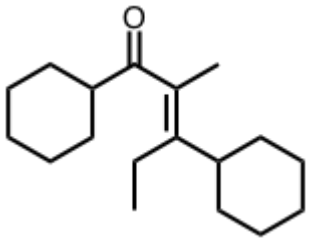
Consider the aldol condensation reaction shown below. Which products may form during this reaction? Choose all that apply.

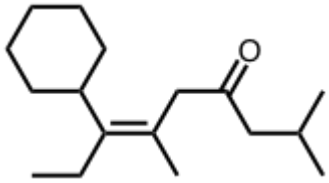






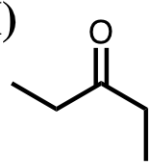


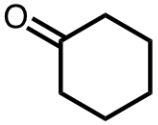


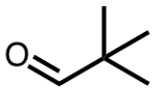


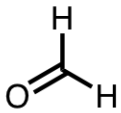
Question 6
0.5 / 0.5 pts

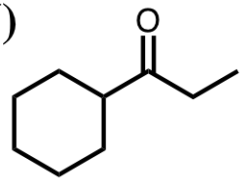
Consider the carbonyl compounds shown below. Which pair of molecules will result in a single organic product (ie. Claisen-Schmidt reaction) when exposed to catalytic NaOH and heat?

I) 

II) 

III) 

IV) 

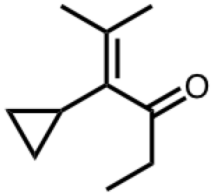
V) 

- I and II
- III and IV
- II and V
- I and IV

Question 7
1 / 1 pts

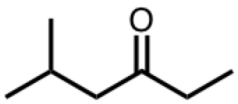
Two carbonyl compounds formed the α,β-unsaturated carbonyl product shown below through an aldol condensation. Which carbonyl acted as the **nucleophile**? *(Hint: Identify the new connection that was made during the reaction, then "rewind" the reaction.)*

Product

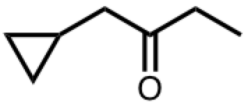


A)

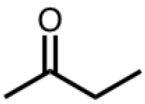
B)



C)



D)



- ○ A
- ○ B
- ◉ C
- ○ D

Quiz Score: 5 out of 5