

LeAP: Alcohol and Ether Activation

- Due Oct 24, 2024 at 11:59pm
- Points 5
- Questions 12
- Available Oct 6, 2024 at 12am - Oct 28, 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 Oct 28, 2024 at 11:59pm.

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	4 minutes	5 out of 5
LATEST	Attempt 2	4 minutes	5 out of 5
	Attempt 1	2,698 minutes	4.5 out of 5

⚠ Correct answers are hidden.

Score for this attempt: 5 out of 5

Submitted Oct 21, 2024 at 12:30pm

This attempt took 4 minutes.



Question 1

0.25 / 0.25 pts

Which of the following reagent(s) would be considered a nucleophilic acid? **Choose all that apply.**

☒ HCl

- ☒ HI
- ☒ HBr
- ☐ H₂SO₄
- ⋮

Question 2

1 / 1 pts

Strong acid can be used to protonate an alcohol and convert it into an exceptional neutral leaving group, water. Which electrophiles will form carbocations (Answer: **Yes** or **No**)? Which substitution (Answer: **SN1** or **SN2** or **No reaction**) and elimination mechanism (Answer: **E1** or **E2** or **No reaction**) will dominate for each electrophile shown below? Write your answers in the blanks provided in the chart.

Carbocation? (Yes or No)	<input type="text" value="No"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text" value="No"/>
Substitution? (SN1 or SN2 or No reaction)	<input type="text" value="SN2"/>	<input type="text" value="SN1"/>	<input type="text" value="SN1"/>	<input type="text" value="SN2"/>
Elimination? (E1 or E2 or No reaction)	<input type="text" value="No reaction"/>	<input type="text" value="E1"/>	<input type="text" value="E1"/>	<input type="text" value="E2"/>

Answer 1:

no

Answer 2:

yes

Answer 3:

yes

Answer 4:

no

Answer 5:

sn2

Answer 6:

sn1

Answer 7:

sn1

Answer 8:

sn2

Answer 9:

no reaction

Answer 10:

e1

Answer 11:

e1

Answer 12:

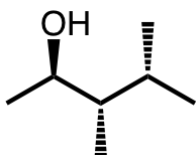
e2



Question 3

0.25 / 0.25 pts

An elimination reaction to form an alkene is attempted by exposing the molecule shown below to lithium diisopropylamide (LDA). However, no C=C bond forms. Why? What kind of reaction actually takes place when LDA is added to the molecule?



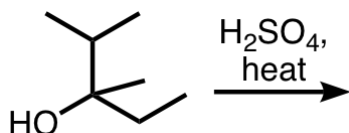
- ☒ -OH is a bad leaving group. An acid/base reaction occurs.
- ☐ LDA is a weak nucleophile. An S_N2 reaction occurs.
- ☐ LDA is a weak base. No reaction occurs.
- ☐ LDA is a weak nucleophile. An S_N1 reaction occurs.



Question 4

0.5 / 0.5 pts

Use the reaction shown below to answer questions 4-5.



Based on the properties of the reagents, what will be the dominant mechanism in the reaction?

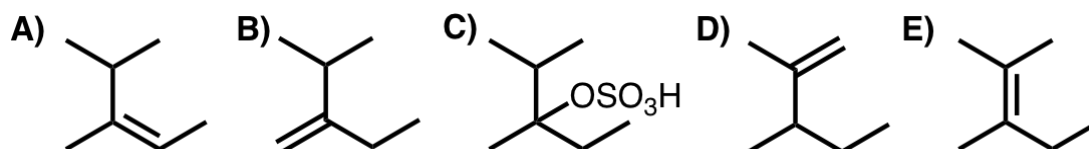
- ☐ S_N2
- ☐ S_N1
- ☒ E1
- ☐ E2



Question 5

0.25 / 0.25 pts

What will be the major organic product formed from the reaction shown in the previous problem?



☐ A

☐ B

☐ C

☐ D

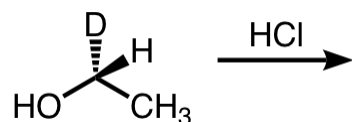
☒ E



Question 6

0.5 / 0.5 pts

Use the reaction shown below to answer questions 6-7.



Based on the properties of the reagents and the substitution of the alpha carbon of the alcohol, what will be the dominant mechanism in the reaction?

☒ S_N2

☐ S_N1

☐ E1

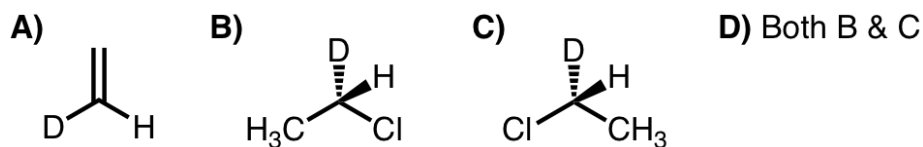
☐ E2



Question 7

0.25 / 0.25 pts

What will be the major organic product(s) formed from the reaction shown in the previous problem?



☐ A

☒ B

☐ C

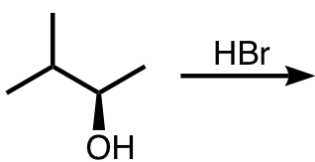
☐ D



Question 8

0.5 / 0.5 pts

Use the reaction shown below to answer questions 8-9.



Based on the properties of the reagents and the substitution of the alpha carbon of the alcohol, what will be the dominant mechanism in the reaction?

☐ S_N2

☒ S_N1

☐ E1

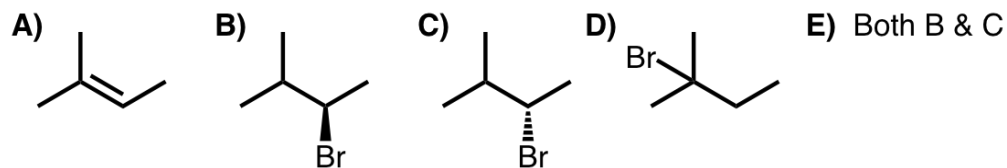
☐ E2

⋮

Question 9

0.25 / 0.25 pts

What will be the major organic product(s) formed from the reaction shown in the previous problem?



☐ A

☐ B

☐ C

☒ D

☐ E

⋮

Question 10

0.25 / 0.25 pts

Which alcohol activation reagent(s) allow you to avoid the formation of carbocations and control the stereochemistry at the alpha carbon through inversion or retention? **Choose all that apply.**

☐ HBr

☒ PBr₃

☒ PCl₃

☒ pyridine, SOCl₂

☐ HCl

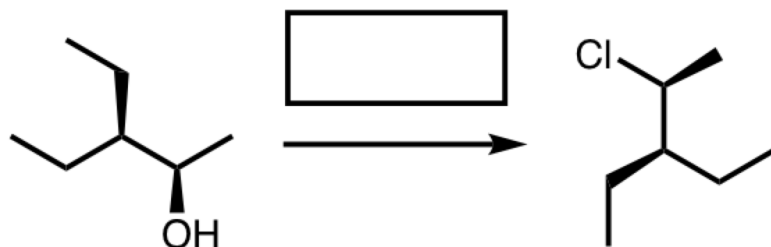
☒ CIMs, pyridine



Question 11

0.5 / 0.5 pts

Which reagent should be placed in the box to complete the reaction shown below?



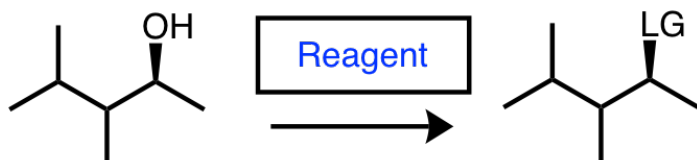
- ☒ pyridine, SOCl_2
- ☐ pyridine, TsCl
- ☐ HCl
- ☐ All of the above



Question 12

0.5 / 0.5 pts

Which reagent will convert an alcohol to a good leaving group and follow the stereochemistry shown below?



- ☐ HCl
- ☐ pyridine, SOCl_2
- ☐ PBr_3
- ☒ ClTs , pyridine

Quiz Score: 5 out of 5