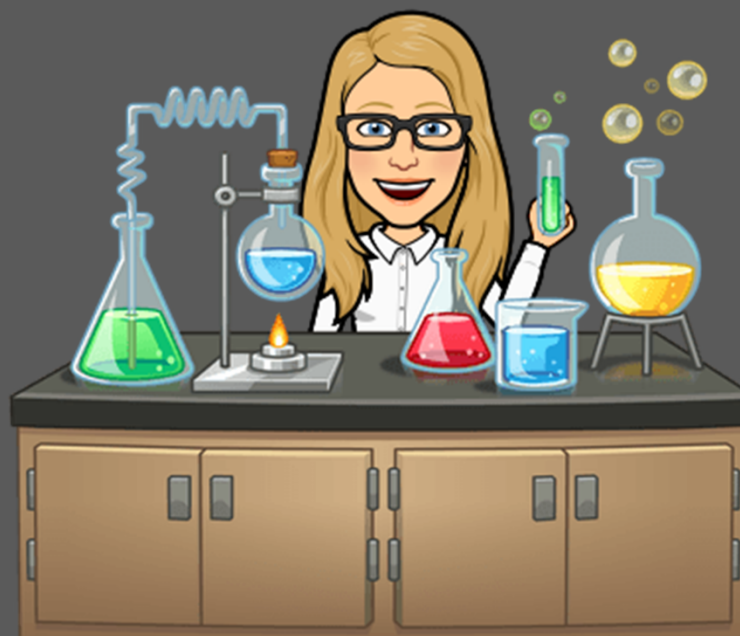


For clicker question voting, go to:
<https://pollev.com/lauriestarke263>



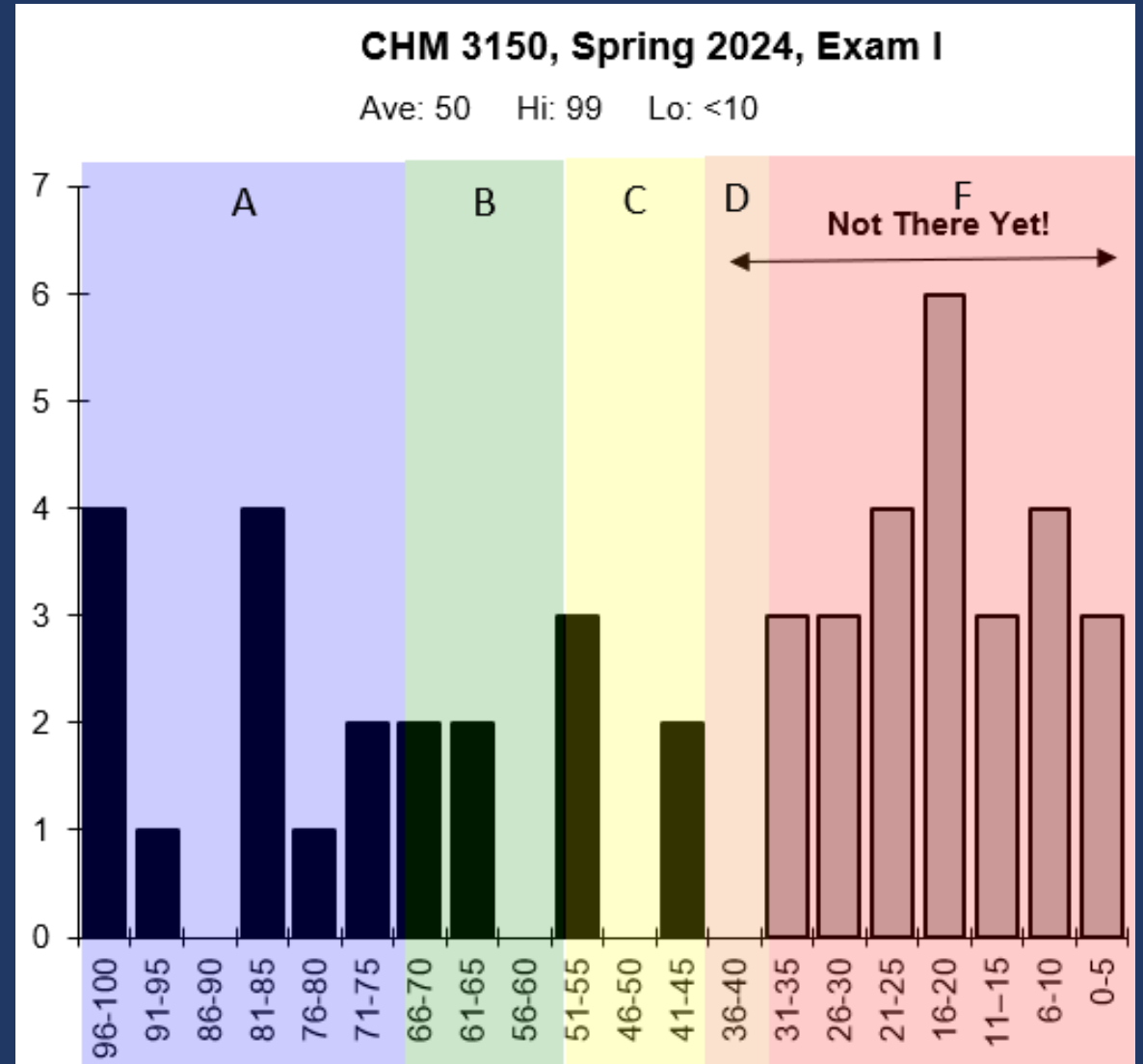
Dr. Laurie S. Starkey
Cal Poly Pomona

CHM 3150 Organic Chemistry II
2/27/24

Exam I Results

A/B/C... ranges are to give you a rough idea of projected CHM 3150 grade based only on this exam score + full homework credit.

Note: lowest midterm score will be dropped!



Exam Wrapper Survey

due
Sunday
3/3

CHM 3150 Exam Wrapper - Post-Test Survey Name: _____

Metacognition By taking a step back and **thinking** about the way you **learn**, you can **improve** your learning! The following survey will guide you through an exercise in **self-reflection**, with the goal of improving your performance on the next exam. *You will earn 4 points credit if you complete this survey, and 4 points for corrections (*include written reflection, if score <50).* It analyzes the following three areas:

1. How did you prepare for this exam?
2. What kinds of mistakes did you make?
3. How will you prepare differently next time?

What was your score on the exam? (out of 100 points)

What was your grade in CHM 1220? CHM 3140? Are you repeating CHM 3150? Y / N

1. Leading up to the exam, approximately how many hours per week outside of class (on average) did you spend studying Organic Chemistry?

2. Given the number of textbook problems in each chapter (#), about how many did you work on?

Mark here if no VitalSource book:

Ch.11 (Synthesis)	~100	Ch. 12 (Alcohols)	~200	Ch. 13 (Ethers)	~200		
In-chapter	<input type="text"/>	In-chapter	<input type="text"/>	In-chapter	<input type="text"/>	# of Flashcards?	<input type="text"/>
End-of-ch.	<input type="text"/>	End-of-ch.	<input type="text"/>	End-of-chapter	<input type="text"/>	# hours per week?	<input type="text"/>

3. Approximately how much of your studying was spent doing each of the following activities?

5 major contributor 4 moderate amount 3 some time spent 2 minimal amount 1 not done at all

Advice for “How to Earn an A (or B...)”

Strategies for Earning an A (or B...) in Organic Chemistry Dr. Laurie Starkey, Cal Poly Pomona

“Miriam, a freshman calculus student at Louisiana State University (LSU), made 37.5% on her first exam but 83% and 93% on the next two exams. Robert, a first-year general chemistry student at LSU, made 42% on his first exam and followed that up with three 100%s in a row. Matt, a first-year general chemistry student at the University of Utah, scored 65% and 55% on his first two exams and 95% on his third exam. I could go on. I could tell you scores of stories like this from the last 15 years of my teaching career. Something happened to all of the students between their last failing grade and their first good grade. They learned something new. **No Miracles, Just Strategies**”
Saundra McGuire, author of *Teach Students How to Learn*

And one more story to share: Laurie, a first-year graduate student at UCLA, scored 12% on her first Organic Synthesis midterm...but then she succeeded in the course, earned her Ph.D. in Organic Chemistry, developed a rewarding teaching career, and even wrote a textbook on Organic Synthesis! So if you are not yet having success in Organic Chemistry, the good news – the GREAT news – is that you can still improve by learning how to learn. Let’s explore various strategies that can help you learn Organic Chemistry and reach your desired goal. **Formative Assessment** is the feedback you get while learning and studying. It comes from *writing down* an answer and checking to see if it is right. **Summative Assessment** is what you do at the end of a unit – taking a quiz or exam for a grade. Formative assessment provides *evidence of your learning*...it helps you steer in the right direction and positions you to do well on summative assessments.

1. **Attend Lecture** - Come to class, take questions, try problems presented in
2. **Read the Book** - As soon as possible closely look through any examples the problems you will encounter on exam compare two compounds (e.g., Higher mechanism, explain something (e.g.,
3. **Work on In-Chapter Problems** - After examples (sometimes there are also S learned skills to the problem(s) in the problem down onto the page and *wri* is the only way to practice and *provid* book and/or lecture notes for help as Manual (or at the back of the book), a
 - a. If your answer was perfect, th a break before moving on to t
 - b. If you made mistakes, do you problem. If there are no mor answer perfect, *without referring to your notes or the book.*
 - c. If you don’t understand the Solutions Manual answer, or you don’t even know how to get started on the problem, then go back to your class lecture notes. Read through your notes and try to work on the example(s) we did in class (i.e., copy it down on a blank page and attempt the problem on your own). Next, re-read or skim through the textbook again and work on the



Today's Topic: Wittig Rxn & Formation of Acetals

Canvas Module
Week 5/6, Ch. 19

- ✓ Watch
- ✓ Read
- ✓ Practice

Step 2:

Read Klein 19.10 **Reaction with Carbon Nucleophiles**

- Watch [Ch19 Part 2a - Wittig](#) (13 minutes *skeleton notes pages 19-4 to 19-5*)
- Work through **SkillBuilder 19.6** and in-chapter problems 19.34-19.38

Read Klein 19.4, 19.5 **Reactions with Oxygen Nucleophiles** (hold off on Protecting Groups until later)

- Watch [Ch19 Part 2b - Acetal Formation](#) (29 minutes *skeleton notes pages 19-5 to 19-7*)
- Work through **SkillBuilder 19.2** and in-chapter problems 19.7, 19.8, 19.9, 19.12, 19.13.
- Work through **SkillBuilder 24.1** and Chapter 24 problems 24.9, 24.10, 24.11

Read Klein 19.7 **Hydrolysis of Acetals**

- Watch [Ch19 Part 2c - Acetal Hydrolysis](#) (10 minutes *skeleton notes page 19-7*)
- Work through **SkillBuilder 19.5** and problems 19.23, 19.24

Work on Klein [suggested textbook problems](#) from the sections listed above

Educator Lectures: Wittig Reaction & Formation of Acetals

Reaction with Oxygen Nu:

Addition of H₂O

Exception: Formaldehyde is 99% Hydrate in H₂O Solution

Exception: Hydrate is Favored if Partial Positive Near Carbonyl

Reaction with Oxygen Nu:

Addition of ROH

TsOH: Tonic Acid

Addition of ROH Cont.

Example

Predict

Mechanism

Mechanism for Acetal Formation

Mechanism for Acetal Formation

What is a CTI?

Tetrahedral Intermediate

Charged Tetrahedral Intermediate

CTI: Acid-cat

CTI: Base-cat

Acetals & Cyclic Acetals

Overall

Cyclic Acetals

Wittig Reaction

Wittig Reaction: A Resonance-Stabilized Carbanion (Nu:)

Wittig Reaction: Mechanism

Preparation of Wittig Reagent

Two Steps From RX

Example: Predict

Wittig Retrosynthesis

Wittig Retrosynthesis

Synthesis

37:39

37:40

39:51

41:58

41:59

45:02

46:19

46:20

48:09

Wittig Rxn

Oxygen Nu: Acetals

Educator Lecture
Part 5: Ketones
Wittig &
Oxygen Nuc.

58:28

59:09

61:43

61:44

63:08

64:10

64:11

75:04

75:05

75:45

76:10

77:01

77:49

77:50

78:46

Making progress, CHM 3150

CHM 3150 Organic Chemistry II, Dr. Laurie S. Starkey, Spring 2024
Tentative Schedule (Chapter and *Worksheet/Step* # given for each day)

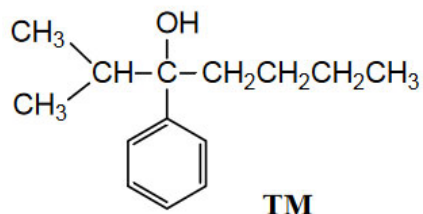
Week	Mon	Tues	Wed	Thurs	Fri
1	1/22	1/23 Review 7-11 #1	1/24	1/25 Review 7-11 #2	
2	1/29	1/30 Ch. 12 #1	1/31	2/1 Ch. 12 #2	2/2
3	2/5 You are here	2/6 Ch. 12 #3	2/7	2/8 Ch. 13 #1	2/9
4		2/13 Ch. 13 #2	2/14	2/15 Ch. 13 #3	2/16
5	2/19	2/20 Ch. 19 #1	2/21	2/22 Exam I	2/23
6	2/26	2/27 Ch. 19 #2	2/28	2/29 Ch. 19 #3	3/1
7	3/4	3/5 Ch. 19/20 #1	3/6	3/7 Ch. 20 #2	3/8
8	3/11	3/12 Ch. 20 #3	3/13	3/14 Ch. 20 #4	3/15
9	3/18	3/19 Exam II	3/20	3/21 Ch. 21 #1	3/22

Ch. 19 Free Red Ink Homework x2

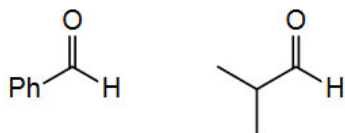
California State Polytechnic University, Pomona
Organic Chemistry II, CHM 3150, Dr. Laurie S. Starkey
Alcohol Synthesis Homework

Name: _____ Section: _____ (day/time)

A) Suggest **two** possible syntheses for the following target molecule (TM), starting with any **aldehyde** (start each synthesis with a different aldehyde). It may help to first consider a retrosynthesis of the TM.



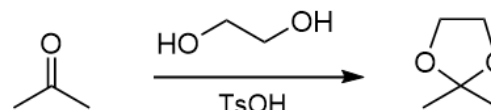
Hint! Possible aldehyde starting materials:



CHM 3150 Organic Chemistry II, Dr. Laurie S. Starkey, Cal Poly Pomona
Acetal Mechanism Homework

Name: _____ Section: _____ (day/time)

Before working on this homework, review Mechanism 19.5 and work on SkillBuilder 19.2.
Provide complete mechanisms for both the formation of the cyclic acetal and then the hydrolysis of the acetal. Pay close attention to details, including lone pairs, formal charges and the use of curved arrows.



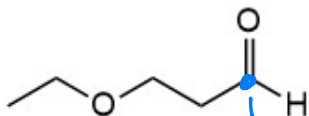
**Acetal formation
mechanism:**

All Course Points go through Gradescope

Exam I assignments*		Exam II assignments*		Exam III assignments*		Homework Course Points 125 (25%) <i>*assignments due no later than date of each exam</i>
WileyPLUS/textbook		WileyPLUS/textbook		WileyPLUS/textbook		
SkillBuild/EOC Ch. 11	10	SkillBuild/EOC Ch. 19	10	SkillBuild/EOC Ch. 21	10	
SkillBuild/EOC Ch. 12	10	SkillBuild/EOC Ch. 20	10	SkillBuild/EOC Ch. 17	5	
SkillBuild/EOC Ch. 13	10			SkillBuild/EOC Ch. 18	10	
"Free Red Ink Homework"		"Free Red Ink Homework"		"Free Red Ink Homework"		
Hmwk - Ch. 11 EOC/Review	5	Hmwk ROH synthesis	5	Hmwk 8 Messy Aldol	5	
Hmwk - Grignard	5	Hmwk acetal	5	Hmwk 9 biphenyl EAS	5	
Hmwk - epoxide	5	Hmwk hydrolysis	5	Hmwk 10 FC alkylation	5	
	45		40		40	
Friday Fives (4 pts each) <i>(13+ earns max. credit)</i>		OLC reports (1 pt each) <i>(10+ reports earns max. credit)</i>		Exam Wrappers <i>(4 pts each, drop one)</i>		Study/Reflection Course Points 75 (15%)
	52		10	Exam Corrections <i>(4 pts each, drop one)</i>		
Midterm Exams x3				Final Exam		Midterms: 200 (40%) Final: 100 (20%)
	200	<i>(100 pts each, drop lowest)</i>			100	

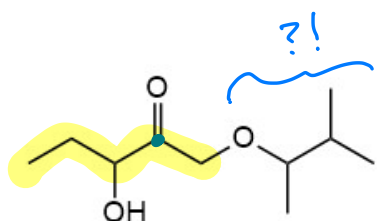


Provide the IUPAC name for the following compound. 1



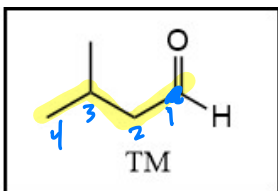
$C=O$ carbonyl
 $R-C(=O)H$ ← Aldehyde alkane + al
 $R-C(=O)R$ ketone alkane + one

2

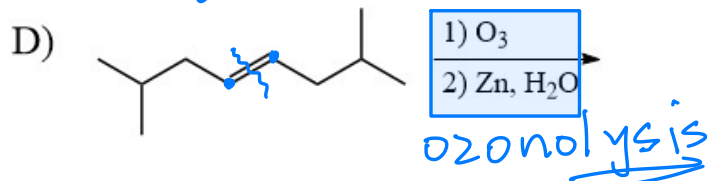
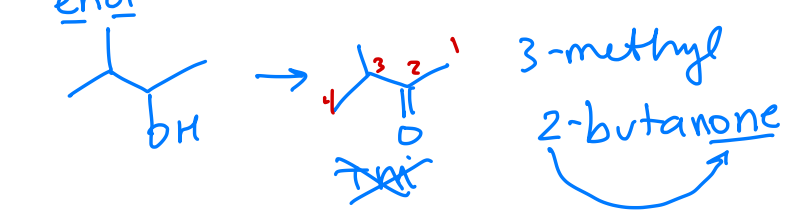
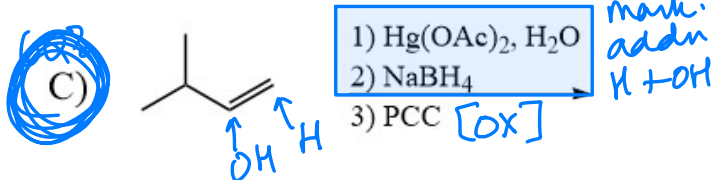
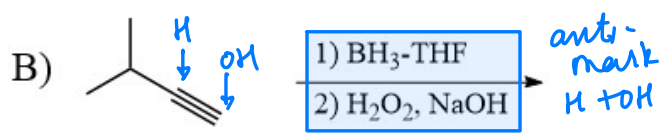
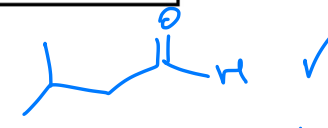
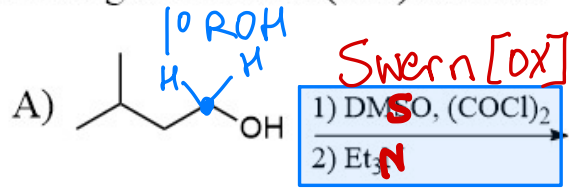


3 Which of the following syntheses would NOT produce the target molecule (TM) shown?

Aldehyde



3-methylbutanal



2 TM

E) None of the above (all would produce TM)

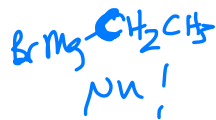
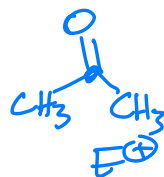
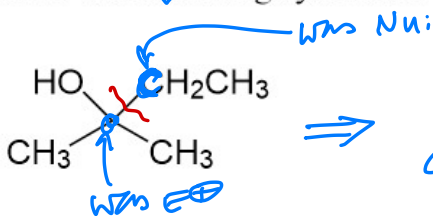
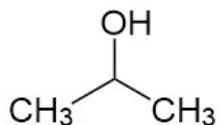
6

ketone/propanone

[ox]



Which reagents would be best to achieve the following synthesis?

A) 1) H_2SO_4 , heatB) 1) NaNH_2 C) 1) $\text{CH}_3\text{CH}_2\text{MgBr}$ 2) $\text{CH}_3\text{CH}_2\text{MgBr}$ 2) $\text{CH}_3\text{CH}_2\text{Br}$ 2) H_3O^+ 3) H_3O^+

D) 1) PCC ✓

E) 1) H_2SO_4 , heat2) $\text{CH}_3\text{CH}_2\text{MgBr}$ ✓

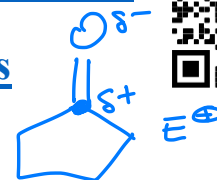
2) mCPBA

3) H_3O^+ (workup)3) $\text{CH}_3\text{CH}_2\text{MgBr}$ 4) H_3O^+

* Free Red Ink
Alcohol
Synthesis

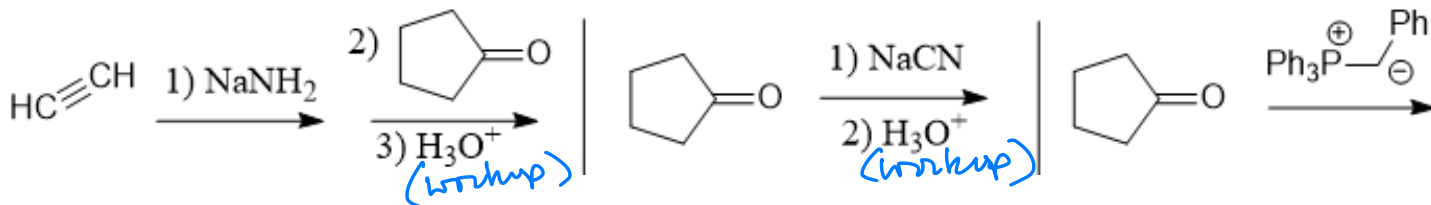
CHM 3150 Organic Chemistry II
 Dr. Laurie S. Starkey, Cal Poly Pomona
 Chapter 19 Aldehydes & Ketones Part 2 – Practice Problems

For clicker question voting, go to:
<https://pollev.com/lauriestarke263>

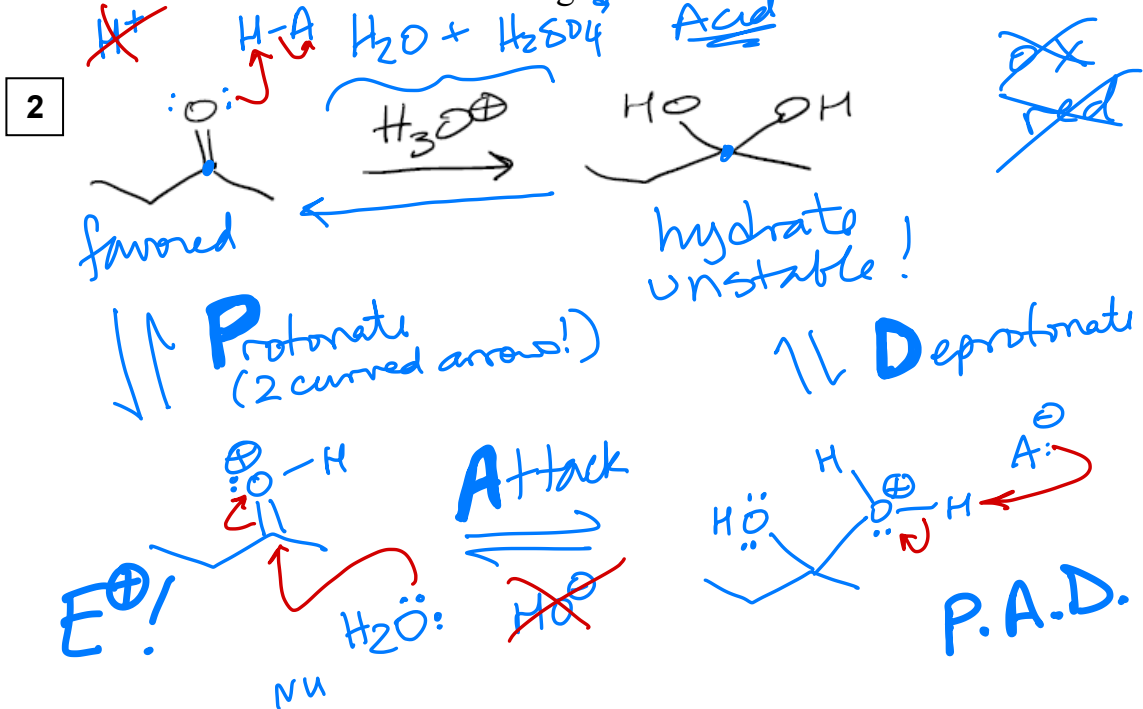


1

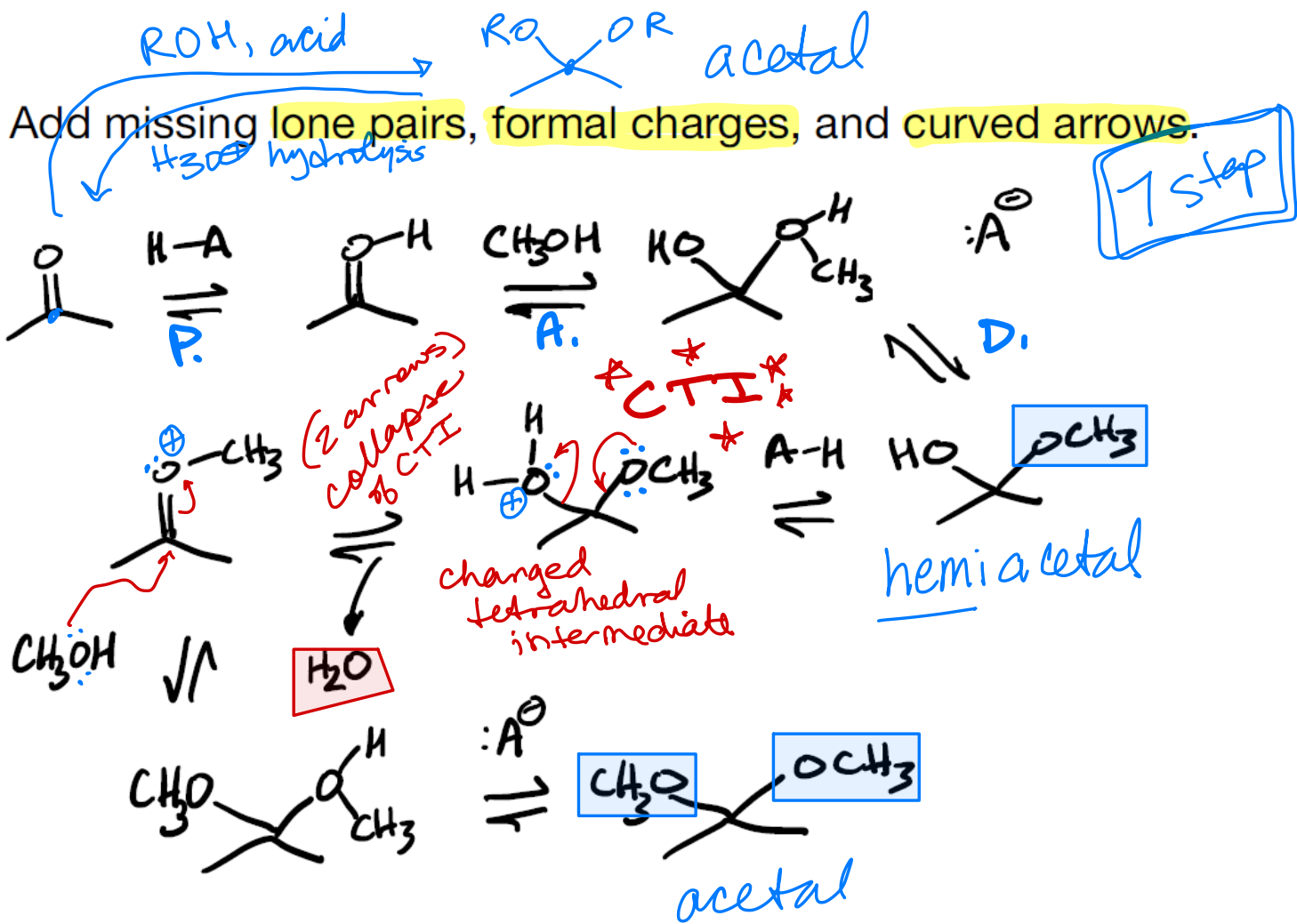
Predict the major products for the following reactions.



2 Draw a mechanism for the following reaction

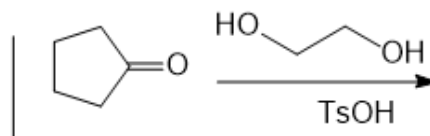
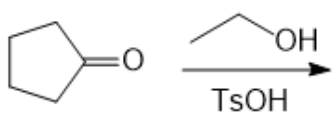


3



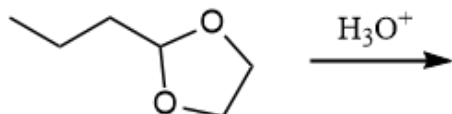
4

Predict the major products for the following reactions.



5

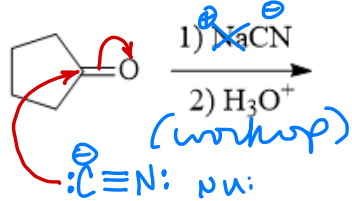
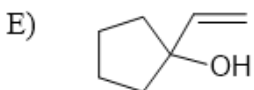
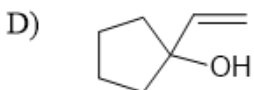
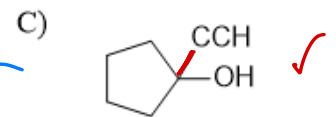
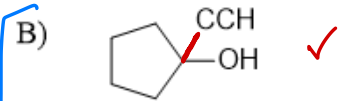
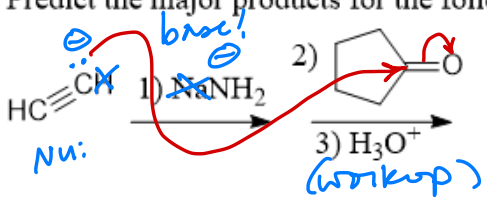
Predict the major product(s) of the following acetal hydrolysis reaction.



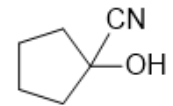
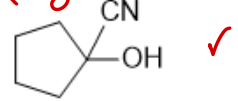
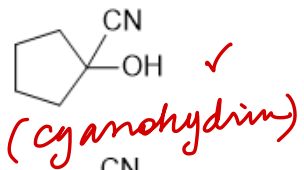
1

AR1O (sp CH)

Predict the major products for the following reactions.



No Reaction



No Reaction

Handwritten: ~~Wittig~~ Wittig reagent

