

Chem 14D Winter 2021 Midterm 1

CHRISTINA KILKEARY

TOTAL POINTS

40.5 / 52

QUESTION 1

1 Question 1 4 / 4

- ✓ + 4 pts Everything correct
- + 3 pts Correct ranking
- + 1 pts Correct reaction type
- + 1 pts One ranking correct
- + 0 pts Incorrect ranking/rxn type/blank

QUESTION 2

2 Question 2 3.5 / 6

- + 3 pts Correct product
- + 2.5 pts Correct product but stereochemistry added incorrectly to SP2 carbons
- ✓ + 1.5 pts Wrong alkene
- + 0.5 pts Product not an alkene
- + 3 pts Correct mechanism as drawn
- ✓ + 2 pts Arrows mostly correct as drawn
- + 1 pts Arrows partially correct as drawn
- + 0 pts Wrong arrows/wrong product/blank

QUESTION 3

Question 3 10 pts

3.13 a 2 / 2

- ✓ + 2 pts Everything Correct
- + 1 pts Correct product No rxn
- + 1 pts Correct reaction No rxn
- + 0 pts Incorrect

3.2 3 b 1.5 / 2

- + 2 pts Everything Correct
- + 1 pts Correct product
- ✓ + 1 pts Correct reaction
- ✓ + 0.5 pts Incorrect attachments
- + 0 pts Incorrect/Blank

3.3 3 c 1.5 / 2

- + 2 pts Everything Correct
- + 1 pts Correct product
- ✓ + 1 pts Correct reaction
- ✓ + 0.5 pts Incorrect attachments/stereochem
- + 0 pts Incorrect/Blank

3.4 3 d 2 / 2

- ✓ + 2 pts Everything Correct
- + 1 pts Correct product
- + 1 pts Correct reaction
- + 0 pts Incorrect/Blank
- 0.5 pts Click here to replace this description.

3.5 3 e 1 / 2

- + 2 pts Everything Correct
- + 1 pts Correct product
- ✓ + 1 pts Correct reaction
- + 0 pts Incorrect/Blank

QUESTION 4

Question 5 15 pts

4.15 a 3 / 5

- + 5 pts All boxes Correct
- + 2.5 pts First box correct
- + 2.5 pts Second box correct based on first box
- ✓ + 1.5 pts First box correct but wrong stereochem
- ✓ + 1.5 pts Second box correct based on first box but wrong stereochem
- + 1 pts Wrong attachments on first or second box
- + 0 pts Incorrect/Blank
- + 2 pts wrong attachments on both
- + 2 pts 2nd box correct but didn't deprotonate hydrogen

4.2 5 b 5 / 5

✓ + 5 pts Correct

+ 3 pts Partially correct/wrong attachments or carbon count

+ 1 pts Not a cyclic carbonyl

+ 0 pts Blank

4.3 5 c 3 / 5

+ 5 pts Correct product and explanation

✓ + 3 pts Correct product

+ 2 pts Correct explanation/aromatic mentioned

+ 1 pts Explanation mentions E1/heat forcing beta hydrogen to become anti-periplanar

+ 2 pts Not elimination product but cyclic/no reaction for step 2

+ 1 pts Wrong attachments after step 1

+ 0 pts Blank

+ 2 pts Correct but stereochem on sp² carbons

QUESTION 5

5 Questions 6 12 / 15

+ 15 pts Fully Correct with proper solvents and OM reagent explicitly shown

+ 14.5 pts Fully Correct with proper solvents and OM reagent explicitly shown, but formation of OM not shown/incorrect or minor unnecessary step, one improper solvent

+ 13 pts Correct with proper solvents and OM reagent explicitly shown, but missing a key step

✓ + 12 pts Correct but solvents are missing/wrong/OM reagent not explicitly(or correctly) shown/missing OM reagent/formation of OM not shown/unnecessary steps

+ 9 pts >50% correct with proper solvents and OM reagents/missing key steps/missing OM reagent

+ 7 pts >50% correct without proper solvents and OM reagents

+ 5 pts <50% correct with proper solvents and OM reagents

+ 3 pts <50% correct without proper solvents and OM reagents

+ 0 pts Blank

QUESTION 6

6 Extra credit 2 / 2

✓ + 2 pts Correct and/or you are hysterical and/or made me cry

+ 1 pts You tried your best

+ 0 pts Blank

MIDTERM #1

Monday, January 25, 2021 5:55 PM

CHEM 14D Midterm 1 January 25, 2021

Full Name on Every Page* *Write Dark* *Only front pages will be scanned

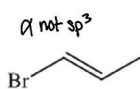
Kilkeary Christina 605416454
Name (Last) (First) Student ID

Question	1	2	3	4	Extra credit	Total
Points	10	10	15	15	2	50

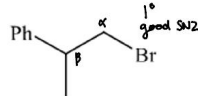
- 1. Where applicable, answers without a clear indication of stereochemistry will be given partial or no credit depending on the problem. Similarly ambiguous and/or unnecessary stereochemical information will be penalized as well. Additionally, drawing the same product multiple times (unless it's meso) will be penalized.**
- 2. Put in your best effort on every question, you will be graded on effort in the end! Try not to leave any questions blank, and just try to stay calm and focus. Good luck!! Seriously though, I think you, YES ALL OF YOU, have the potential of performing your utmost best on this test and that's all you need to do!! Think of it as a puzzle/game and focus on yourself and your own abilities, the grade will follow suit 😊**
- 3. Academic misconduct disclaimer: I hereby state that I have neither given nor received aid to or from other people during this exam (including external websites and programs). I vouch for the honesty and integrity of each and every answer given.**

Signature Christina King
ID# 605416454

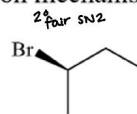
1. [4 Points] Rank the following substrates in order of the corresponding reaction with NaCN in DMSO (1 = best substrate, 3 = worst substrate). Identify the reaction mechanism:



Rank = 3



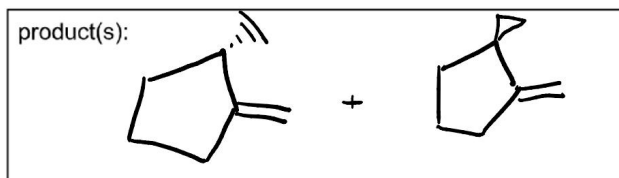
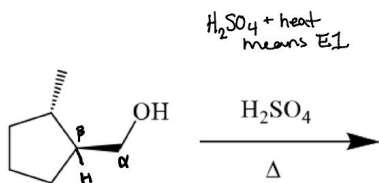
Rank = 1



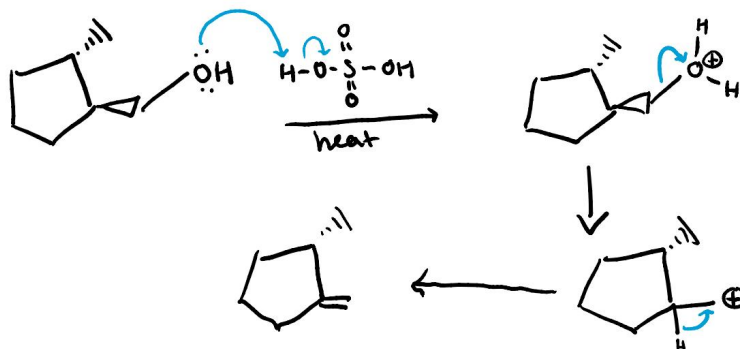
Rank = 2

Reaction mechanism type (circle one): S_N1 **S_N2** $E1$ $E2$

2. [6 Points] Predict the major organic product(s) of the following reactions and draw complete arrow-pushing mechanisms for their formation. If more than one product stereoisomer is formed, draw them all. However, you only need to show a mechanism for formation of one stereoisomer. Show all mechanistic steps including all organic intermediates and all formal charges, if applicable.

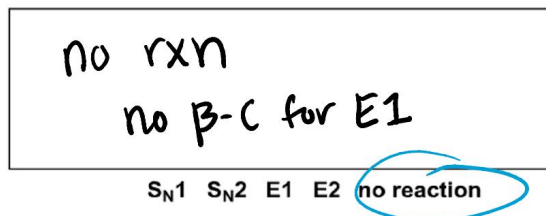
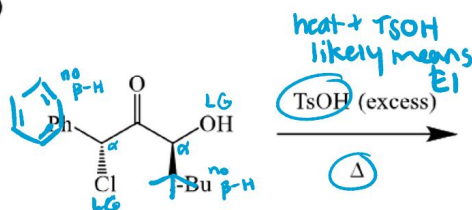


mechanism:

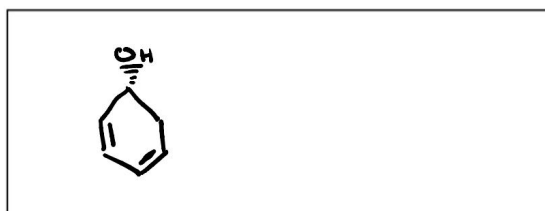
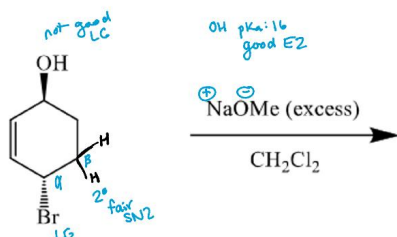


3. [10 Points] Predict the major organic product(s) of the following reactions and circle the appropriate mechanism among $S_N1/S_N2/E1/E2$, or "no reaction". If multiple stereoisomers would form in equal concentrations, draw them all. No need to show the full mechanism.

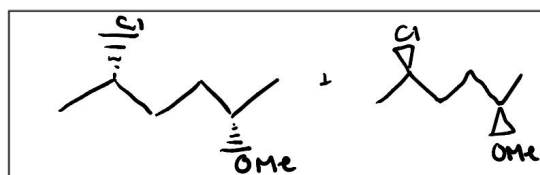
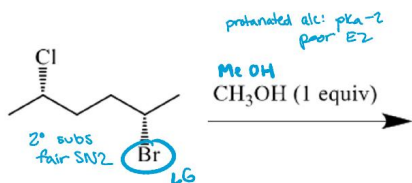
(a)



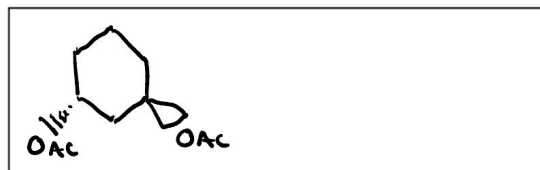
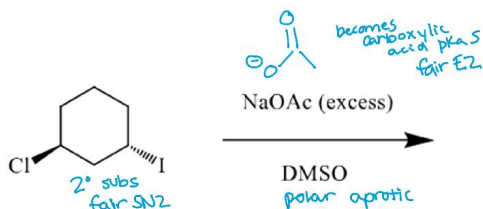
(b)

 S_N1 S_N2 E1 E2 no reaction

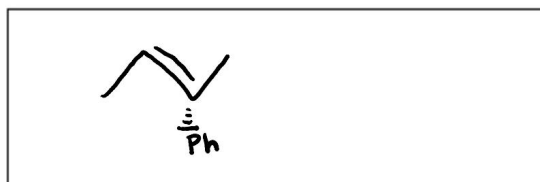
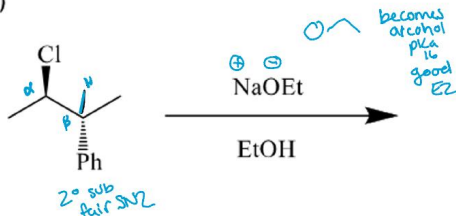
(c)

 S_N1 S_N2 E1 E2 no reaction

(d)

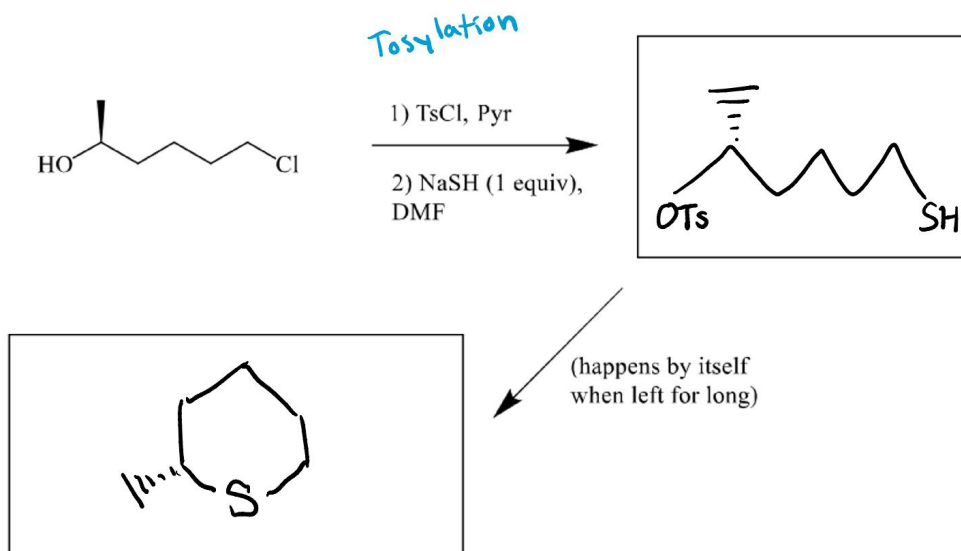
 S_N1 S_N2 E1 E2 no reaction

(e)

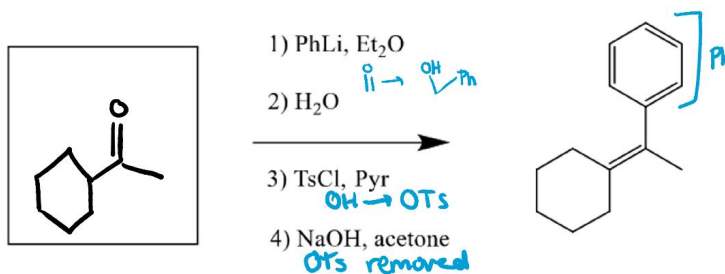
 S_N1 S_N2 E1 E2 no reaction

5. [15 points] Predict the missing reagent(s)/reactant(s)/product(s) to complete the following transformations. Specify stereochem where needed appropriately. No need to show the full mechanism.

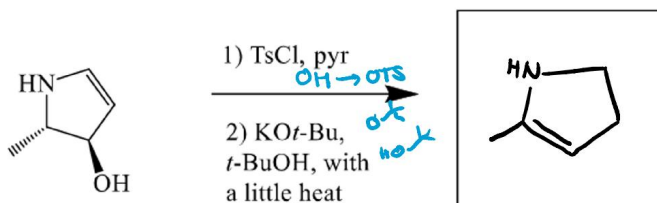
(a)



(b)



(c)

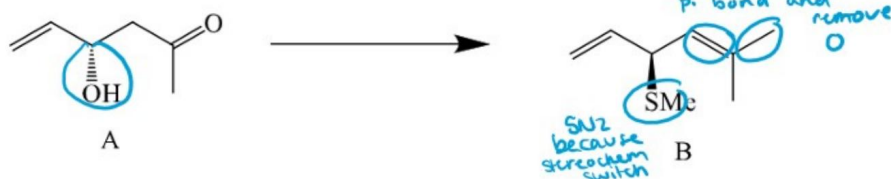


If you think there is no reaction for step 2 above, draw the product of step 1 and justify your reason for no reaction for step 2 in a few words (be specific):

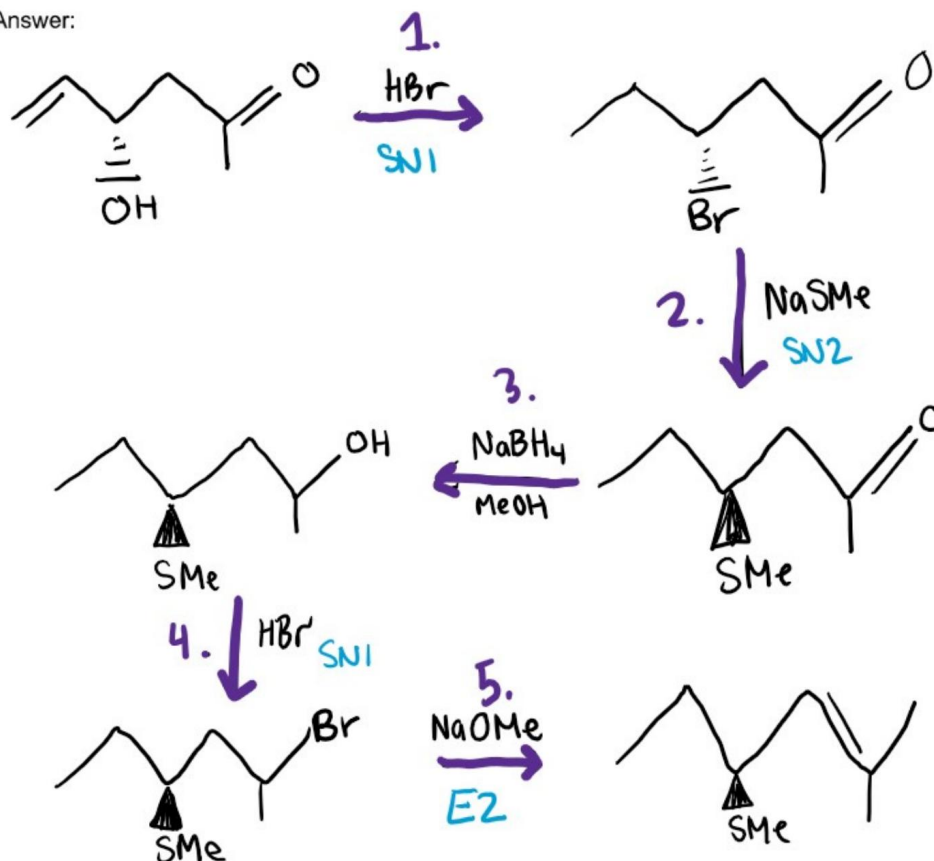
If you think there is a reaction for step 2, draw the corresponding final product and justify your reason for why the reaction occurs in a few words (be specific):

There is a new good leaving group to eliminate (OTs) after step 1.

6. [15 points] Propose a synthesis for the following conversion (in other words, make compound B using compound A as the starting material). You can use any other sources of carbon that are 2 carbon or less you wish, as long as every new source of carbon is explicitly shown. Every step must either be shown with different arrows, or, numbered separately. You may use common reagents and solvents learned in class. If you use an organometallic reagent, you must show how it is made from the corresponding halide. Do not show arrow-pushing mechanisms in your answer. Steps must be selective which means you can only use steps which produce one major product and there is no competition with other reactions. [Hint: can be done in 4 steps].



Final Answer:



Extra credit: You will earn more points based on creativity and/or your ability to make me laugh...or cry...or both!

1. [1 point] Identify this Learning Assistant (LA) from their photo below.



Alair?