

Exam 1

Professor R. Hoenigman

I pledge to uphold the CU Honor Code:

Signature _____

Name (printed) _____

Last four digits of your student ID number _____

Recitation TA _____

Recitation number, day, and time _____

You have 1 hour and 30 minutes to complete this exam.
 No model kits or calculators allowed.
 Periodic table and scratch paper are attached.

DO NOT TURN THIS PAGE UNTIL INSTRUCTED TO DO SO.**Recitation Sections:**

| # | Day | Time | TA | SCORE: | |
|-----|----------|-------|--------|-----------------|-----------------|
| 122 | Monday | 5 pm | Ashley | | |
| 121 | Tuesday | 8 am | Noel | Page 1 _____/20 | Page 3 _____/20 |
| 131 | Tuesday | 12 pm | Jin | | |
| 132 | Tuesday | 12 pm | Ashley | Page 2 _____/30 | Page 4 _____/30 |
| 161 | Thursday | 8 am | Morin | | |
| 171 | Thursday | 12 pm | Jin | | |
| | | | | TOTAL _____/100 | |

Happy Valentine's Day!

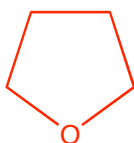
1. (3 pts) What does the abbreviation THF stand for?

Tetrahydrofuran

2. (3 pts) What is the common use of THF?

THF is commonly used as a solvent.

3. (3 pts) Draw THF.



4. (3 pts) What is the Simmons-Smith reagent?

I-Zn-CH₂-I

5. (3 pts) For what type of transformation is the Simmons-Smith reagent used? Give an example.

(1 pt) Alkene → Cyclopropane

(2 pts)



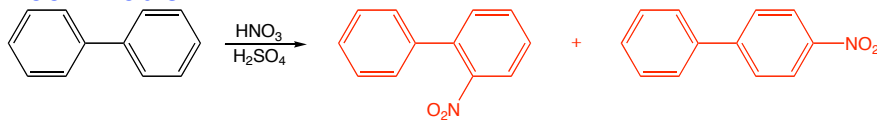
6. (5 pts) From what reagents is the Simmons-Smith reagent derived? Propose a mechanism for the formation of the Simmons-Smith reagent.

CH₂I₂ and Zn(Cu) form the Simmons-Smith Reagent.

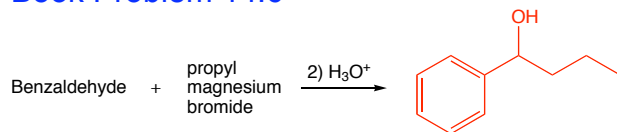


7. (30 pts) Give the major organic product(s) of the following reactions. Write NR if no reaction occurs. (3 points each)

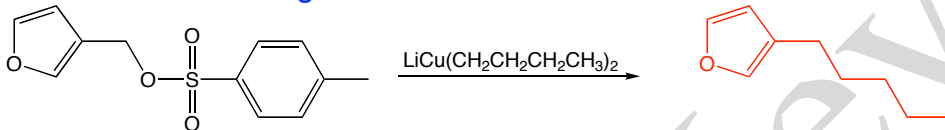
A. Book Problem 12.14



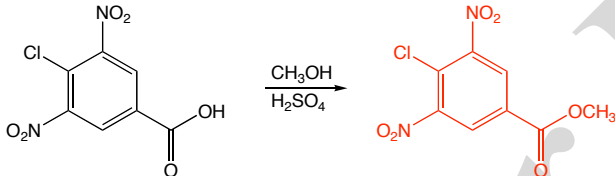
B. Book Problem 14.6



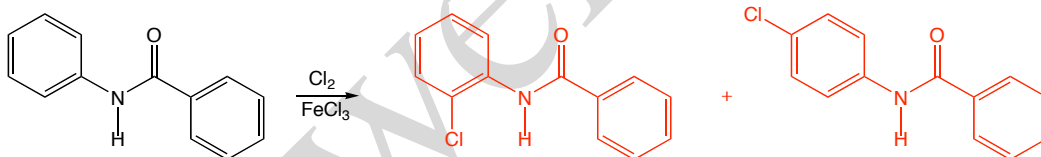
C. Book Problem 14.26g



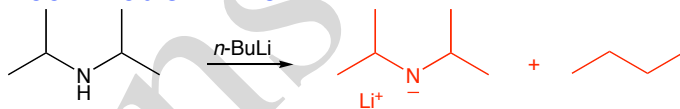
D. Book Problem 15.30i



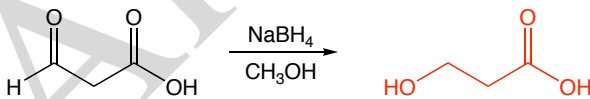
E. Book Problem 12.33



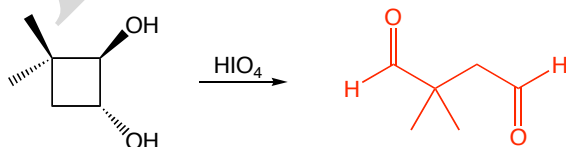
F. Book Problem 14.5



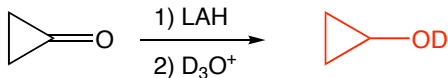
G.



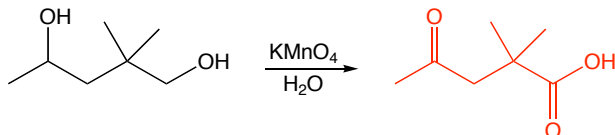
H.



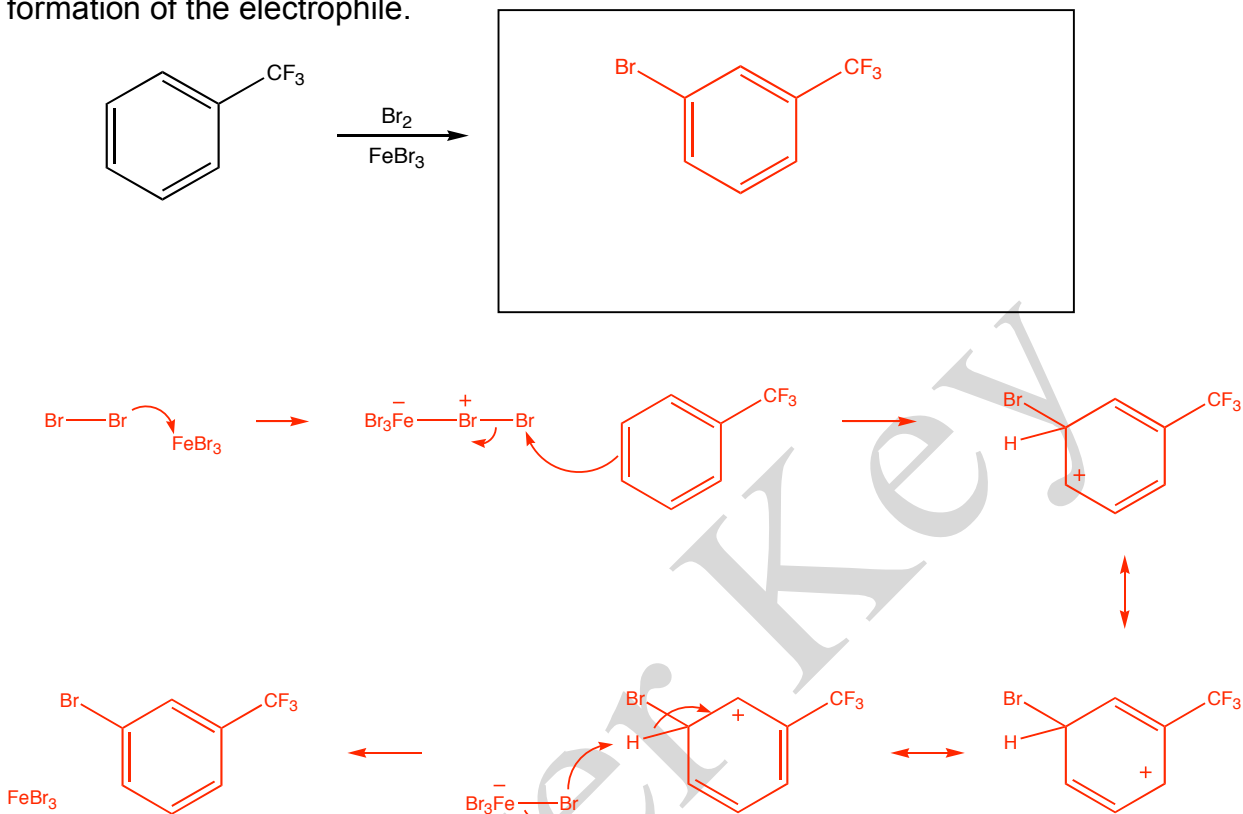
I.



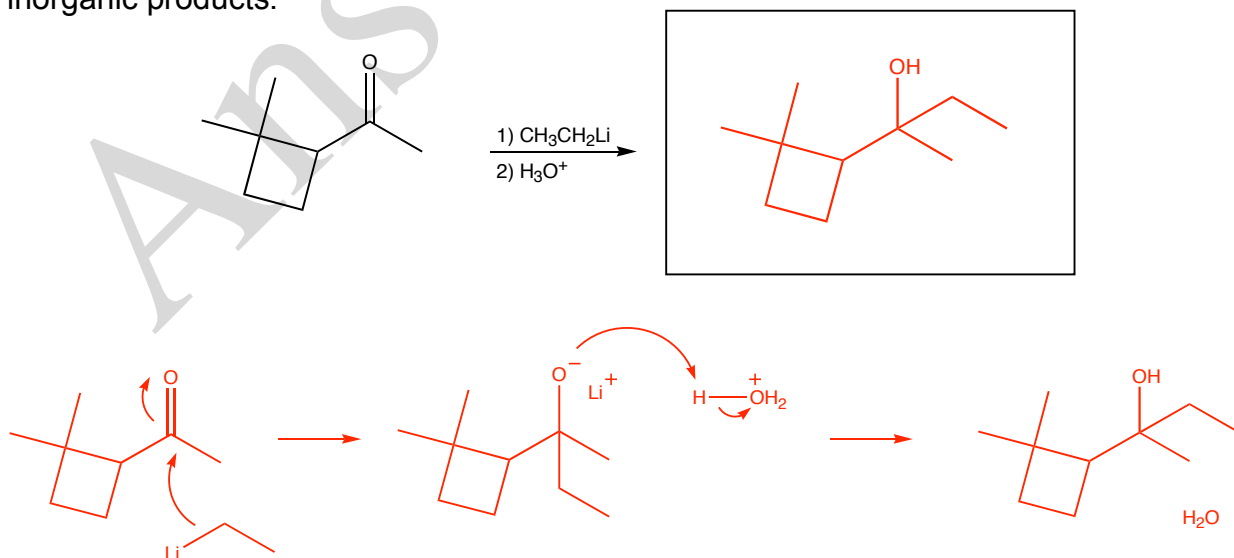
J.



8. (10 pts) Fill in the organic product(s) of the reaction below in the box and draw a mechanism to account for the formation of the product(s). In your mechanism be sure to show all contributing resonance structures and be sure to show the formation of the electrophile.



9. (10 pts) Fill in the organic product of the reaction below in the box and draw a mechanism to account for its formation. In your mechanism be sure to show all inorganic products.

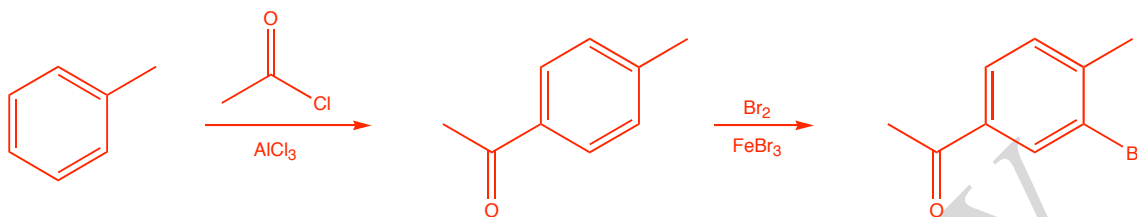


10. (30 pts) Propose an efficient synthesis for the following transformations. You may use any reagents you like, but must use the given starting material. (10 points each)

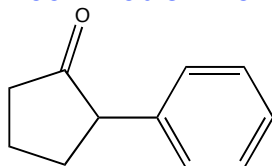
A. 3-bromo-4-methylacetophenone
Book Problem 12.29g

starting from

toluene

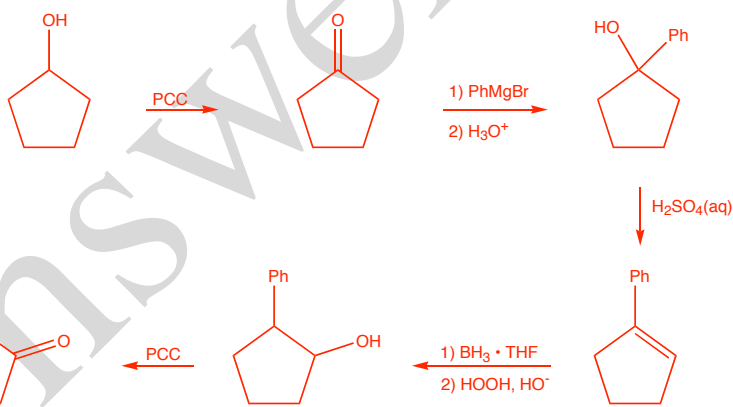


B. Book Problem 15.28d

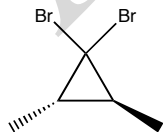


starting from

cyclopentanol



C.



starting from

