CHEM 3331-100 Spring 2008

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
122	Monday	5 pm	Ashley
121	Tuesday	8 am	Noel
131	Tuesday	12 pm	Jin
132	Tuesday	12 pm	Ashley
161	Thursday	8 am	Morin
171	Thursday	12 pm	Jin

SCORE:

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TOTAL_____/100

Happy Valentine's Day!

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

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

3. (3 pts) Draw THF.

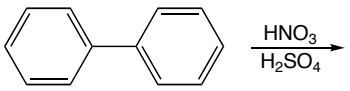
4. (3 pts) What is the Simmons-Smith reagent?

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

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

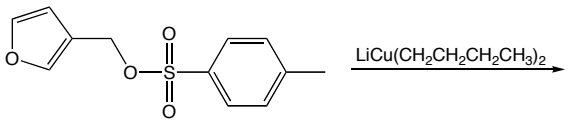
A.



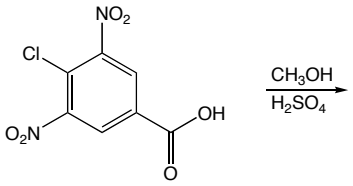
B.

Benzaldehyde + propyl magnesium bromide $\xrightarrow{2)\ H_3O^+}$

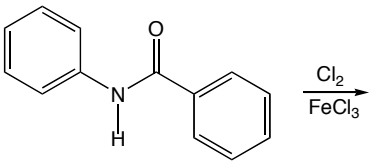
C.



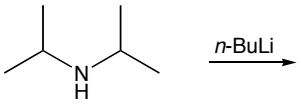
D.



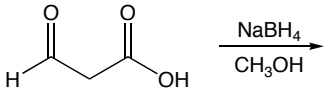
E.



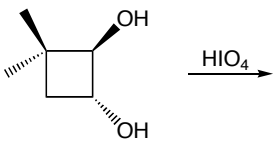
F.



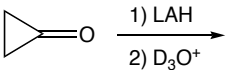
G.



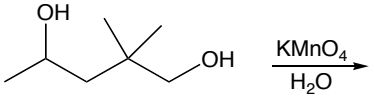
H.



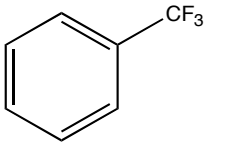
I.



J.

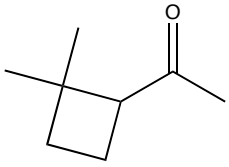


8. (10 pts) Fill in the organic product(s) of the reaction below in the box and draw a mechanism to account for the formation of the product(s). In your mechanism be sure to show all contributing resonance structures and be sure to show the formation of the electrophile.



$\xrightarrow[FeBr_3]{Br_2}$

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.

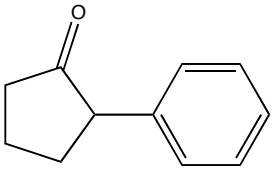


$\xrightarrow[2)\ H_3O^+]{1)\ CH_3CH_2Li}$

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)

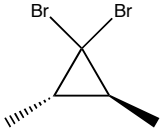
A. 3-bromo-4-methylacetophenone *starting from* toluene

B.



starting from cyclopentanol

C.



starting from