Practice Exam 3B

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The exam consists of 8 questions on a total of 10 pages, including periodic table. It will be graded out of 100 points

1. \_\_\_\_\_/10
2. \_\_\_\_\_/20
3. \_\_\_\_\_/20
4. \_\_\_\_\_/10
5. \_\_\_\_\_/10
6. \_\_\_\_\_/10
7. \_\_\_\_\_/10
8. \_\_\_\_\_/10

Regrading: All requests for regrades must be submitted in writing within 48 hours of the return of the exam. You must explicitly state what has been misgraded and why it is an error. The entire exam will be regraded, which could result in points being added or deducted overall.

1. (10pts) Provide a mechanism for this transformation:



Would you expect the reaction below to proceed faster or slower than the one above? Explain, with reference to the mechanism.



2. (20pts) Provide reagents or starting materials necessary for 5 of the following 6 transformations. CLEARLY MARK the one you do not want graded or else the first five will be graded. More than one step may be necessary.



3. (20pts) Predict the MAJOR product(s) of 5 of the following 6 reactions. CLEARLY MARK the one you do not want graded or else the first five will be graded. Include proper stereochemistry, and indicate if the enantiomer also forms.



4. (10pts) Provide the reagents necessary for these multistep syntheses. Show intermediates for partial credit.



5. (10pts) Provide mechanisms for these two reactions:





(Hint: Start with the same mechanism as Br2/H2O addition to an alkene.)

6. (4pts) Compounds A and B are alkynes with molecular formula C5H8. Compound A reacts with excess HBr to give two products; Compound B reacts with excess HBr to give one product. Give the structures of these compounds.



(6pts) Compound X reacts with H2 and Pd to give 2-methylbutane. When Compound X undergoes hydroboration/oxidation, it gives a compound with no chirality centers. Fill in the boxes with appropriate structures.



7. (10pts) Fill in the boxes next to the reactions with the **letters** of all products that form from this list below:





8. (10pts) Provide all reagents necessary for this multistep synthesis. Show synthetic intermediates for partial credit.

