CHEMISTRY 112A FALL 2015

EXAM 2

OCTOBER 22, 2015

NAME- WRITE BIG _____

STUDENT ID: _____

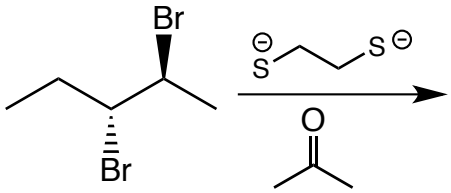
SECTION AND/OR GSI IF YOU ARE IN THE LABORATORY COURSE: _____

- **You will have 75 minutes in which to work.**
- **BE NEAT! Non-legible structure drawings will not be graded.**
- **Only answers in the answer boxes will be graded – you can write in other places, but we only grade the answers in the boxes.**
- **All pages of the exam must be turned in.**
- **No calculators**
- **No stencils**
- **Molecular models may be used**

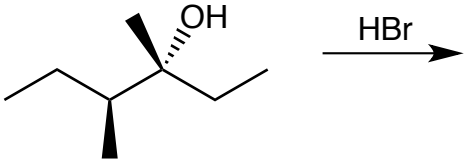
Problem	Points (Maximum)
1	
2	
3	
4	
5	
6	
Total	*120*

1. For each reaction draw the major organic products, **including all stereoisomers**. Write NR if you think there will be no reaction.

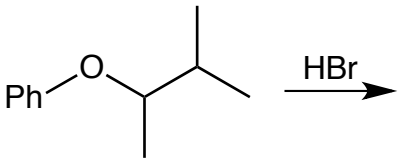
a.



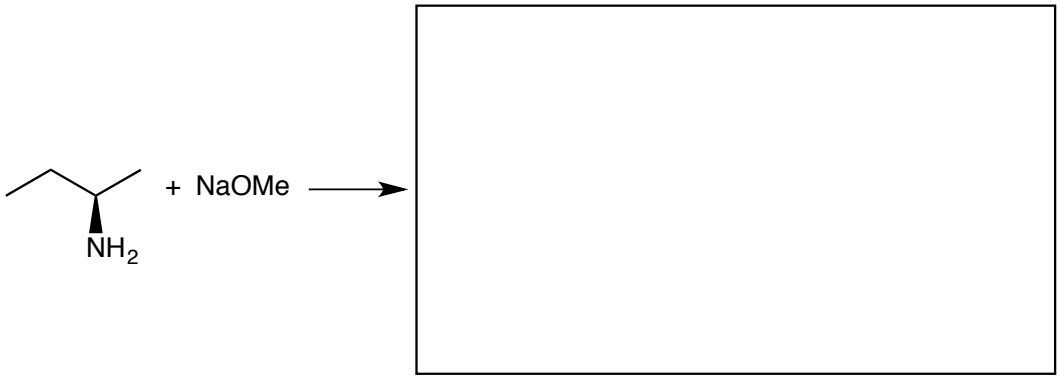
b.



c.

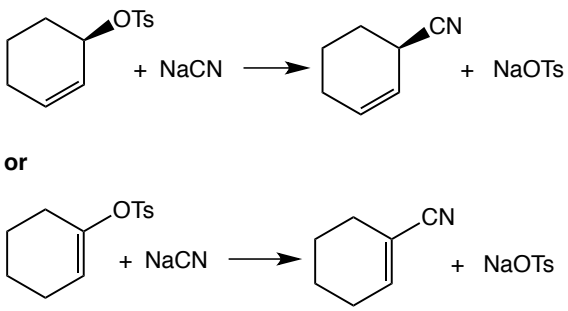


d.



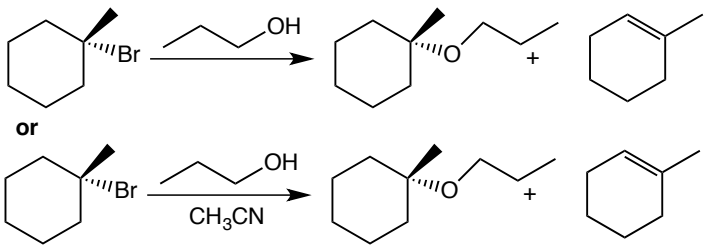
2. Circle the reaction in the following pairs of reactions that you would expect to go faster. It is possible that both reactions have the same rate. Give brief explanations in the boxes provided.

a.



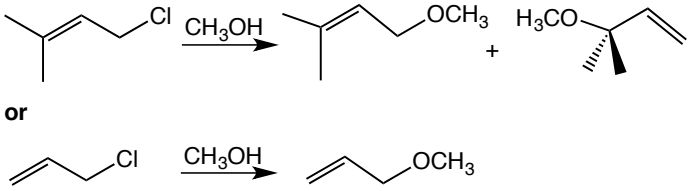
Type of mechanism:_____
Explanation

b.



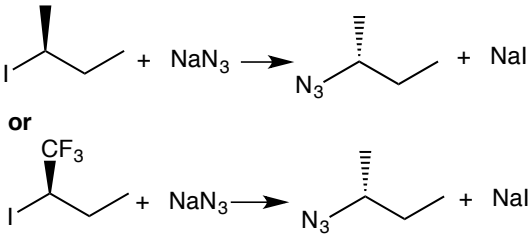
Type of mechanism:_____
Explanation

c.



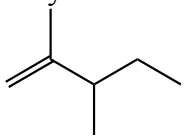
Type of mechanism:_____
Explanation

d.

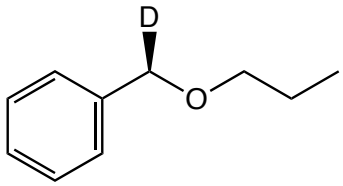
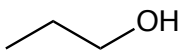


Type of mechanism:_____
Explanation

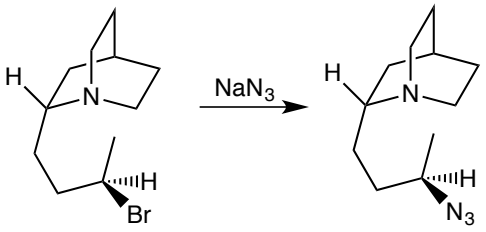
3. Predict starting materials and plan synthesis.
a. Synthesize the following alkene from an alkyl halide and any other reagents.



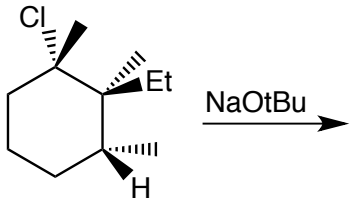
b.

Synthesize  from  and any other reagents

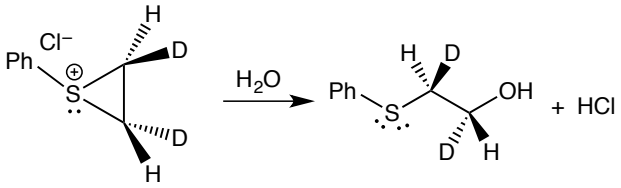
4. Draw the mechanism of the following reaction using arrows to indicate the flow of electrons. Make sure to clearly indicate stereochemistry.



5. Draw the mechanism of the following reaction using arrows to indicate the flow of electrons. Indicate major and minor products. Make sure to clearly indicate stereochemistry. In your mechanism *draw the chair conformation of the starting material that undergoes the reaction.*



6. In lecture on Tuesday, problem 3 involved the reaction shown below.



a. Draw the mechanism of this reaction with arrows.

b. Would you expect this reaction to be faster or slower in a solvent containing 10% water and 90% DMF (dimethylformamide) instead of pure H_2O. Explain your answer.

c. Draw a reaction coordinate diagram to illustrate your answer to part b. Include on one diagram the reaction performed in H_2O and the reaction performed in 10% water and 90% DMF.

e. Would you expect the reaction below to faster or slower than the one drawn at the beginning of the problem? Explain your answer.