First Hour Exam

Name:_____

Recitation instructor's name:_____

Recitation day and time:_____

Page	Possible points	Score
2	22	_____
3	35	_____
4	24	_____
5	18	_____
TOTAL	100	_____

You have 2 hours to complete the exam.

Anyone caught cheating or helping someone cheat will receive *at minimum* a grade of 0 on this exam and will be referred to the honor council. ***Don't cheat!***

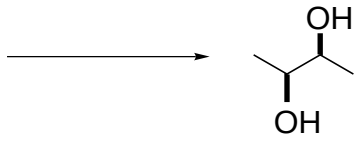
1) Complete the following syntheses in **one step** using any inorganic reagents you need and organic reagent of 5 carbons or less. Show the number of equivalents of a reagent whenever more than one equivalent is used. All chiral products are racemic mixtures. (3 points each).

A) 

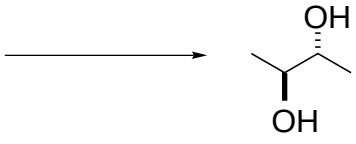
B) 

C) 

Do this a different way than you did in part B

D) Use a starting material with the formula C_4H_8 

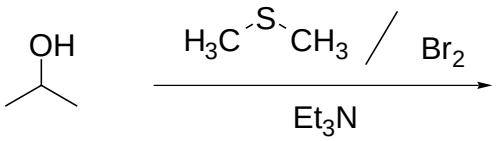
(2 pts for starting material, 3 pts for reagent)

E) Use a starting material with the formula C_4H_8 

(2 pts for starting material, 3 pts for reagent)

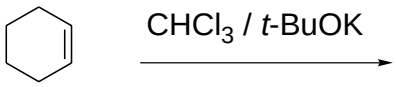
E) 

2) Provide the product and mechanism for the reaction shown below. Be sure to show all the intermediates and all the arrows required for each step of the reaction (3 + 9 points).

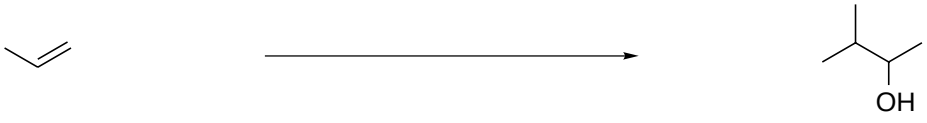


3) Provide the product and mechanism for the reaction shown below. Be sure to show all the intermediates and all the arrows required for each step of the reaction (3 + 8 points).

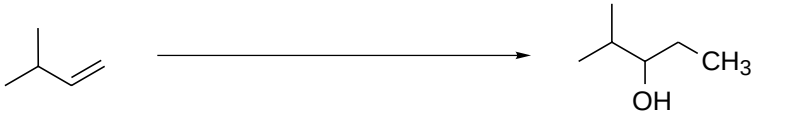
4) Provide the product and mechanism for the reaction shown below. Be sure to show all the intermediates and all the arrows required for each step of the reaction (3 + 9 points).



5) Complete the syntheses shown below using organic reagents of 5 carbons or less and any inorganic reagents you wish. If your synthesis requires more than one step, you must write the product of each step. Show the number of equivalents of a reagent whenever more than one equivalent is used. All chiral products are racemic mixtures. (6 points each).

A) 

9 points

B) (5 carbons) 

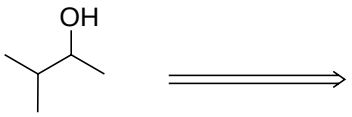
(6 carbons) 6 points

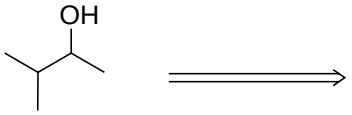
C) 

9 points

6) Is LDA an acid or a base (1 point)?

5) Complete the following **one step** retrosynthetic analyses. Please indicate which bond you are cleaving in the compound shown below by drawing a line through the bond that you are breaking in your retrosynthetic analysis, and then showing the starting materials and reagents you will need to make the molecule. Whatever reactions you use must provide an alcohol as the product. All I want is one step, that's all, just the last step you'd do in the synthesis 6 points each





Extra credit: 5 points for up to 100 points total on the exam: Provide two more disconnections for this molecule You must get this entirely right for credit, there is no partial credit on these, so don't ask! HINT: The capital of Nebraska is Lincoln.