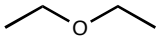
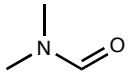
Name _____ Test 1 (2/15)
CHEM 0203 (Organic II) Spring 2013

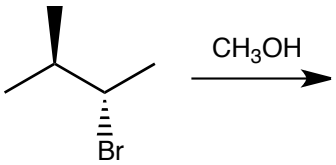
Common solvents used in organic chemistry.

THF =  Et_2O =  DMSO =  DMF =  acetone = 

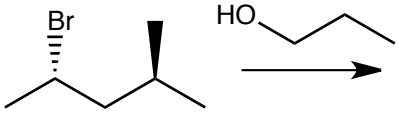
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

1. (6 pts. ea.) Predict the outcome of the following reactions. Remember to use wedge and dashed bonds to indicate the stereochemical outcome of the reaction where appropriate.

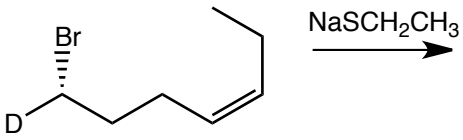
a. S_N1



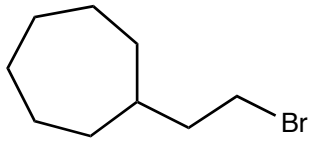
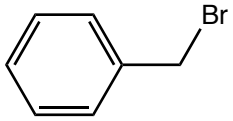
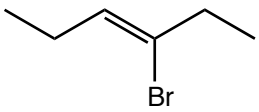
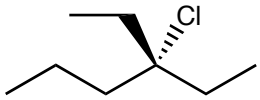
b. S_N1



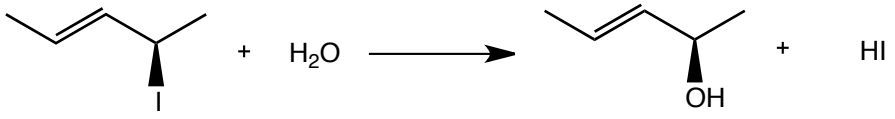
c. S_N2



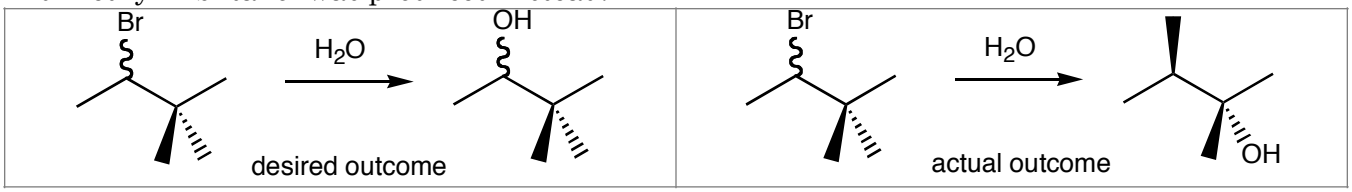
2. Determine whether the following substrates would be able to react via S_N1, S_N2, both or neither mechanism.

3. (10 pts.) Explain why increasing the concentration of the nucleophile in the following reaction doesn't increase the rate of the reaction.

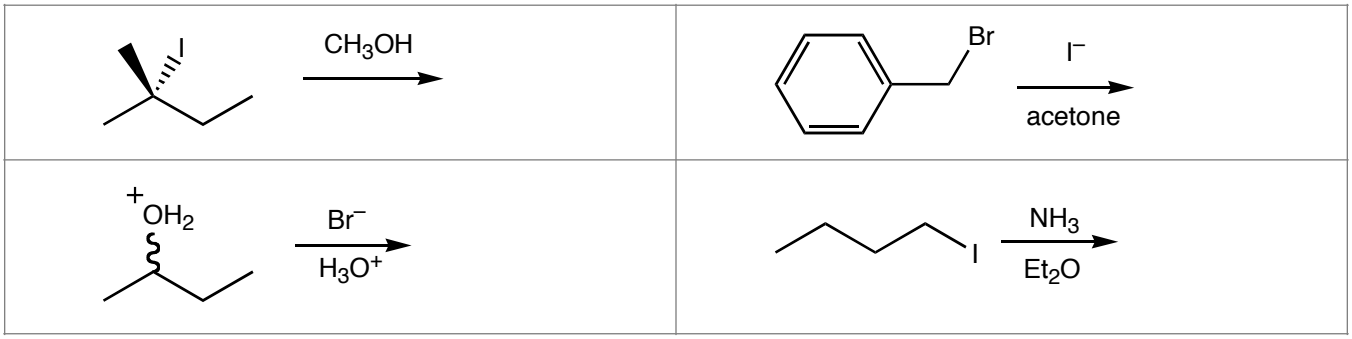


4. (10 pts.) The synthesis of 3,3-dimethyl-2-butanol was attempted as indicated below, but 2,3-dimethyl-2-butanol was produced instead.



Draw a mechanism that explains the observed outcome of the reaction.

5. (4 pts. ea.) Determine whether the following reaction conditions encourage the reaction to occur via an S_N1 or an S_N2 mechanism. Solvent structures are listed on the first page.

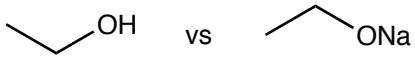
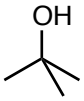


6. a. (4 pts.) What can protic solvents do that aprotic solvents cannot?

b. (4 pts.) How can protic solvents encourage carbocation formation in an S_N1 reaction?

7. (8 pts.) Which is the better leaving group, I^- or Cl^-? Explain your response.

8. (12 pts.) For each of the following pairs of nucleophiles, determine which is the better nucleophile.

 vs solvent is 	$CH_3CH_2S^-$ vs CH_3CH_2SH solvent is 
$CH_3CH_2S^-$ vs $CH_3CH_2O^-$ solvent is 	vs solvent is