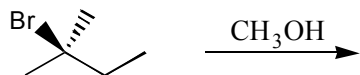


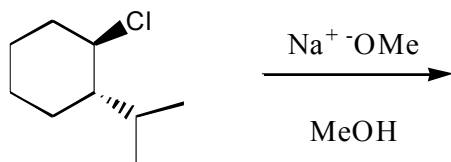
Chem 141
Problem Set 11
Friday 5th December 2008

1. Draw free energy diagram to represent the following reaction. Include structures of the transition state(s) and intermediate.



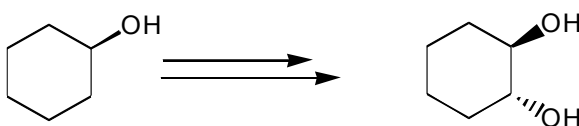
2. Explain when an E1 mechanism is likely to occur compared to an E2 mechanism. Use two reactions as examples.
3. Define Zaitsev's rule with an example.

4. What is (are) the product(s) of the following reaction? Draw the mechanism(s).

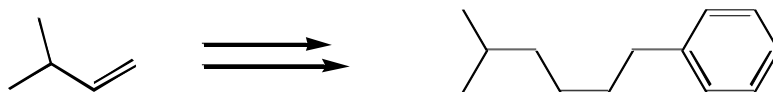


5. Provide synthetic strategies for the following transformations.

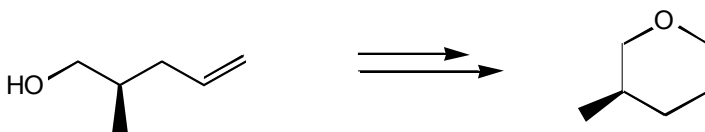
(a)



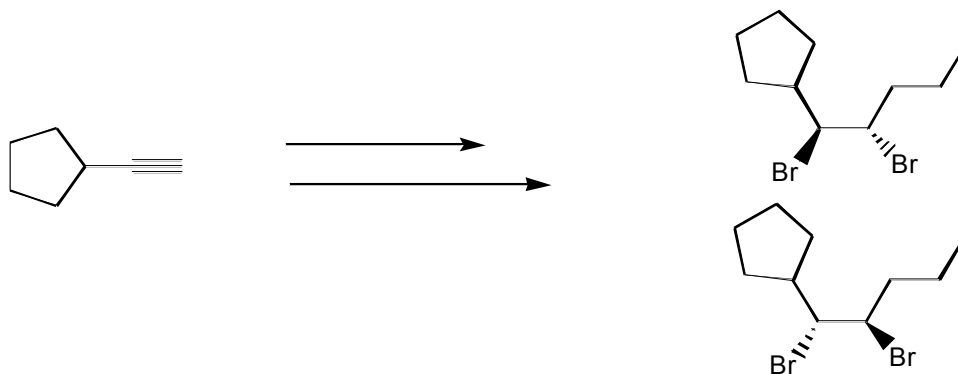
(b)



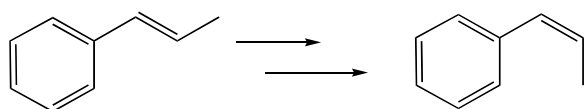
(c)



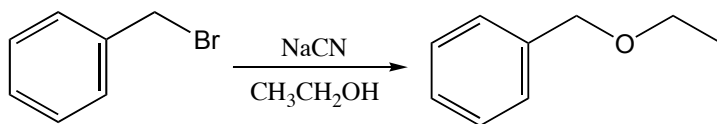
(d)



(e)



6. The following is a recent example from a lab at UVM. The target molecule is phenylacetonitrile (phenylmethylcyanide), $C_6H_5CH_2CN$, which could presumably be made by an S_N2 reaction. This is what happened:



Draw a mechanism for this reaction, and suggest how the reaction conditions could be changed to get the desired product.