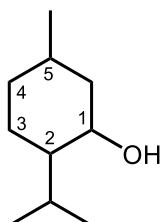
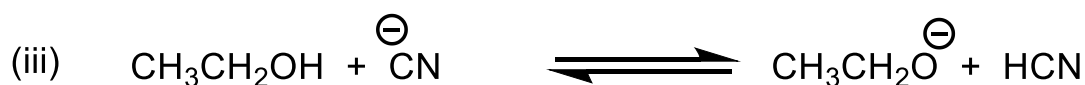
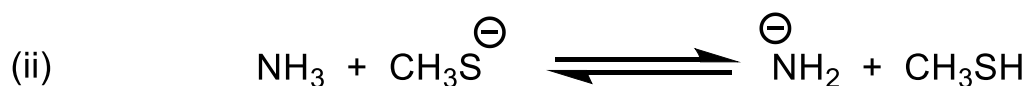
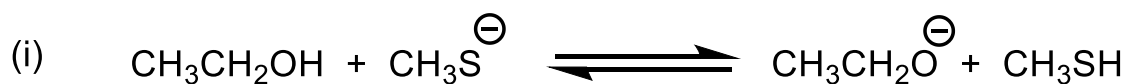


Tutorial 6

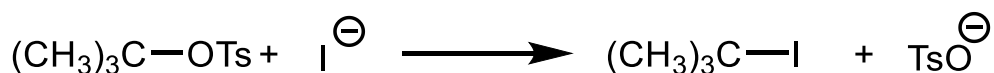
Q1. The molecule menthol exists naturally in a (1*R*,2*S*,5*R*) form and a (1*S*,2*R*,5*S*) form (ring numbering is shown). Draw the two molecules in their most stable chair conformer(s). Are these two compounds *enantiomers* or *diastereomers*?



Q2. Indicate whether equilibrium lies to the LEFT or to the RIGHT for the following reactions.



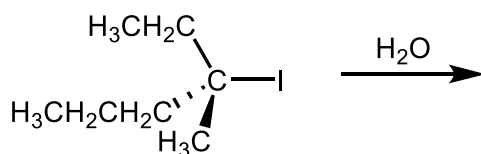
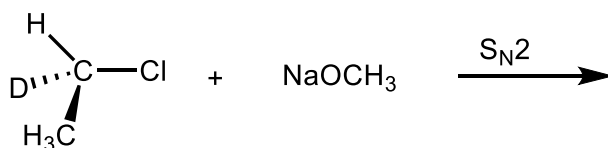
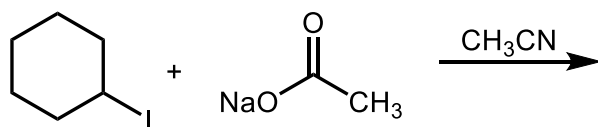
Q3. Consider the $\text{S}_{\text{N}}1$ reaction of *tert*-butyl chloride with iodide ion:



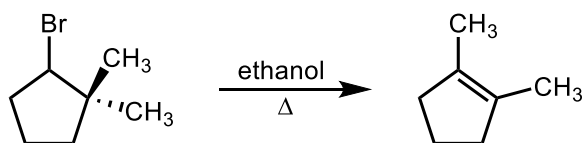
If the concentration of iodide ion is doubled, the rate of forming *tert*-butyl iodide will:

(A) Double. (B) Increase 4 times. (C) Remain the same. (D) Decrease. (E) None of the above.

Q4. Draw the organic product expected from each of the following reactions. Be sure to indicate stereochemistry where appropriate and to include stereoisomers if any. In case two or more stereoisomers are formed, label their relationship as diastereomers, enantiomers, structural isomers, or conformers.



Q5. One of the products that results when 1-bromo-2,2-dimethylcyclopentane is heated in ethanol is shown below. Give a mechanism by which it is formed and give the name of this mechanism.



Q6. Draw all likely products of the following reaction and indicate the product you expect to predominate.

