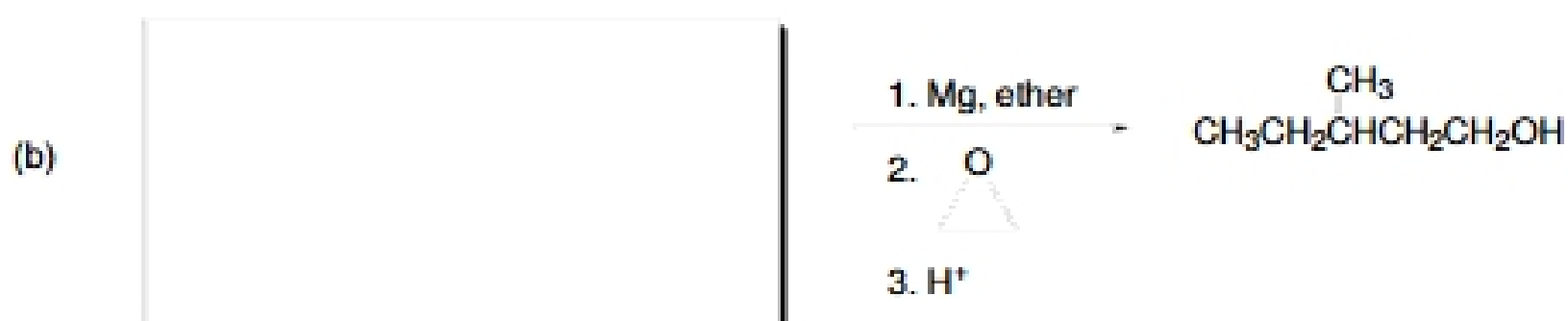
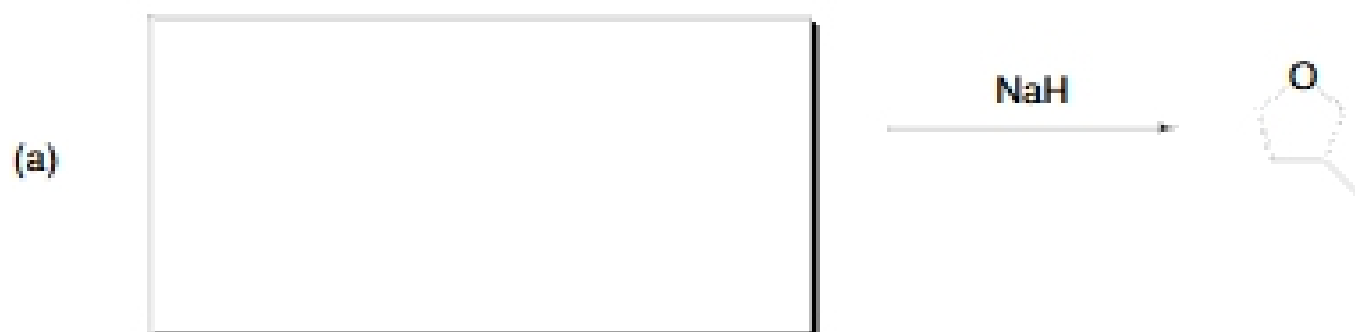
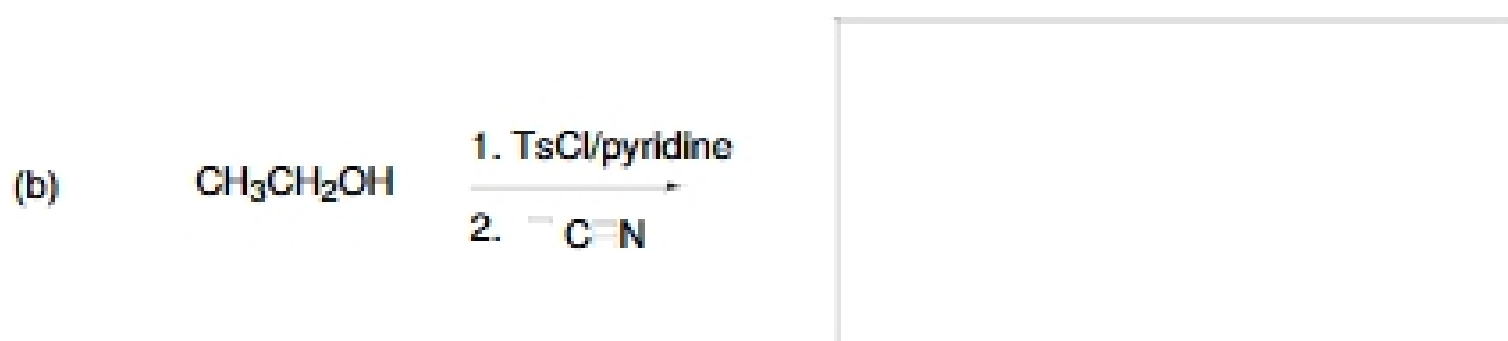
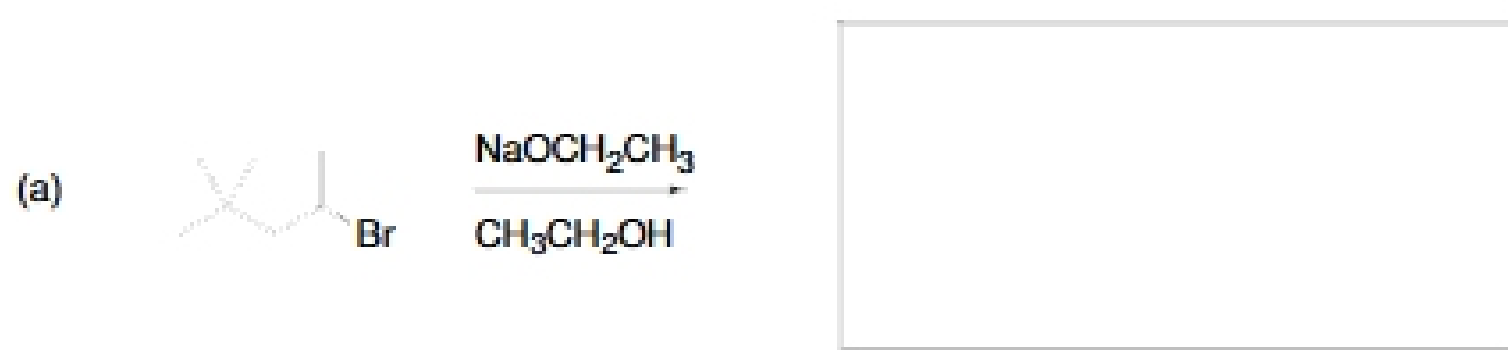


**Practice Midterm:** covering material through the end of Chapter 13

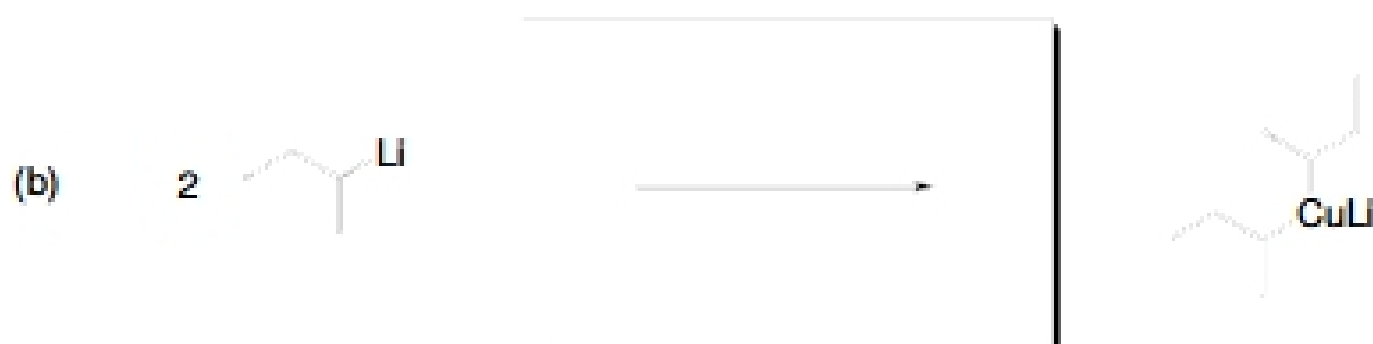
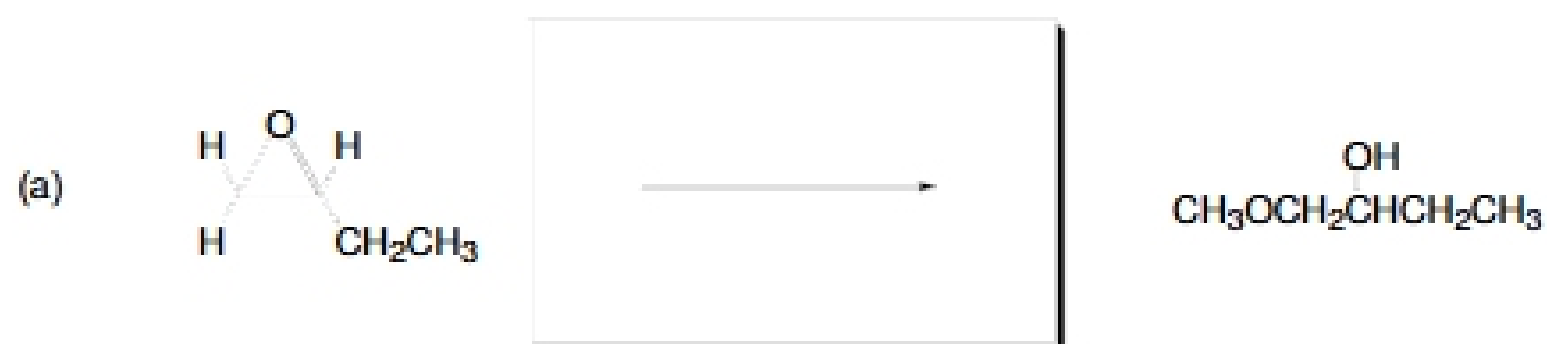
1. Fill in the missing organic reagents for the following transformations:



2. Predict the major organic product for the following transformations:



3. Fill in the missing organic reagents for the following transformations:



4. Using the given starting material, any necessary inorganic reagents, and any carbon-containing compounds with no more than two carbon atoms, indicate how the following synthesis could be carried out:



5. Methyl iodide is reacted with an unknown compound ("A") to give a new compound with molecular formula  $C_4H_{11}N$ . The  $^1H$  NMR spectrum of the product "B" is given below.

- (a) Give the structures of reactant "A" and product "B".  
(b) Assign the  $^1H$  NMR resonances in the below spectrum to the hydrogens in compound "B". The coupling information is:

1.1 ppm – t, 3H

2.2 ppm – s, 6H

2.4 ppm – q, 2H

