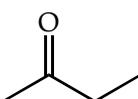
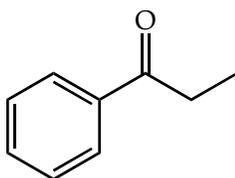
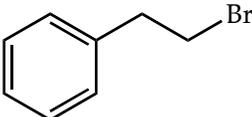


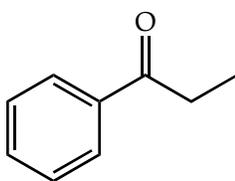
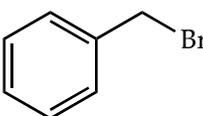
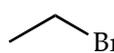
Cooperative Assignment 1

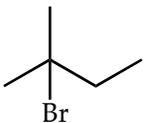
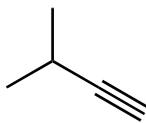
Chapter 10 - Alkynes

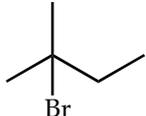
For these synthesis problems, propose a series of synthetic steps that will yield the desired product from the indicated starting materials. You may use any organic or inorganic reagents, except where specified otherwise. In some cases more than one starting material may be specified, in which case you must use both starting materials at some point in the synthesis. Some problems may not give specific starting materials, but rather restrict the number of carbons you are allowed to use in your precursors to make the problem more interesting. There are many themes in these problems - adding carbons by reacting terminal alkynyl anions with appropriate primary S_N2 substrates, formation of carbonyls from ozonolysis or hydration of alkynes, formation of *E* or *Z*-double bonds, using *syn* versus *anti* addition to double bonds to control stereoselectivity, and there are a fair number of epoxides used in some of the later problems.

1. Make  starting from any materials of two carbons or less.

2. Make  from  and CH_3Br (easy).

3. Make  from  and  (difficult).

4. Starting with  $\xrightarrow{\hspace{2cm}}$ 

5. Starting with  $\xrightarrow{\hspace{2cm}}$ 