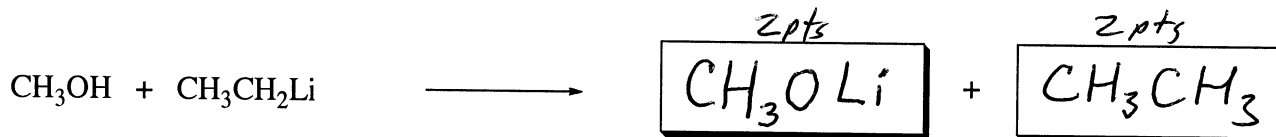


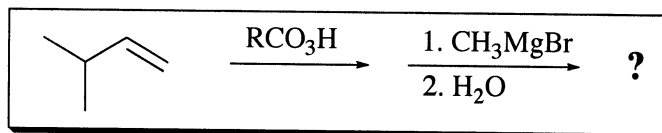
Key

SIGNATURE (required): _____

1. (4) Complete the following reaction by drawing
- one**
- product in each of the provided boxes:



2. (4) Circle the
- name**
- of the major organic product obtained from the following sequence of reactions:



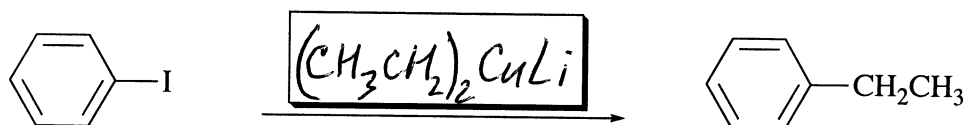
2,3-dimethyl-1-butanol

2-methyl-3-pentanol

2-isopropylloxirane

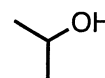
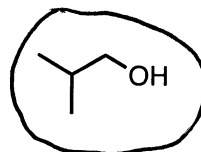
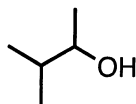
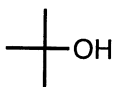
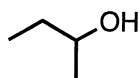
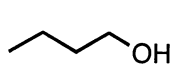
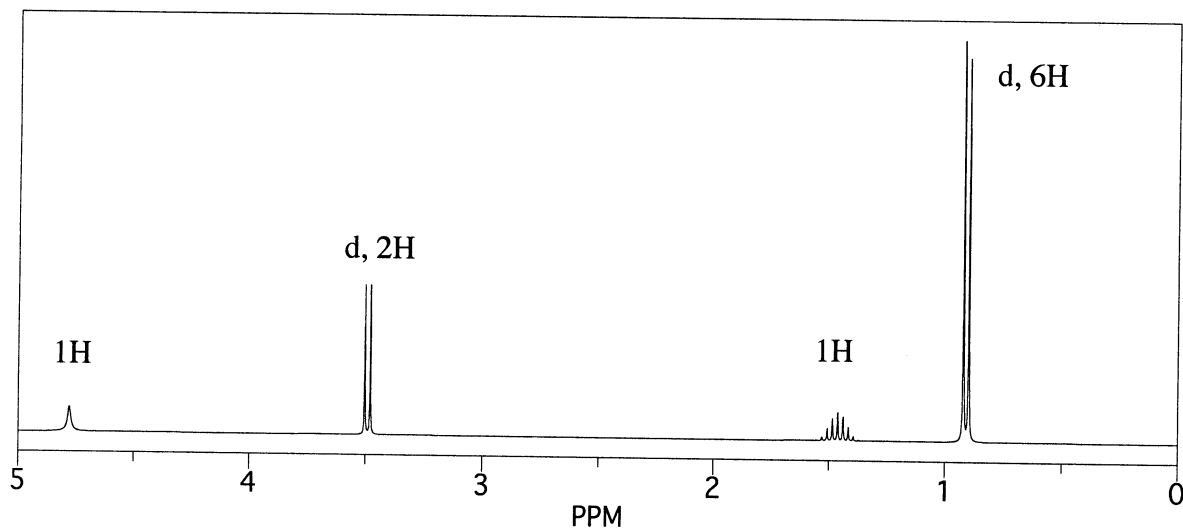
3,3-dimethyl-2-butanol

3. (4) Show the
- reagent**
- in the box that can be used to convert the reactant to the indicated product:



4. (4) Write the value of
- m/z
- of the molecular peak (
- M^+
-) in the mass spectrum of
- methanol**
- :
- $m/z =$
- 32

5. (6) Circle the structure of an alcohol which is in agreement with the following
- ^1H
- NMR spectrum:



6. (3) Which of the following compounds has the
- characteristic IR peaks
- at about
- 3400 cm^{-1}
- and
- 2200 cm^{-1}
- ?

3-heptyn-1-ol

dimethyl ether

ethylene oxide

ethanol

trans-3-hepten-1-ol

2-butanone