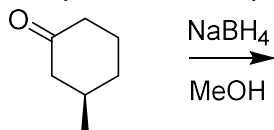


Experiment 19

Reduction of Ketones: Preparation of Benzhydrol from Benzophenone

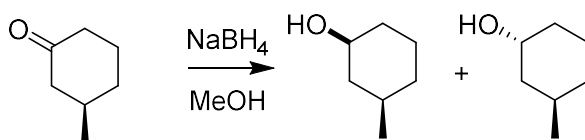
Study Questions

- 1) What two product alcohols would be produced if (*R*)-3-methylcyclohexanone were treated with sodium borohydride? Would you expect them to separate on a TLC plate?



(*R*)-3-methylcyclohexanone

Answer:

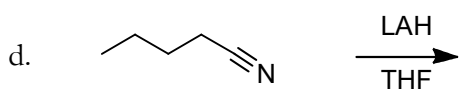
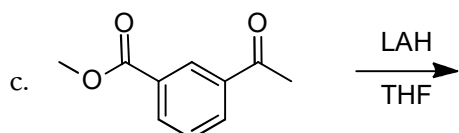
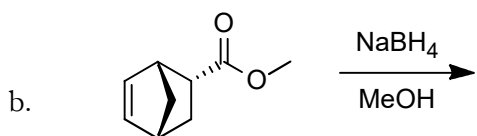
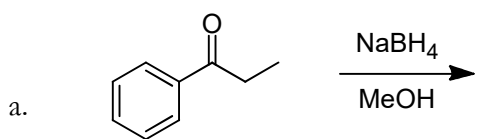


(*R*)-3-methylcyclohexanone

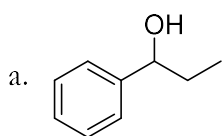
The R_f values of these compounds should be different, although they might not be different enough to permit separation.

- 2) The solubility of a compound with a melting point of 70° is as follows: 8 g/100 mL hexanes (at 69°C); 1 g/100 mL hexanes (at 0°C). If you tried to recrystallize 1 g of this compound from 10 mL of hexanes, you would notice droplets of oil forming in the hot mixture.
- What is this oil? **Answer:** The oil is the compound oiling out of solution, or forming a liquid that cannot dissolve because the solution is saturated but above the melting point of the compound.
 - What would you do to correct the problem? **Answer:** Add more solvent until there is enough to dissolve all of the molten compound.
- 3) For the following reaction schemes, draw the expected major product. If no reaction will take place, write *NR*. Ignore stereochemistry, and assume that an aqueous workup is included if necessary.

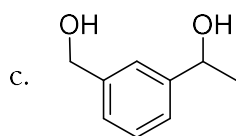
Experiment 19: Reduction of Ketones

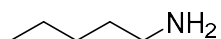


Answer:



b. NR



d.  CCCCCN