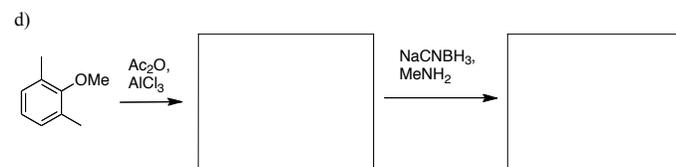
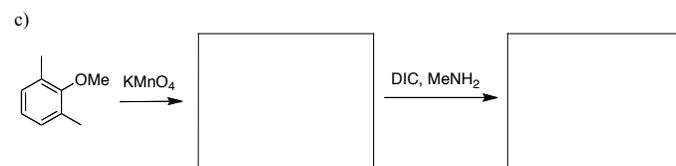
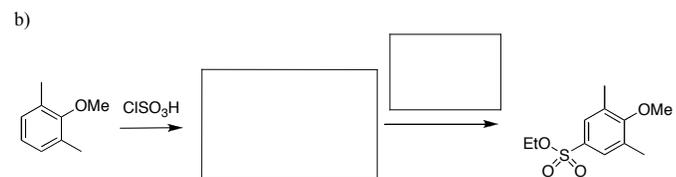
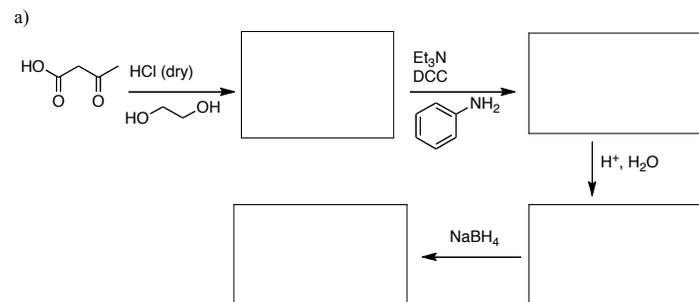
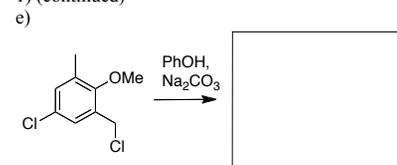


2010 — Problem set 2
Chapter 25.

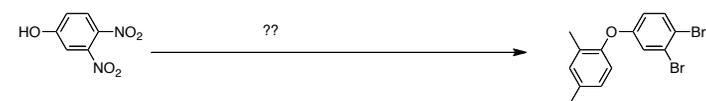
1) Fill in the missing products and reagents/conditions where needed.



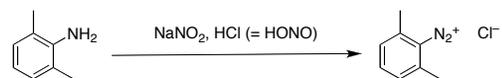
1) (continued)



2) Plan the following multi-step synthesis. Do not show mechanisms.

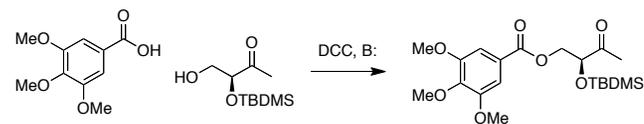


3) Consider the following transformation.



- Draw the product diazonium in full, unabbreviated form that shows all lone pairs and bonds.
- Give the mechanism of the following transformation. Show all proton transfers, intermediates, and byproducts.
- What byproducts are produced? Is this reaction catalytic in H^+ ?

4) In addition its usual role in peptide synthesis, dicyclohexylcarbodiimide (DCC) is routinely used for mild ester formation on complex substrates. Draw the detailed mechanism of this transformation, tracking all proton transfers carefully. Is the reaction catalytic in DCC? Is the reaction catalytic in Base?



5) Amino acid *side chains* can also have functional groups that need to be protected during synthesis.

For the coupling shown below, create a derivative of *each* amino acid monomer that is suitably protected in order to undergo the coupling shown. Show in detail how each amino acid could be protected. Include intermediates, reagents, and conditions, but not mechanisms.

