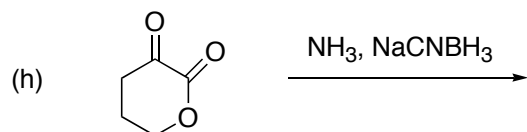
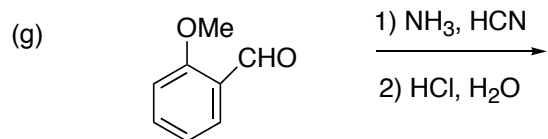
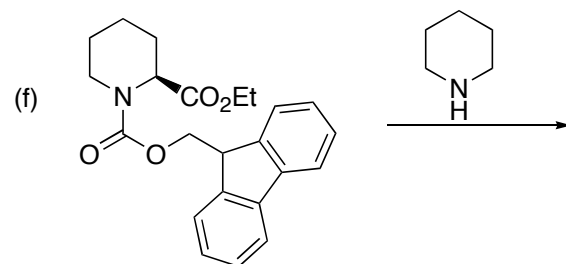
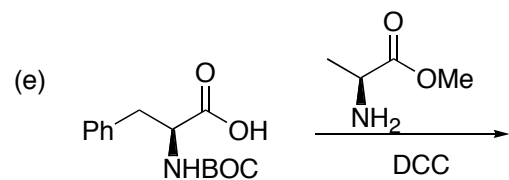
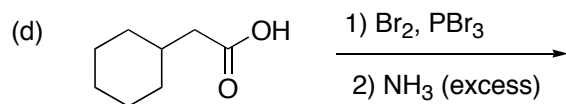
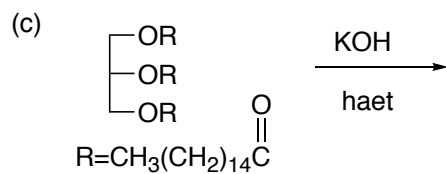
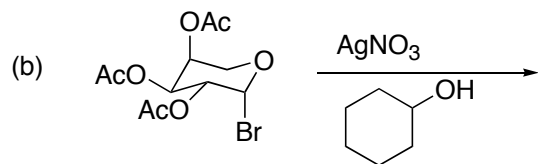
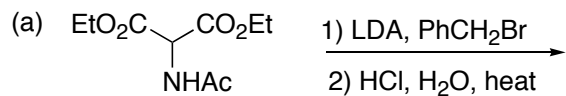
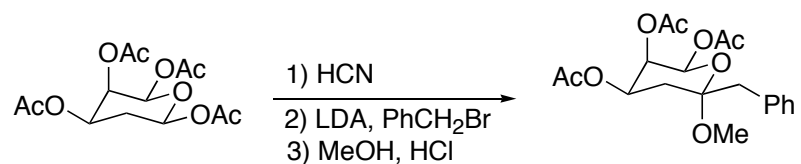


(1) Predict the major product from each reaction. If you expect no reaction, indicate.

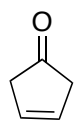
note: aqueous work-up is implied for all reactions.



(2) Give a detailed mechanism for the following reaction, show all steps.



(3) Complete the following roadmap problem.



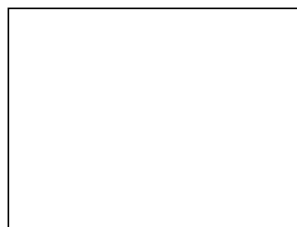
1) mCPBA
2) NaN₃



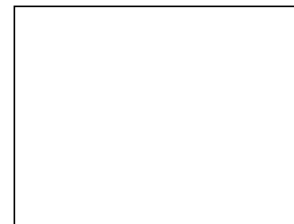
3) TMSCl, Et₃N
4) H₂, Pd/C



4) Fmoc-Cl, pyridine
5) NH₂OCH₃
HOAc



6) Piperidine
7) CH₂O, NaCNBH₃



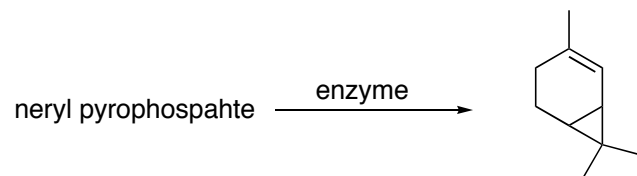
8) Ac₂O, pyridine
9) TBAF



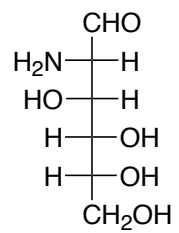
10)
AgNO₃
11) NaOH



(4) Propose a mechanism for the following enzymatic transformation

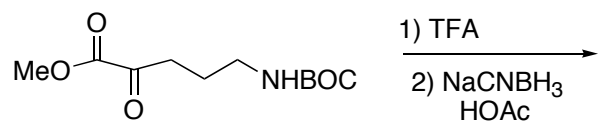


(5) For the following aminosugar, draw the enantiomer



(6) Draw this compound in the chair form.

(7) Give the product and a mechanism for the following reaction.



(8) Using benzene and any other organic reagents with less than six-carbons, design a synthesis of the following unnatural amino acid.

