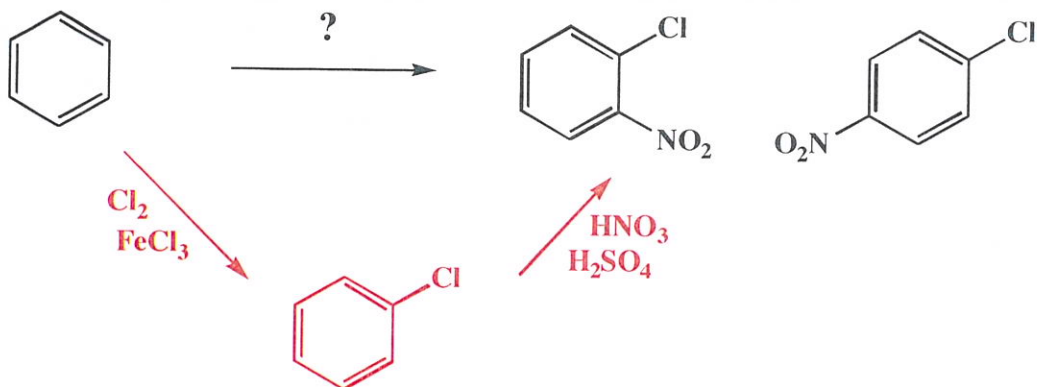


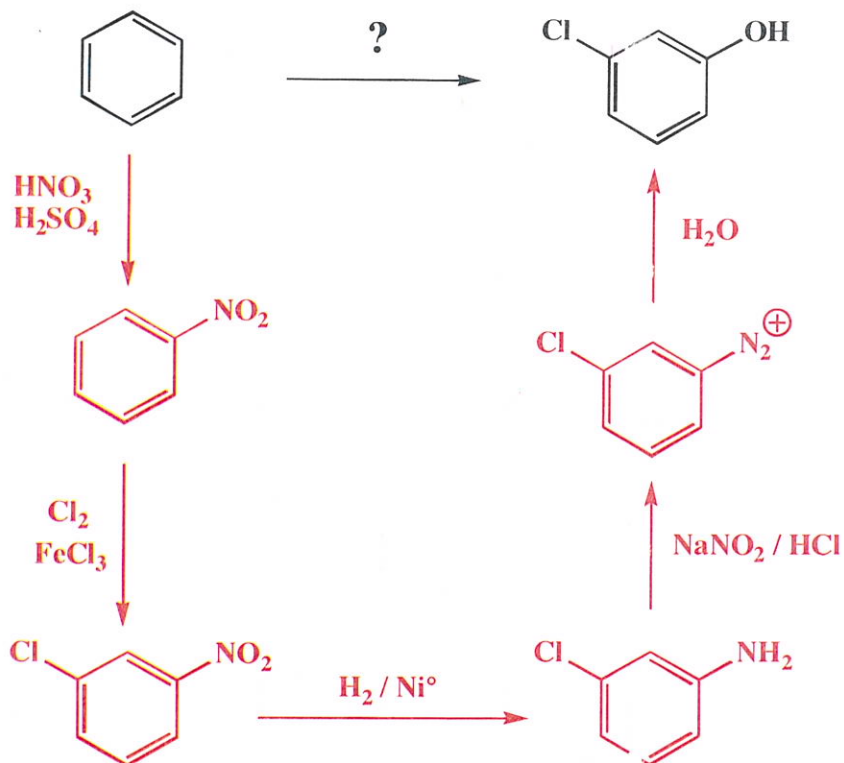
17. Using any reagents turn the starting material into the indicated product. All the carbons in the product must come from the given starting materials. Draw all molecules synthesized along the way. When it doubt, draw the molecule!

(4 pts)



This was just a warmup

(13 pts)



**Recognize** that the product has the Cl atom and OH group in a meta orientation, meaning this could not be the major product from a simple sequence of reactions from benzene.

**Recognize** further that the only way you know how to place an OH group on an aromatic ring is by adding water to a diazonium. Therefore, propose an initial nitration followed by chlorination to give the correct meta orientation. Reduction of the nitro group, reaction with HONO and finally addition of water gives the final product.

8. Show reagents and intermediates synthesized along the way that allow you to produce the product from the given starting material. Assume you can isolate either the ortho or para product in pure form, even though both are usually produced together.

