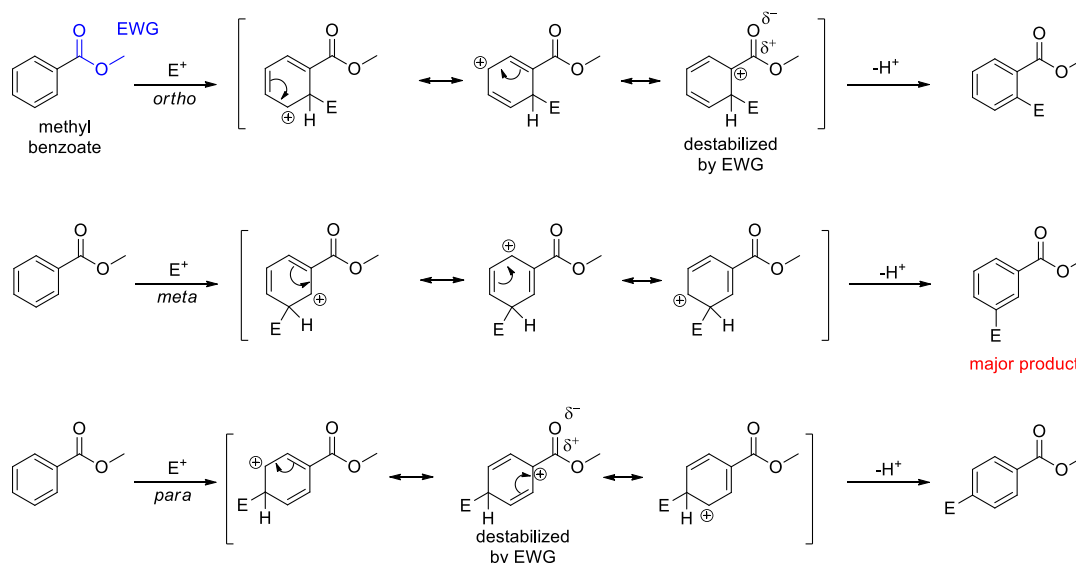
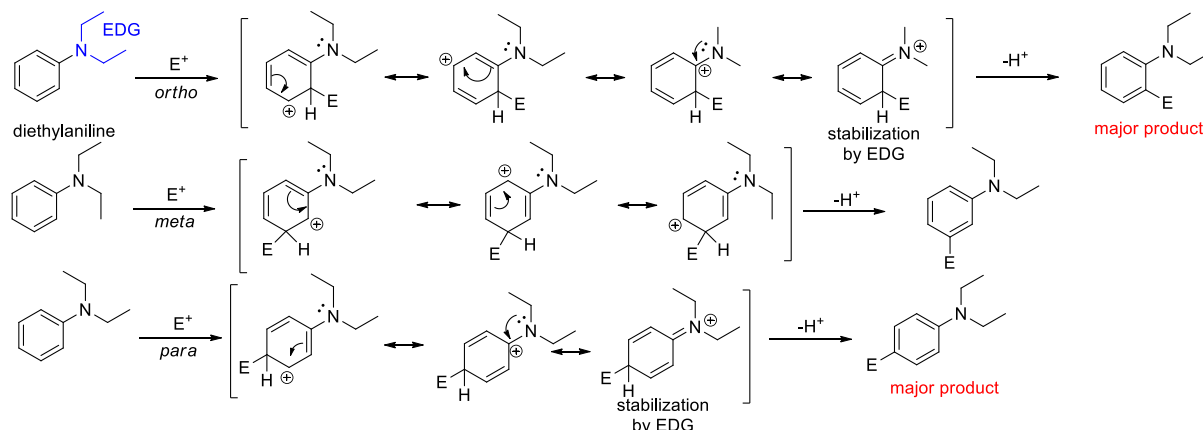


FRO-II 2021 QUESTIONS OF THE WEEK 4 - SOLUTIONS

1)

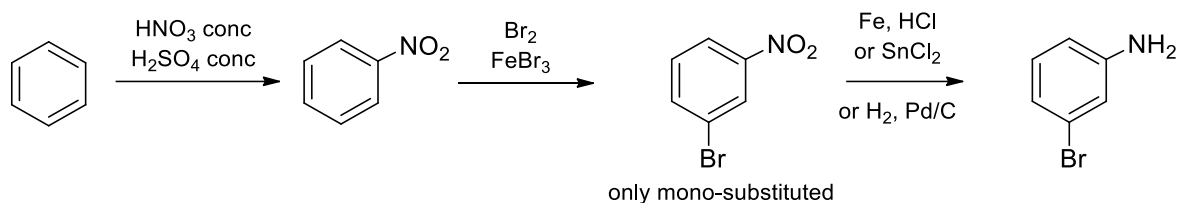


EWG substituent destabilizes the σ -complex when $-E$ is in *ortho*- or *para*-position, so *meta*-product is the least deactivated and is formed preferentially; the reaction is slower than compared to benzene. $-\text{CO}_2\text{Me}$ is an EWG making the S_EAr more difficult.

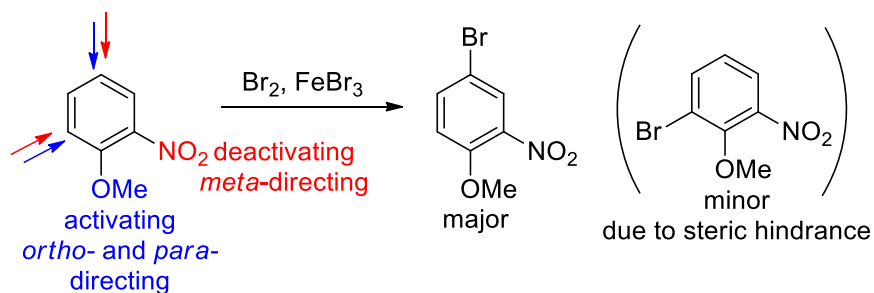


EDG substituent stabilizes the σ -complex when $-E$ is in *ortho* or *para*-position, so *meta*-product is the least activated, *ortho*- and *para*-products are formed preferentially. The ratio between the *ortho*- and *para*-products is controlled by the steric hindrance of the EDG. The reaction is faster than compared to benzene. $-\text{NMe}_2$ is an EDG making the S_EAr easier.

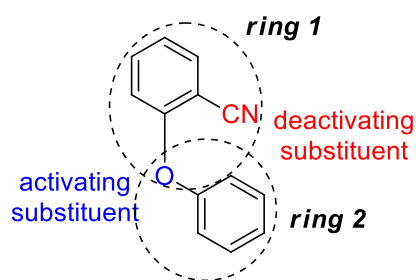
2)



3) A)



B)



Ring 2 is more reactive than **ring 1** because it contains only activating group (aryl ether), that stabilizes the σ -complex. Therefore electrophilic substitution occurs on **ring 2** with *ortho*- / *para*-orientation (*para*-substituted product is major for steric reasons).

