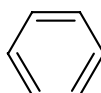


NAME: _____

To **not** have your graded script placed outside my office please check this box**(1-10) Are True or False**

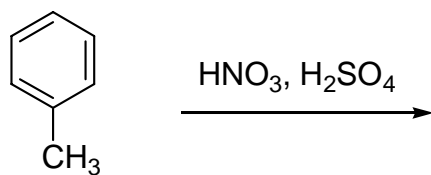
- 1) Cyclohexane is a 6π aromatic compound.
- 2) During an *electrophilic aromatic substitution*, the aromatic compound loses its aromaticity in the first step, but then regains it in the last step of the reaction.
- 3) Ortho substitution means a 1,2 arrangement on a benzene ring.
- 4) The rate determining step in an electrophilic aromatic substitution is the endothermic addition of the electrophile.
- 5) Propylbenzene undergoes nitration and bromination reactions faster than benzene.
- 6) Friedal Crafts acylation reactions are more likely to have carbocation rearrangements than Friedal Crafts alkylation reactions.
- 7) This compound is 6π aromatic.



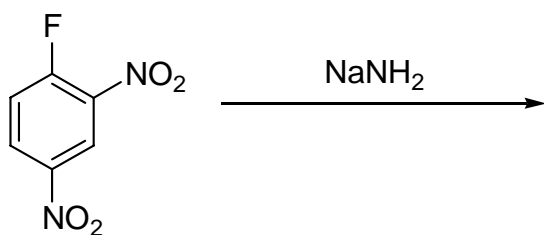
- 8) The amino group ($-\text{NH}_2$) is a deactivating, meta directing substituent for electrophilic aromatic substitution because of its lone pair.
- 9) The nitro group ($-\text{NO}_2$) is an electron withdrawing substituent, and thus an activating group for electrophilic aromatic substitution reactions.
- 10) The trifluoromethyl group ($-\text{CF}_3$) is a meta directing substituent.

11-15) Give the products for the following reactions (and indicate stereo/regiochemistry where applicable).

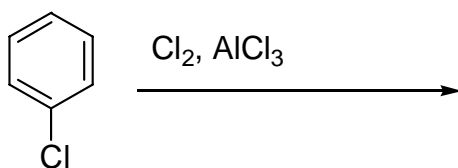
11)



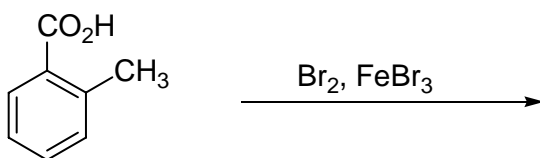
12)



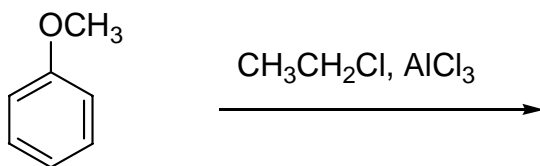
13)



14)

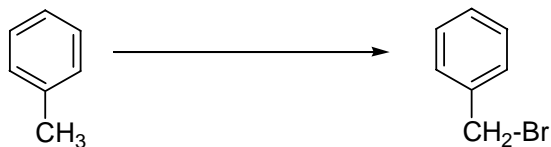


15)



16-18) Give reagents and conditions for the following transformations.

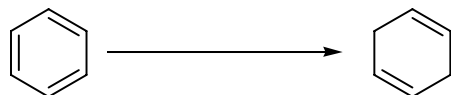
16)



17)

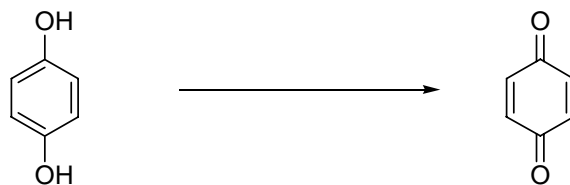


18)

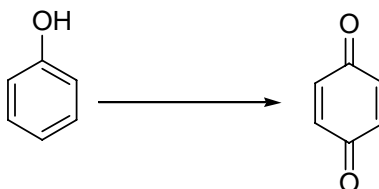


19 - 20) Identify if the following are *reductions* or *oxidations*:

19)

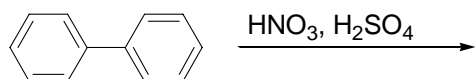


20)



BONUS QUESTION for up to 2 extra points

Predict the product when biphenyl becomes nitrated, and explain why you picked that site of substitution.



NAME: _____

KATHY DRALSPIRE

To **not** have your graded script placed outside my office please check this box **(1-10) Are True or False**

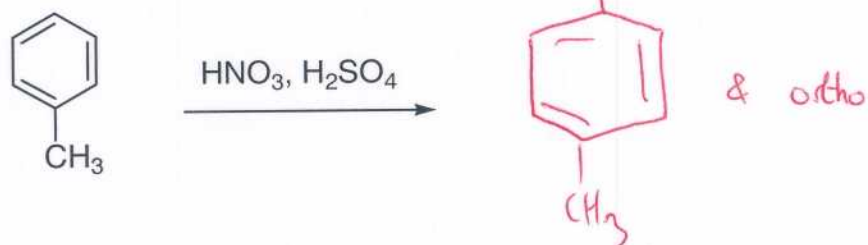
- 1) Cyclohexane is a 6π aromatic compound. **F**
- 2) During an *electrophilic aromatic substitution*, the aromatic compound loses its aromaticity in the first step, but then regains it in the last step of the reaction. **T**
- 3) Ortho substitution means a 1,2 arrangement on a benzene ring. **T**
- 4) The rate determining step in an electrophilic aromatic substitution is the endothermic addition of the electrophile. **T**
- 5) Propylbenzene undergoes nitration and bromination reactions faster than benzene. **T**
- 6) Friedal Crafts acylation reactions are more likely to have carbocation rearrangements than Friedal Crafts alkylation reactions. **F**
- 7) This compound is 6π aromatic.



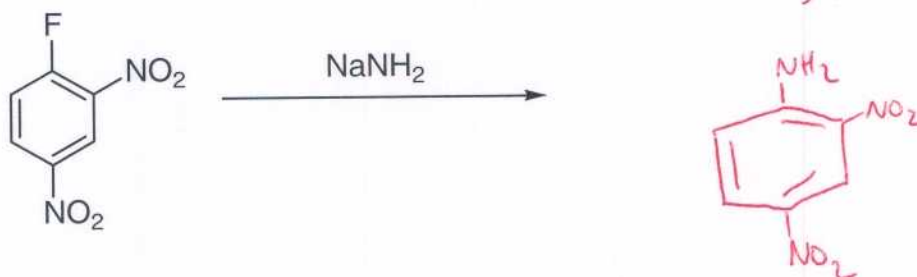
- 8) The amino group ($-\text{NH}_2$) is a deactivating, meta directing substituent for electrophilic aromatic substitution because of its lone pair. **F**
- 9) The nitro group ($-\text{NO}_2$) is an electron withdrawing substituent, and thus an activating group for electrophilic aromatic substitution reactions. **F**
- 10) The trifluoromethyl group ($-\text{CF}_3$) is a meta directing substituent. **T**

11-15) Give the products for the following reactions (and indicate stereo/regiochemistry where applicable).

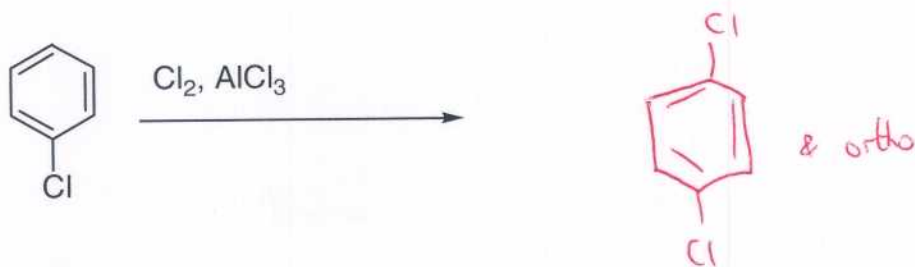
11)



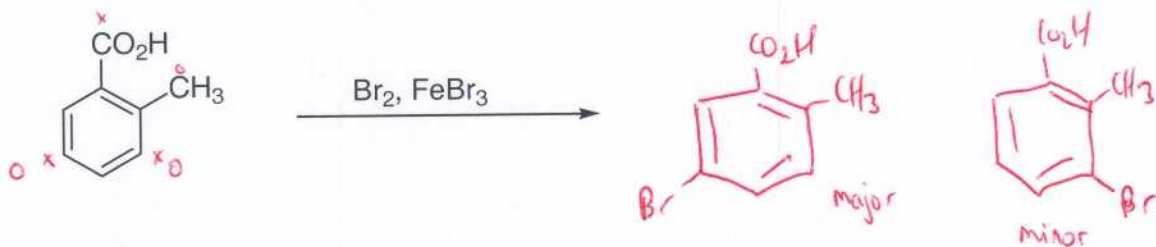
12)



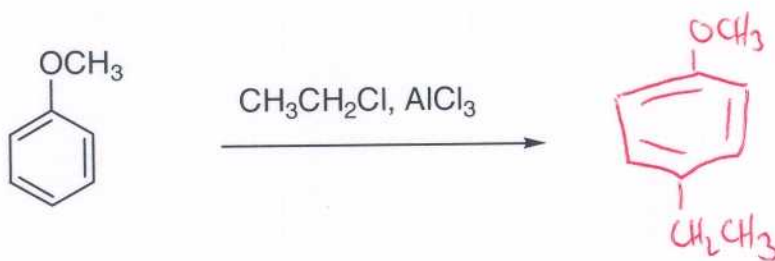
13)



14)

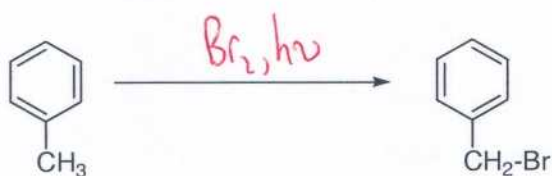


15)

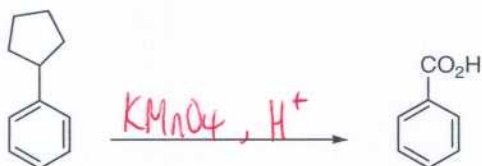


16-18) Give reagents and conditions for the following transformations.

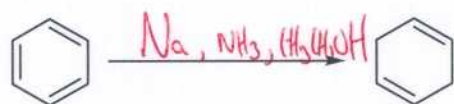
16)



17)

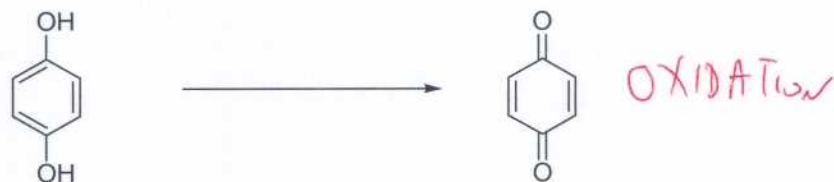


18)

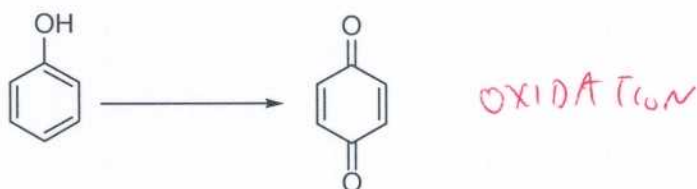


19 - 20) Identify if the following are *reductions* or *oxidations*:

19)

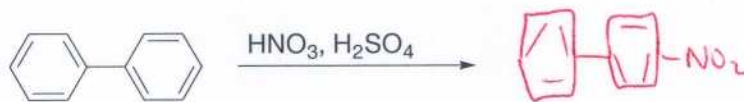


20)



BONUS QUESTION for up to 2 extra points

Predict the product when biphenyl becomes nitrated, and explain why you picked that site of substitution.



The Ph- substituent is able to stabilize a +ve charge by resonance. ortho substitution is too sterically crowded.

