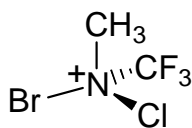


NAME: _____

To *not* have your graded script placed outside my office please check this box

(1-10) Are True or False

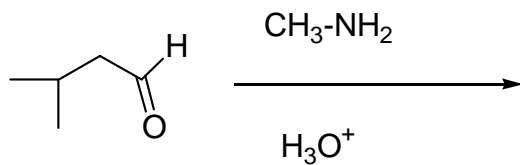
- 1) Amines can act as nucleophiles because of the nitrogen atom which has a lone pair of electrons.
- 2) Aqueous solutions of amines have pH values greater than 7.
- 3) Ketones can undergo nucleophilic addition reactions.
- 4) Aldehydes can undergo nucleophilic addition reactions.
- 5) Wolff-Kishner reduction can be described as 'deoxygenation'.
- 6) Clemmensen reduction can be described as 'oxidation'.
- 7) Aldehydes are more sterically hindered than ketones.
- 8) Cyclic acetals are formed when a diol reacts with a carbonyl compound under acidic conditions.
- 9) This ion is chiral:



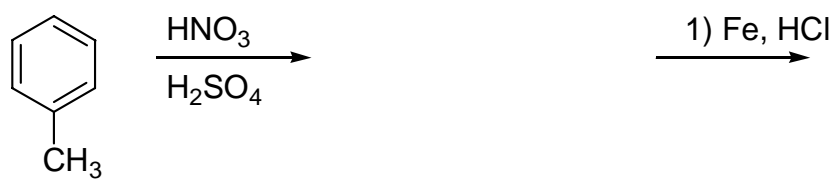
- 10) Hoffman eliminations give Hoffman products.

11-12) Give the products for the following reactions (and indicate stereo/regiochemistry where applicable).

11)



12)

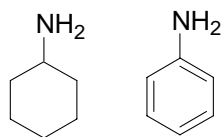


13-15) Circle the **stronger** base in each set.

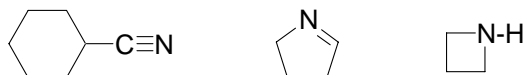
13)



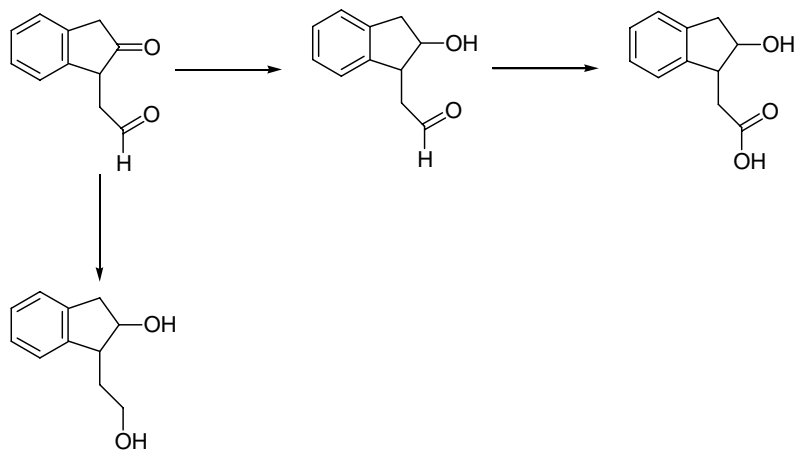
14)



15)



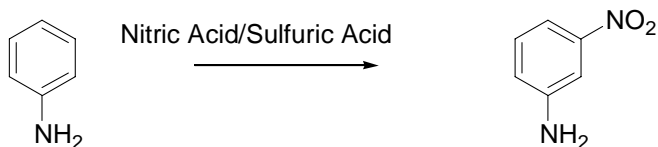
16-18) Give reagents and conditions for the following transformations.



19 and 20) Draw the mechanism for the reaction of a primary amine and an acid chloride to produce an amide.

***BONUS QUESTION for up to 2 points ***

Bearing in mind the -NH_2 group is an activating, ortho/para director for EAS reactions, explain why the following EAS reaction is slow, and why the nitro group ends up meta to the -NH_2 .

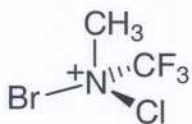


NAME: _____

TERRY BALL

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

- 1) Amines can act as nucleophiles because of the nitrogen atom which has a lone pair of electrons. T
- 2) Aqueous solutions of amines have pH values greater than 7. T
- 3) Ketones can undergo nucleophilic addition reactions. T
- 4) Aldehydes can undergo nucleophilic addition reactions. T
- 5) Wolff-Kishner reduction can be described as 'deoxygenation'. T
- 6) Clemmensen reduction can be described as 'oxidation'. F
- 7) Aldehydes are more sterically hindered than ketones. F
- 8) Cyclic acetals are formed when a diol reacts with a carbonyl compound under acidic conditions. T
- 9) This ion is chiral: T



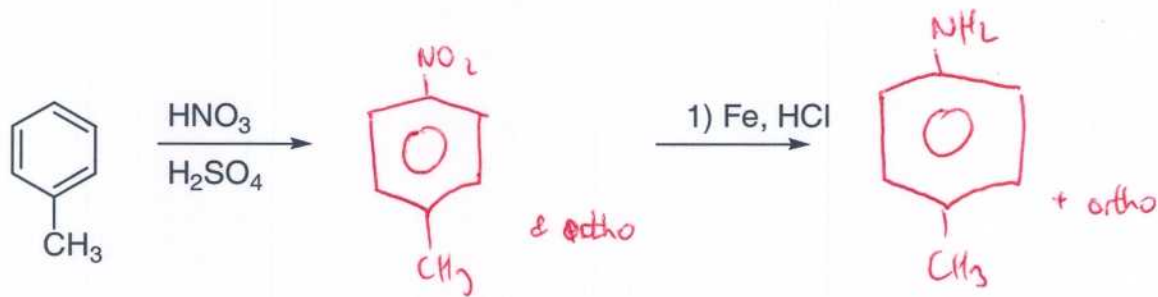
- 10) Hoffman eliminations generally give Hoffman products. T

11-12) Give the products for the following reactions (and indicate stereo/regiochemistry where applicable).

11)

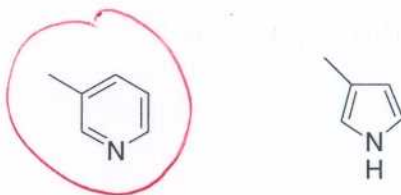


12)

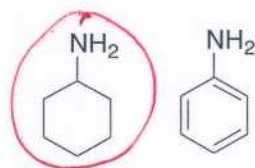


13-15) Circle the **stronger** base in each set.

13)



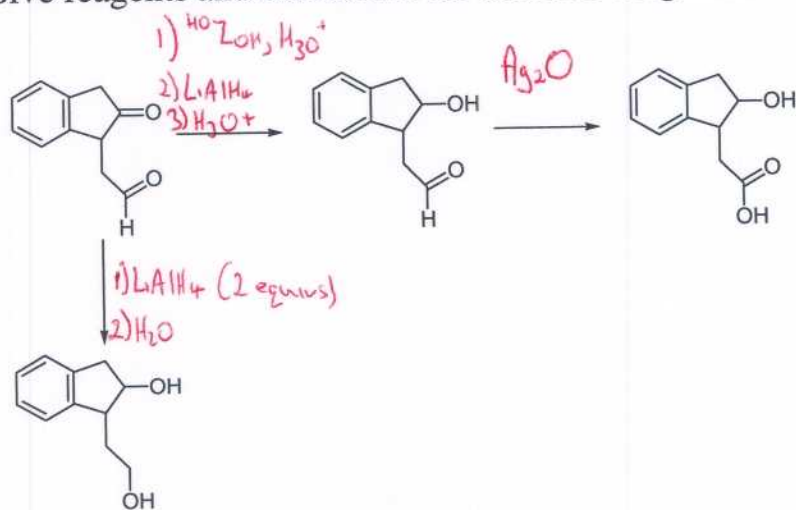
14)



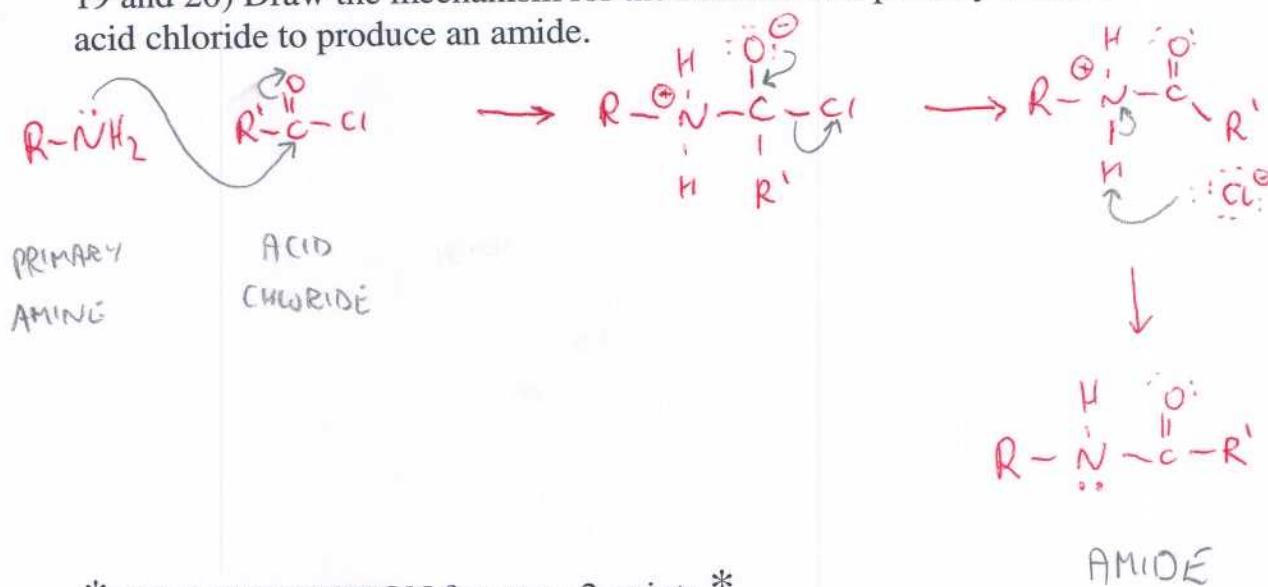
15)



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

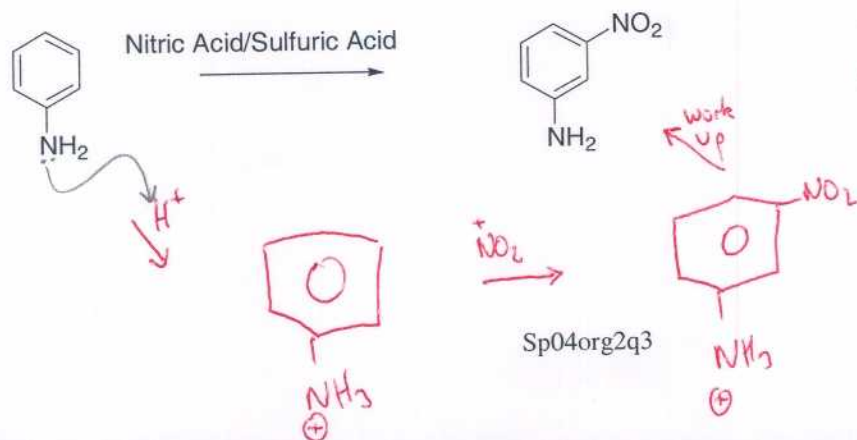


19 and 20) Draw the mechanism for the reaction of a primary amine and an acid chloride to produce an amide.



BONUS QUESTION for up to 2 points

Bearing in mind the $-\text{NH}_2$ group is an activating, ortho/para director for EAS reactions, explain why the following EAS reaction is slow, and why the nitro group ends up meta to the $-\text{NH}_2$.



The aniline gets protonated in the acidic solution. The $-\text{NH}_3^+$ group is electron withdrawing & meta directing.