

NAME: _____

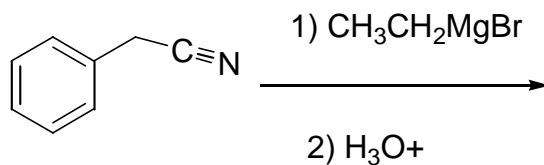
If you do **not** wish to have your script placed outside my office, then please check this box _____

(1-10) are True or False.

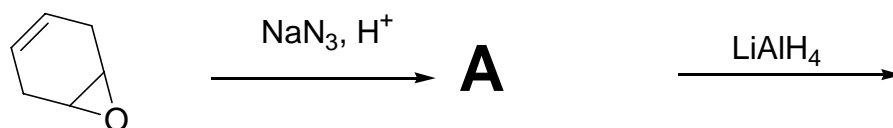
- 1) Aldehydes and Ketones both contain a carbon-oxygen double bond.
- 2) Carbonyl functionalities are attacked by nucleophiles at the carbonyl carbon.
- 3) Aldehydes are generally more reactive than ketones.
- 4) Tollen's reagent reacts with aldehydes to give a silver mirror.
- 5) Hoffman elimination gives products of predominantly Saytzeff orientation.
- 6) Clemmensen reduction uses a zinc/mercury amalgam and hydrochloric acid.
- 7) Aryl diazonium salts are more stable than alkyl diazonium salts.
- 8) Wittig reactions convert alkenes to ketones.
- 9) Cyanide ion has a nucleophilic carbon atom.
- 10) Imines contain a carbon nitrogen double bond.
- 11) Draw a compound that is chiral and contains a nitrogen atom.

12-14) Give the products for the following reactions (and indicate stereo/regiochemistry where applicable).

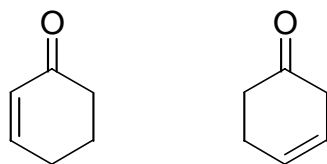
12)



13-14)



15) Explain why the ketone on the left is more stable than the ketone on the right.



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

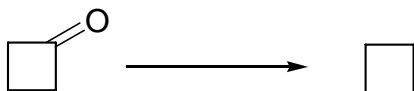
16)



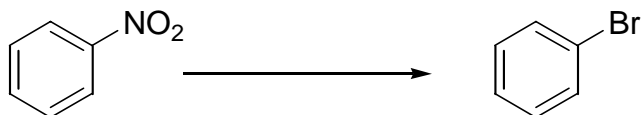
17)



18)

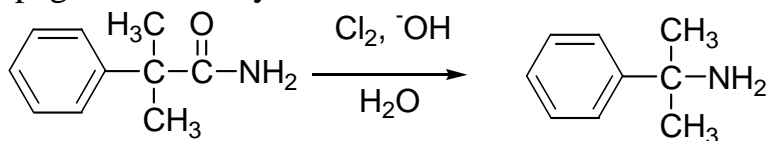


19 and 20) Provide **two** completely different synthetic schemes (i.e. sets of reagents) to achieve the transformation below.



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

Provide the mechanism of the transformation below (use the back of this page if necessary).



NAME: _____

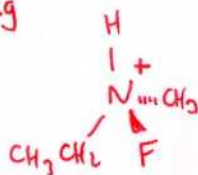
M.T. SKULL

If you do **not** wish to have your script placed outside my office, then please check this box ___

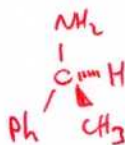
(1-10) are True or False.

- 1) Aldehydes and Ketones both contain a carbon-oxygen double bond. T
- 2) Carbonyl functionalities are attacked by nucleophiles at the carbonyl carbon. T
- 3) Aldehydes are generally more reactive than ketones. T
- 4) Tollen's reagent reacts with aldehydes to give a silver mirror. T
- 5) Hoffman elimination gives products of predominantly Saytzeff orientation. F
- 6) Clemmensen reduction uses a zinc/mercury amalgam and hydrochloric acid. T
- 7) Aryl diazonium salts are more stable than alkyl diazonium salts. T
- 8) Wittig reactions convert alkenes to ketones. F
- 9) Cyanide ion has a nucleophilic carbon atom. T
- 10) Imines contain a carbon nitrogen double bond. T
- 11) Draw a compound that is chiral and contains a nitrogen atom.

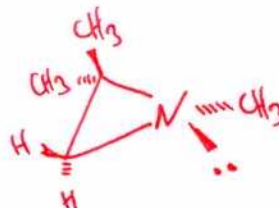
Eg



or

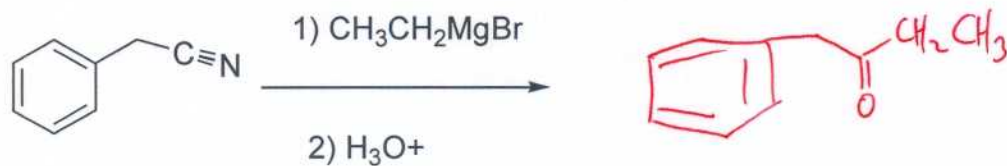


or

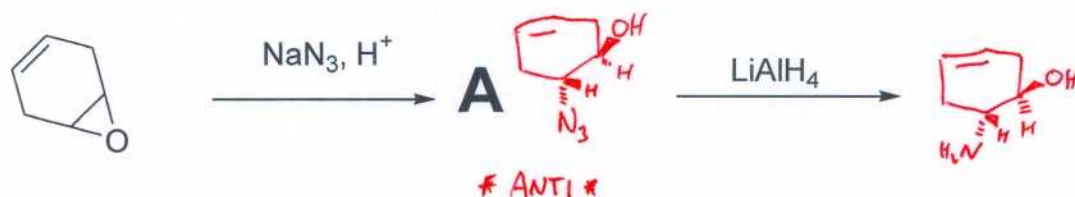


12-14) Give the products for the following reactions (and indicate stereo/regiochemistry where applicable).

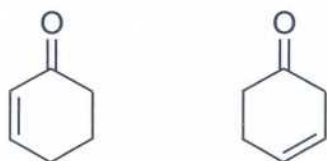
12)



13-14)



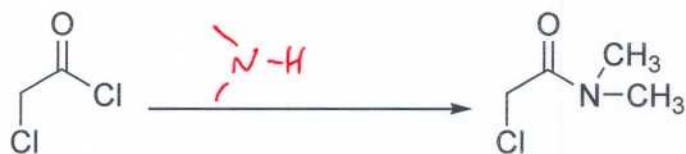
15) Explain why the ketone on the left is more stable than the ketone on the right.



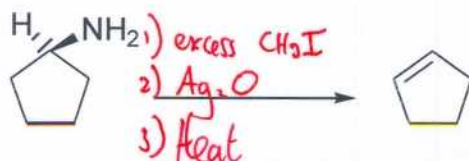
The double bonds on the left are conjugated, and therefore the molecule is lower in energy than the R.H.S. ketone where the double bonds are isolated.

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

16)



17)

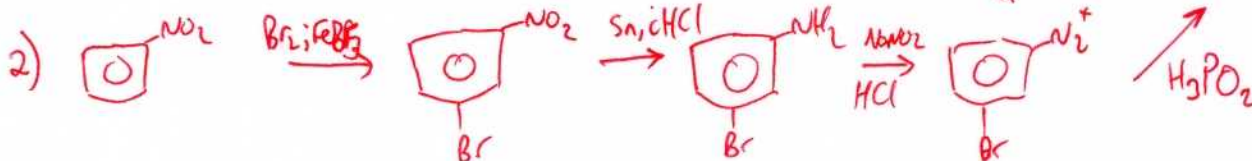
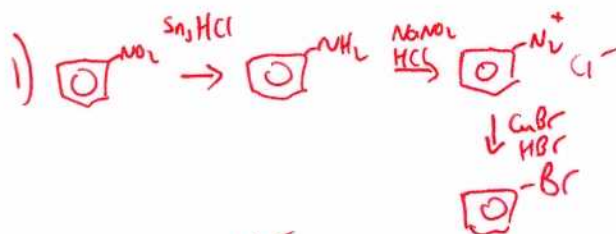


18)



(\nearrow -OH)
 1) $\text{NaBH}_4, \text{H}_3\text{O}^+$ 1) Zn(Hg), HCl 1) $\text{H}_2\text{N-NH}_2, \text{KOH}$
 2) Py, TosCl (\rightarrow -OTs) or (Clemmensen) or (Wolff-Kishner)
 3) NaBH_4

19 and 20) Provide two completely different synthetic schemes (i.e. sets of reagents) to achieve the transformation below.



*BONUS QUESTION for up to 2 points *

Provide the mechanism of the transformation below (use the back of this page if necessary).

