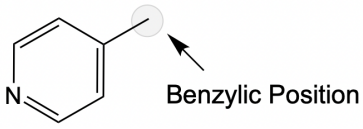
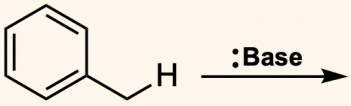
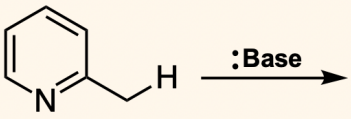
CONCEPT: SIDE CHAIN REACTIONS OF SUBSTITUTED PYRIDINE



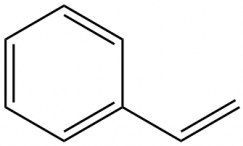
- Benzylic hydrogens are _____ due to stable intermediate anions.
  - □ **Ordinary Benzylic carbanion:** only stabilized by _____.
  - □ **Pyridine carbanion:** stabilized by _____ and _____ of the electronegative N atom.

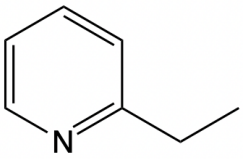
Benzylic Carbanion Formation

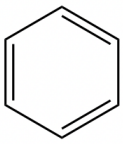
Reaction	Relative pKa
	_____
	_____

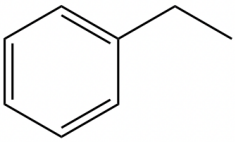
- Benzylic position can be deprotonated by strong bases such as _____ or _____.

EXAMPLE: Arrange the following compounds in order of increasing acidity.

a) 

b) 

c) 

d) 

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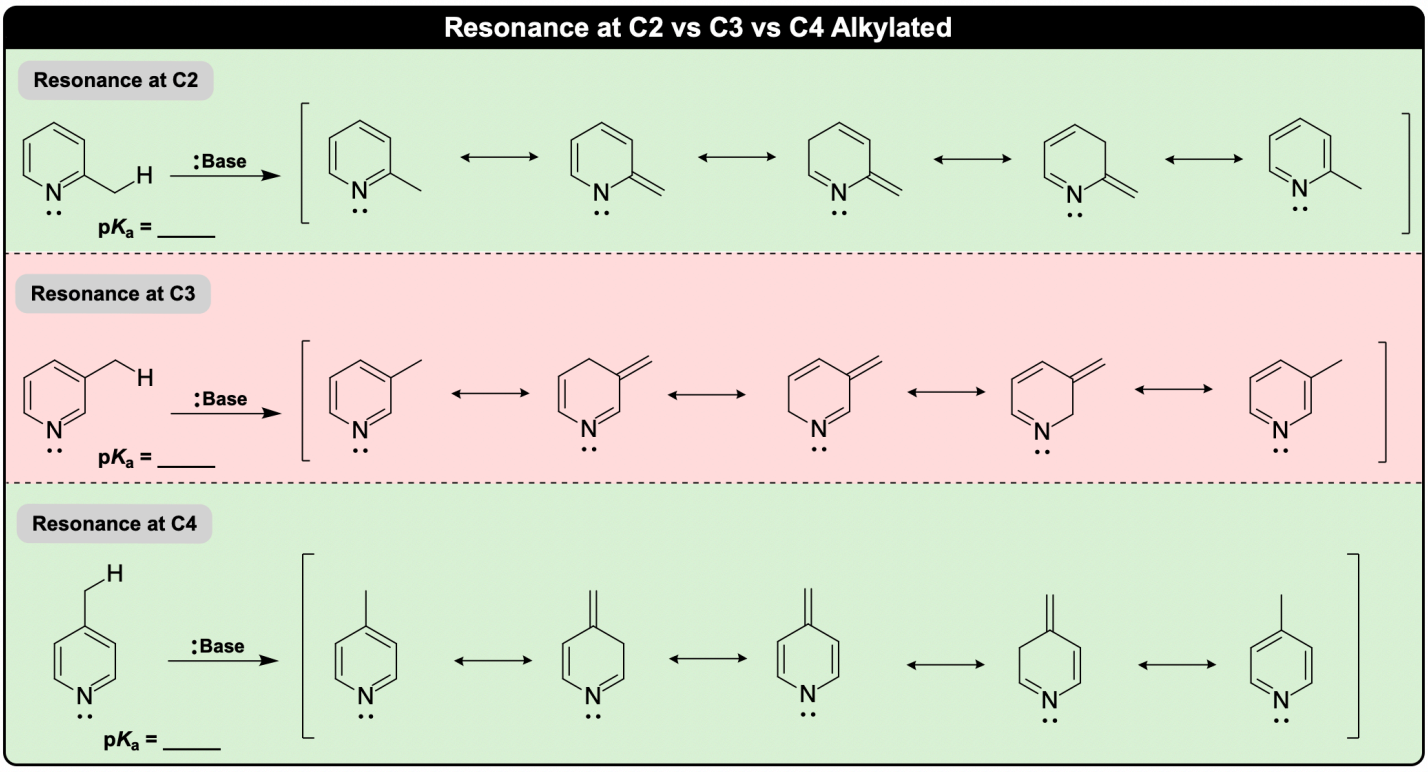
Resonance Structures

- Certain side chain positions of alkylated pyridines are _____ acidic than others.
  - □ _____ and _____ alkylated pyridines are more acidic because of the ___ charge on the electronegative N atom.



EXAMPLE: Provide all the resonance structures formed when 4-ethylpyridine reacts with sodium amide.

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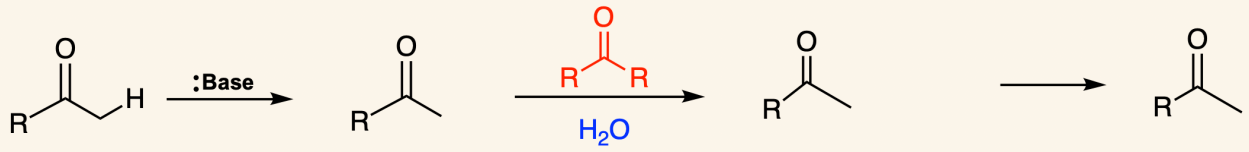
Addition Reaction

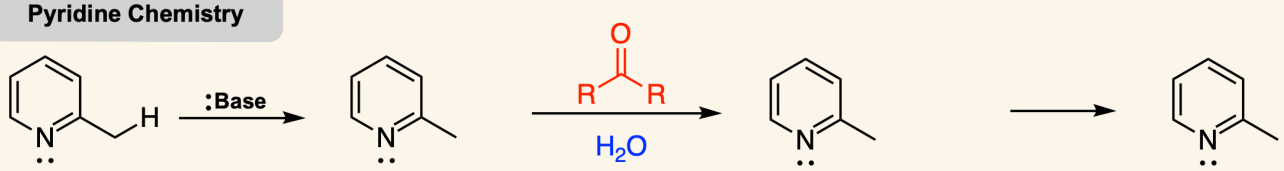
- The conjugate base of pyridine reacts in a similar way to the _____ anion of carbonyl chemistry.
  - □ **Recall:** Aldehydes and ketones can react with an enolate anion via an _____ _____.

Carbonyl vs Pyridine Chemistry

Carbonyl Chemistry

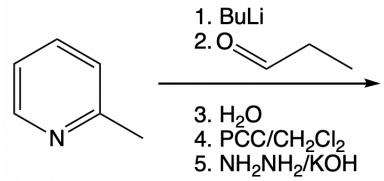


Pyridine Chemistry

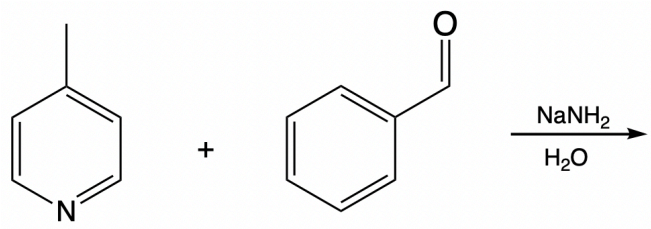


- Benzylic carbon compounds tend to readily form _____ , _____ unsaturated products.

EXAMPLE: Using 2-methylpyridine as a starting material, predict the final product based on the list of reagents given?



PRACTICE: Provide the mechanism and final product from the reaction given.



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PRACTICE: Starting from pyridine, show the reagents necessary to make the following compound.