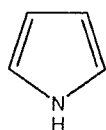## Answer Guide

Answer all questions.

1. a. Draw resonance structures for Pyrrole.

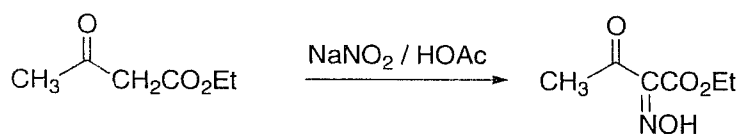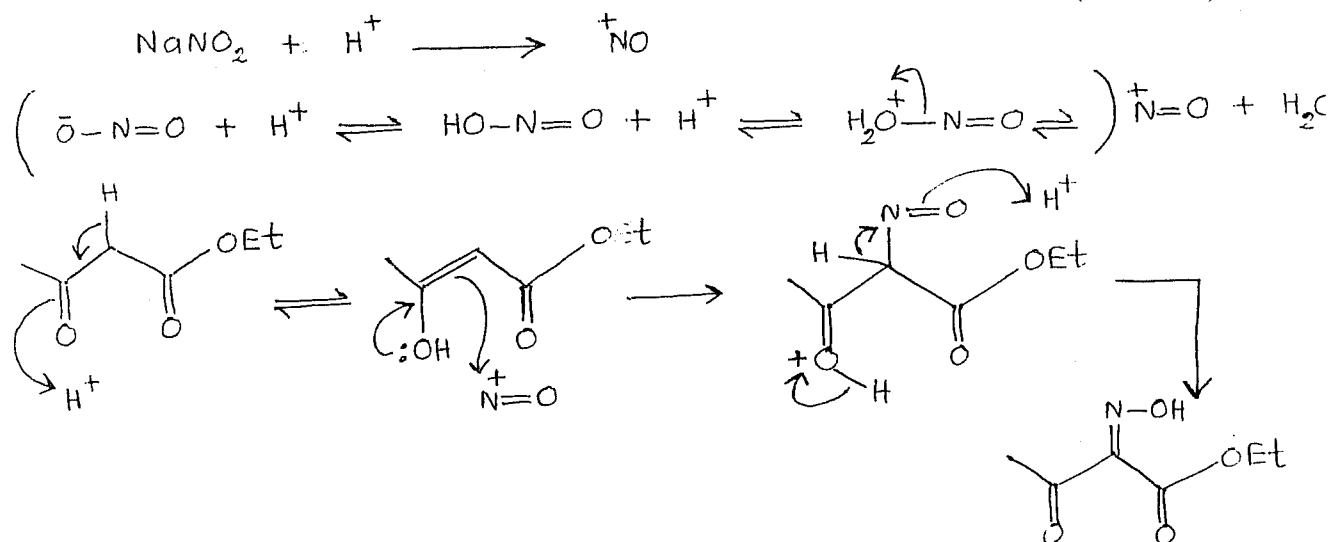
The answer is given in page 7 of your level 5 unit 1 book.

b. Giving reasons, state why pyrrole is less basic than pyridine.

In pyrrole lone pair on N delocalizes. Therefore it is not available for abstract a H^+
In pyridine lone pair is not delocalized. Therefore it can abstract H^+ showing more basicity.
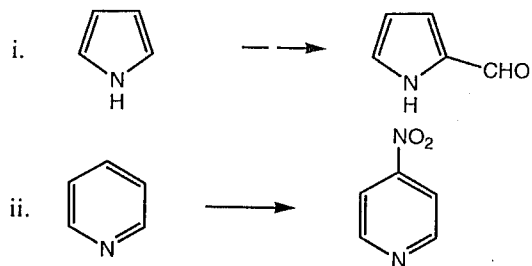
c. During the synthesis of pyrroles, acetoacetates are reacted with $NaNO_2$ / HOAc. One of the primary reactions that take place is as follows.

Give the mechanism of this reaction. (*Hint:* ^+NO *is formed from* $NaNO_2$ *and HOAc*)
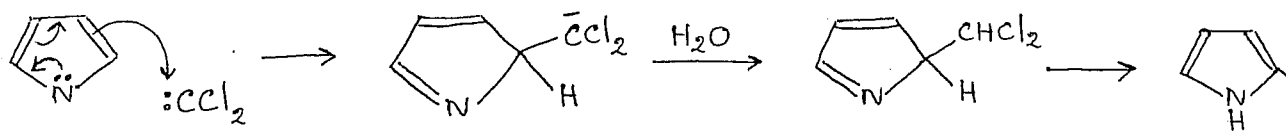
(30 Marks)

2. Giving necessary reagents and conditions show how you would carry out the following conversions.
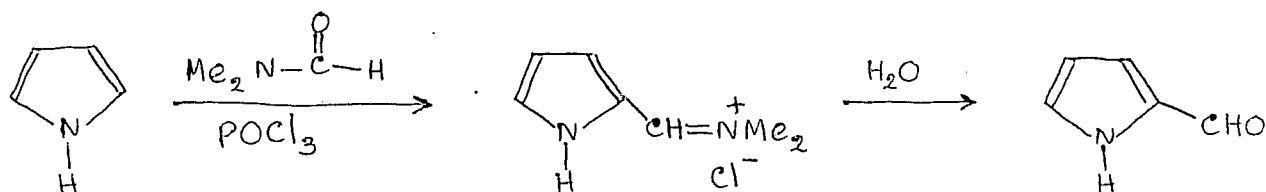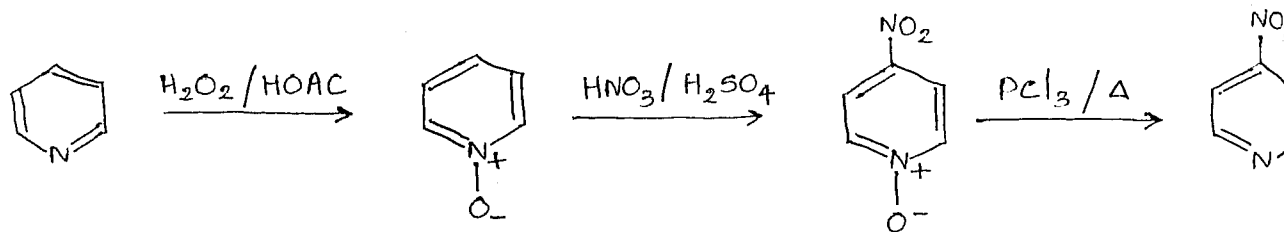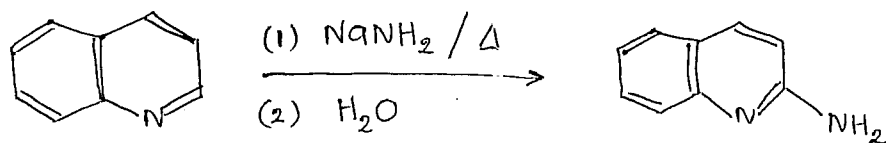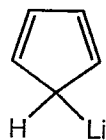
i.

ii.

(20 Marks)

I

OR

II

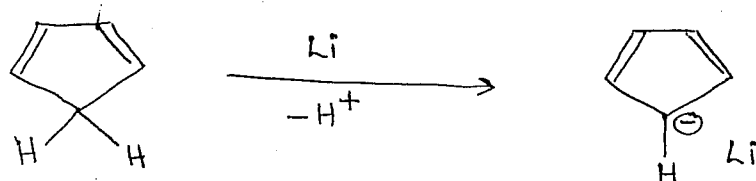3. Give **ONE** example to illustrate nucleophilic substitution reaction of quinoline

(10 Marks)

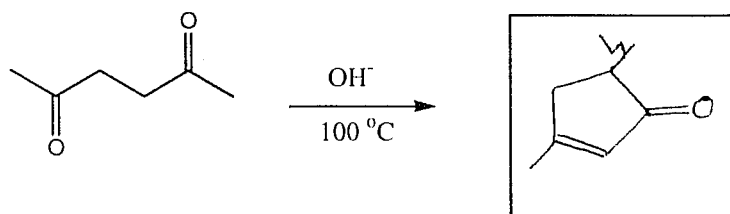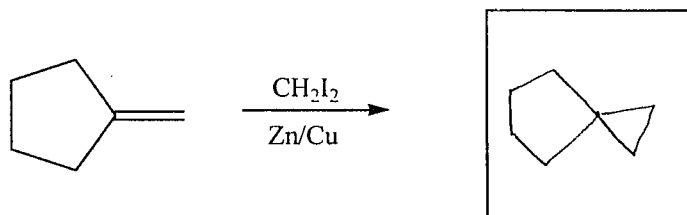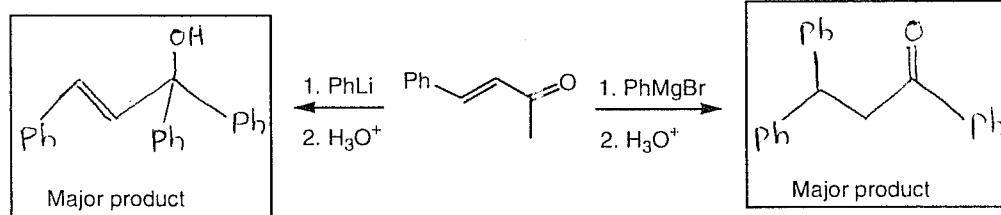(1) $NaNH_2 / \Delta$

(2) H_2O

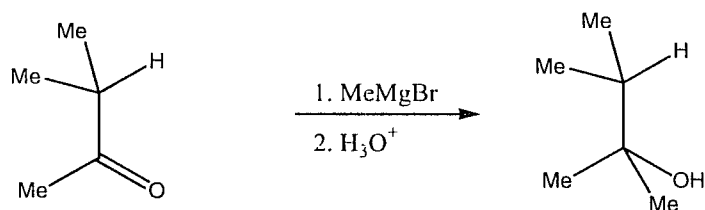4. a. Give a method to prepare the following compound.

(05 Marks)

Li

$-H^+$

b. Give the products of the following reactions.

Major product

1. PhLi
2. H_3O^+

Ph \quad\quad O

1. PhMgBr
2. H_3O^+

Major product

$\xrightarrow[\text{Zn/Cu}]{CH_2I_2}$

$\xrightarrow[\text{100 °C}]{OH^-}$

(20 Marks)

c. Giving appropriate mechanism, explain why the following reaction does not occur.

1. MeMgBr
2. H_3O^+

(20 Marks)

If either the Grignard reagent or the ketone is sterically hindered, the expected Girgnard reaction does not occur.

$\longrightarrow$

$\bar{O} MgBr$

$\xrightarrow{H^+}$