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The Open University of Sri Lanka
B.Sc. Degree / Stand Alone Programme 2012/2013
Organic Chemistry II – CMU3120 /CME5120
Level 5 - Continuous Assessment Test I
Duration 1½ Hours

Q	Marks	
	Max.	Awarded
1	50	
2	35	
3	15	
Total		

Friday 29th January 2013

Time : 4.00 p.m. – 5.30 p.m.

Answer All Questions

1. (i) Arrange the following compounds in the order of decreasing basicity.

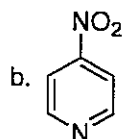
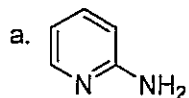
ammonia, pyridine, 3-nitropyridine, trimethylamine, 3-methylpyridine

(10 marks)

- (ii) Explain why pyridine is less basic than piperidine

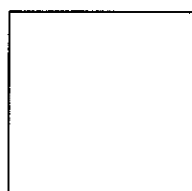
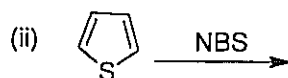
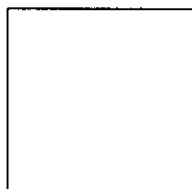
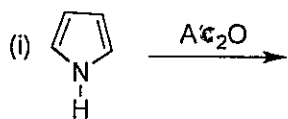
(10 marks)

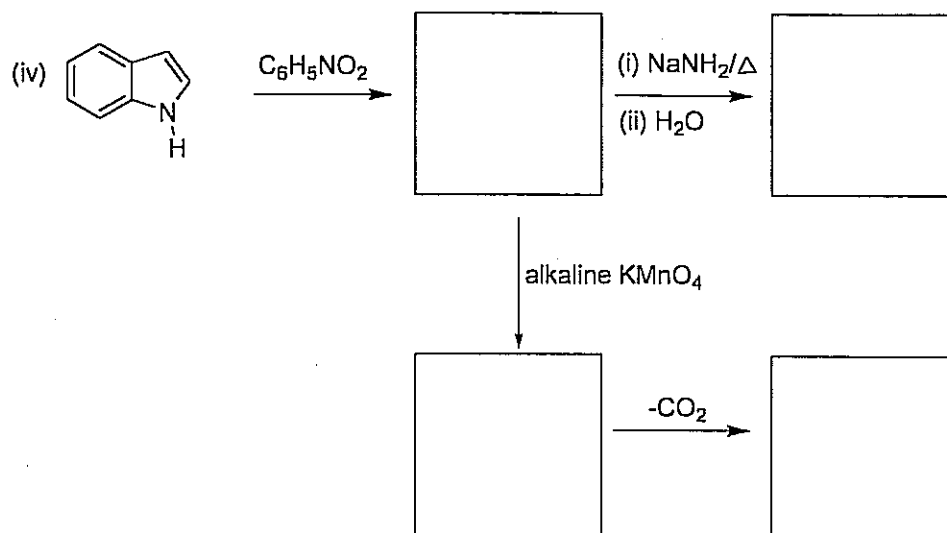
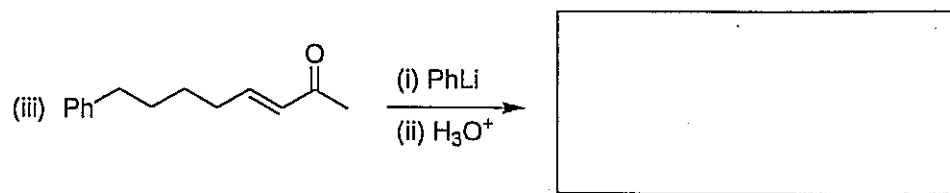
(iii) Show how you would prepare the following compounds starting from pyridine.



(30 marks)

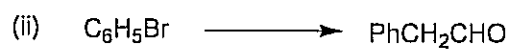
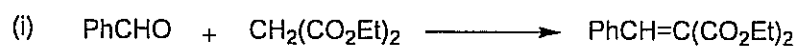
2. Give the products of following reactions.





(35 marks)

3. Give the mechanism with appropriate reagents for **ONE** of the following transformations.



(15 marks)

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Answer Uuide

Answer All Questions

1. (i) Arrange the following compounds in the order of decreasing basicity.

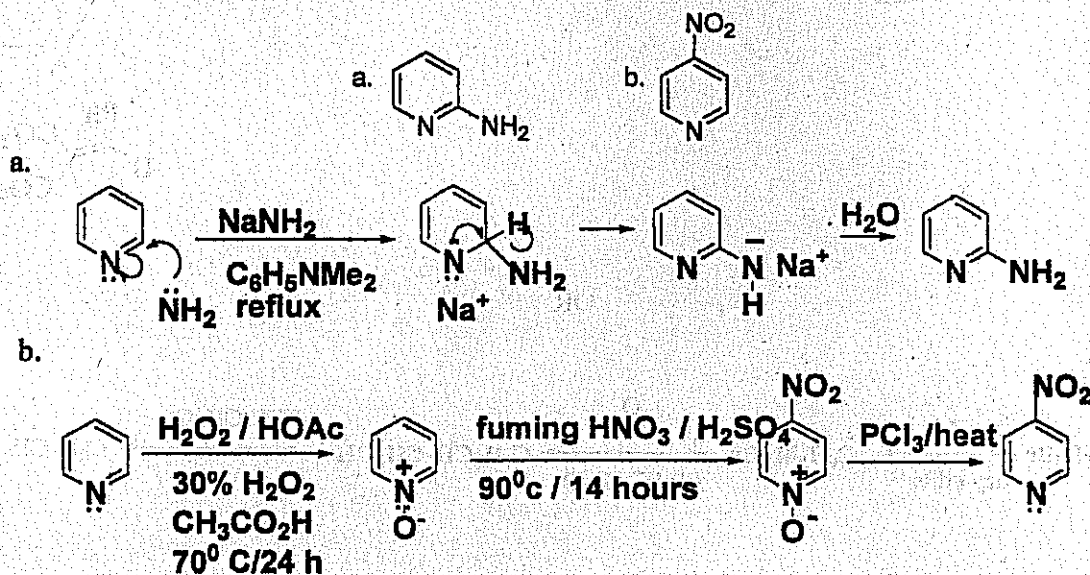
trimethylamine > ammonia, > 3-methylpyridine > pyridine > 3-nitropyridine

- (ii) Explain why pyridine is less basic than piperidine

The unshared pair of electrons on the pyridine nitrogen occupies a sp^2 -hybridized orbital, While in piperidine the unshared pair occupies a sp^3 -hybridized orbital
The more the s character in the orbital holding the unshared pair of electrons the more strongly it is held.

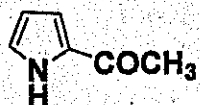
This would result in less availability of electrons for H^+ abstraction. Therefore pyridine is less basic than piperidine

- (iii) Show how you would prepare the following compounds starting from pyridine.

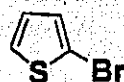


2. The products

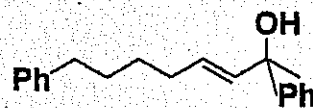
(i)



(ii)

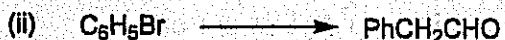
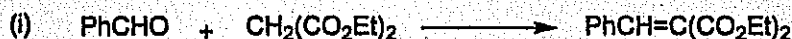


(iii)

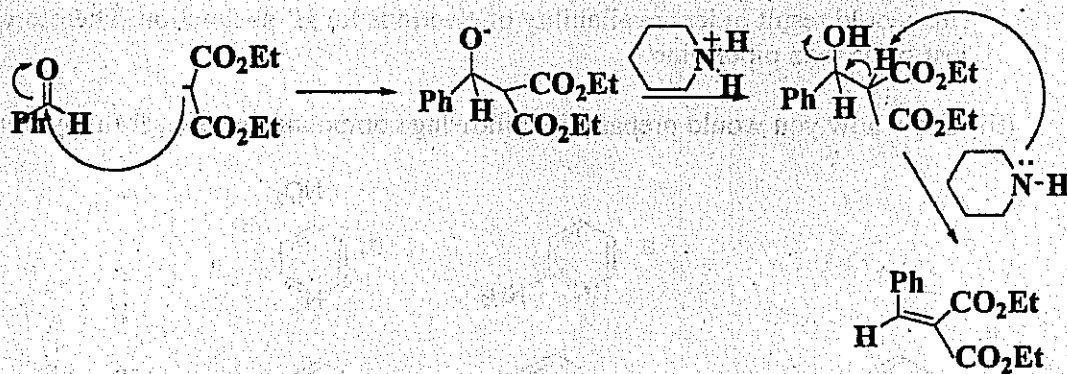


(iv) Structure of the compound given in starting material is not in correct form

3. Give the mechanism with appropriate reagents for ONE of the following transformations.



(i)



OR

(ii)

