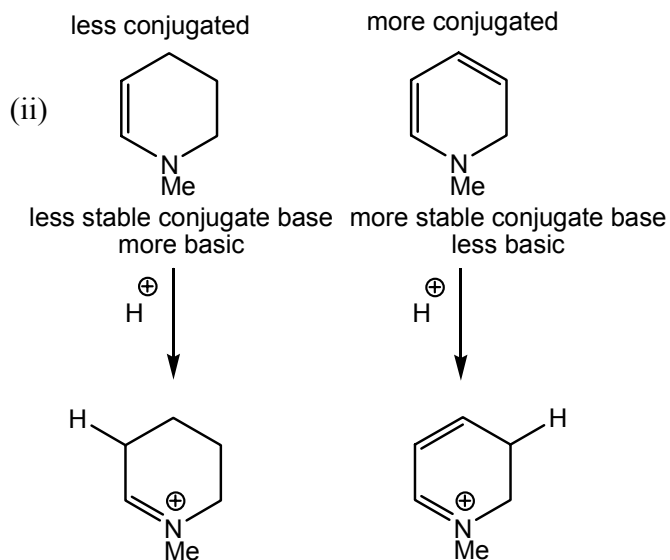
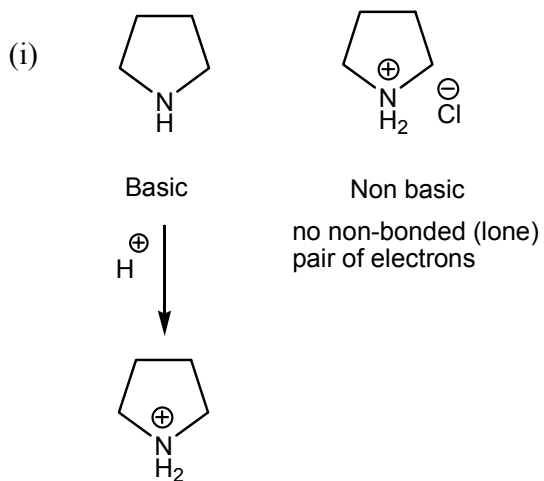


YOUR STUDENT NUMBER:

Year 2 Seminars, 06524, Semester 2, 2009  
Heterocyclic Chemistry Test

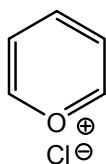
1. Answer *all* parts.

(a) For each of the following pairs of molecules, predict and explain which is the more basic.



(PTO)

(b) Which of the following molecules are aromatic, anti-aromatic or simply conjugated?



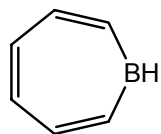
Cyclic - YES

Planar - YES

Continuous conjugation - YES

Number of pi electrons = 6

AROMATIC ( $4n+2$ )  $n = 1$



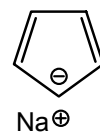
Cyclic - YES

Planar - YES

Continuous conjugation - YES

Number of pi electrons = 6

AROMATIC ( $4n+2$ )  $n = 1$



Cyclic - YES

Planar - YES

Continuous conjugation - YES

Number of pi electrons = 6

AROMATIC ( $4n+2$ )  $n = 1$

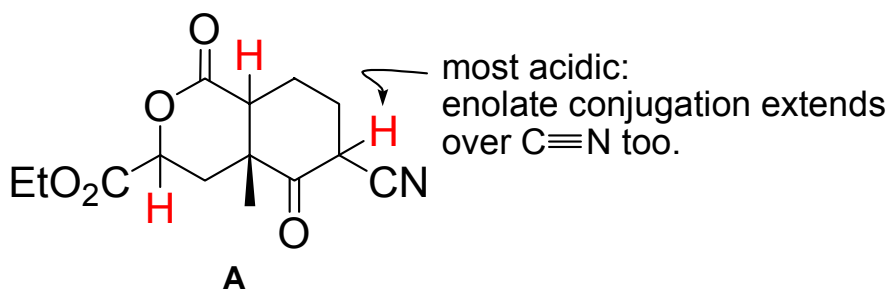
(PTO)

YOUR STUDENT NUMBER:

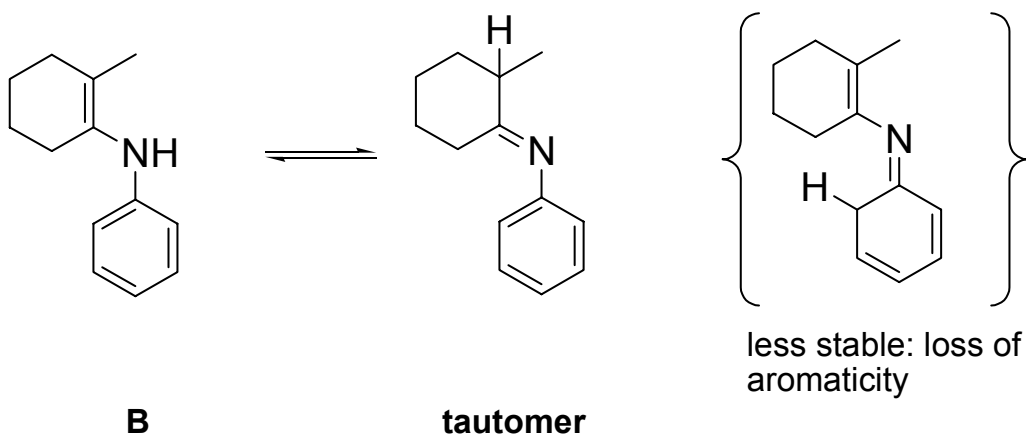
Year 2 Seminars, 06524, Semester 2, 2009  
Bifunctional Chemistry Test

2. Answer *all* parts.

- (a) Mark on the following diagram **all** of the acidic hydrogen atoms in compound **A** and indicate clearly, with a brief explanation, which is the most acidic.

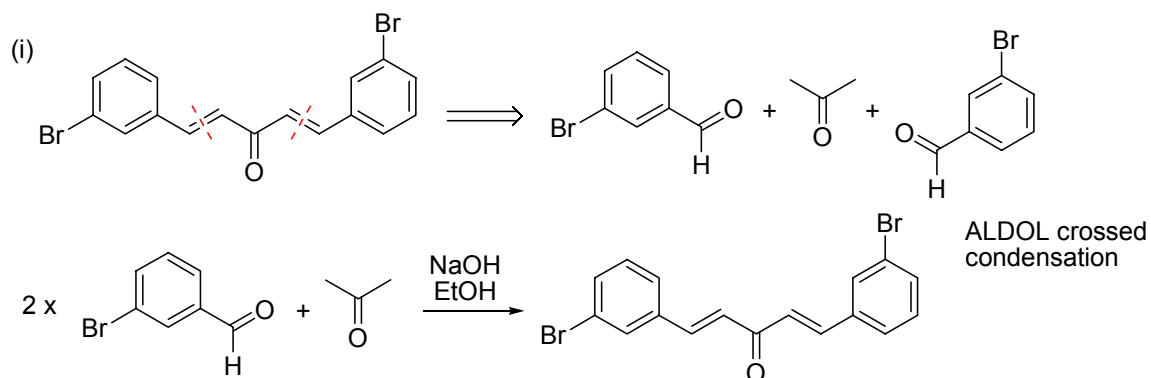


- (b) Draw a tautomeric form of the compound **B**.

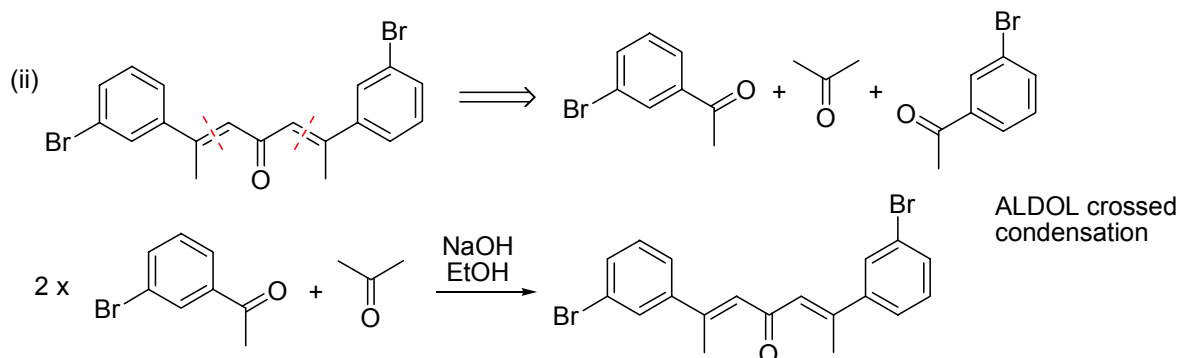


- (c) For each of the following (see overleaf) work out what carbonyl-containing compounds could condense to form the molecules shown. In each case, **giving a reason**, state whether a synthesis from your two starting materials would be practicable (i.e. the reaction would give you the target molecule as the sole product).

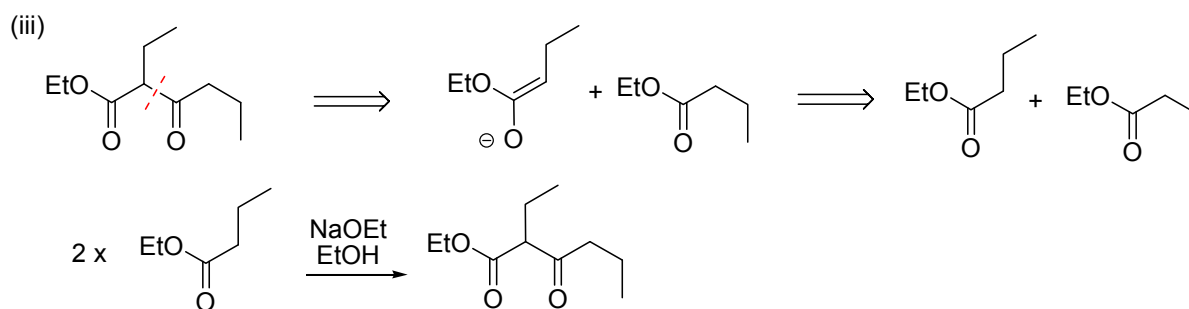
(PTO)



Only ketone can enolize, aldehyde is more reactive electrophile than ketone: crossed condensation practicable. (This is *essentially the same* as question 1 tutorial sheet 4, and the dibenzylidene acetone lab experiment).



Both ketones can enolize, both have similar reactivity as electrophile: crossed condensation **NOT** practicable. Mixture of self and crossed condensation products obtained. (This is *similar* to question 2 tutorial sheet 4)



CLAISEN condensation comes from 2 moles of the same ester: condensation practicable. (This is *essentially the same* as question 1 tutorial sheet 6)

(END)