

# **CHEM – 750**

## **Advanced Organic synthesis**

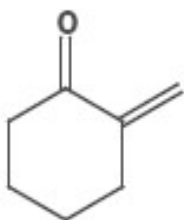
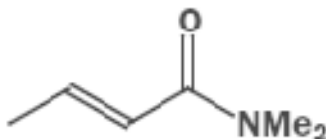
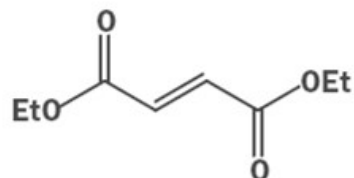


**Dr. Humaira Yasmeen Gondal**  
Department of Chemistry  
University of Sargodha

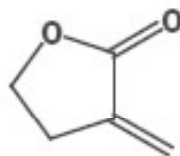


# 1,4-Addition (Conjugate Addition or Michael Addition)

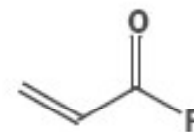
## Michael acceptors



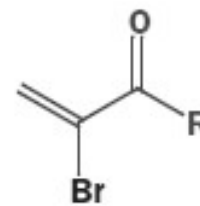
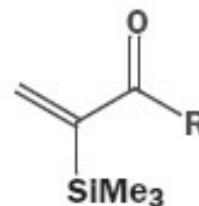
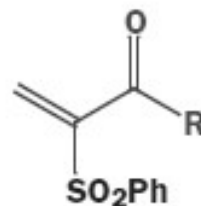
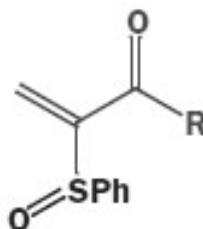
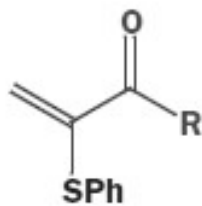
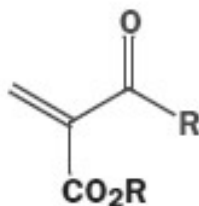
exo-methylene ketones



exo-methylene lactones



vinyl ketones

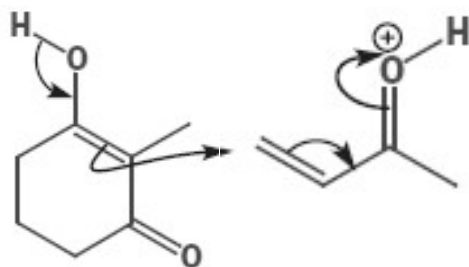




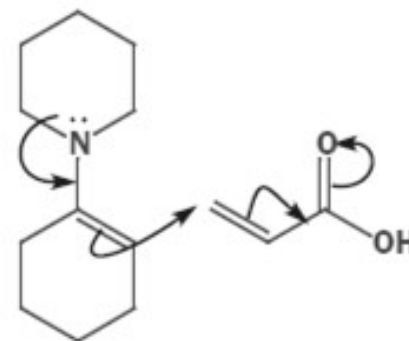
# 1,4-Addition (Conjugate Addition or Michael Addition)

## Michael Donors

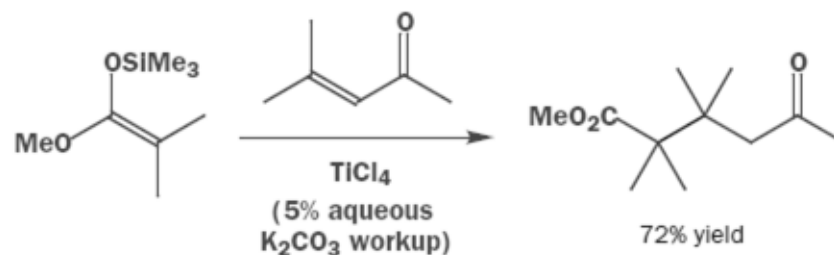
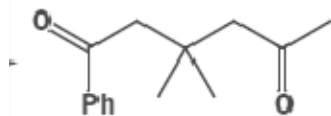
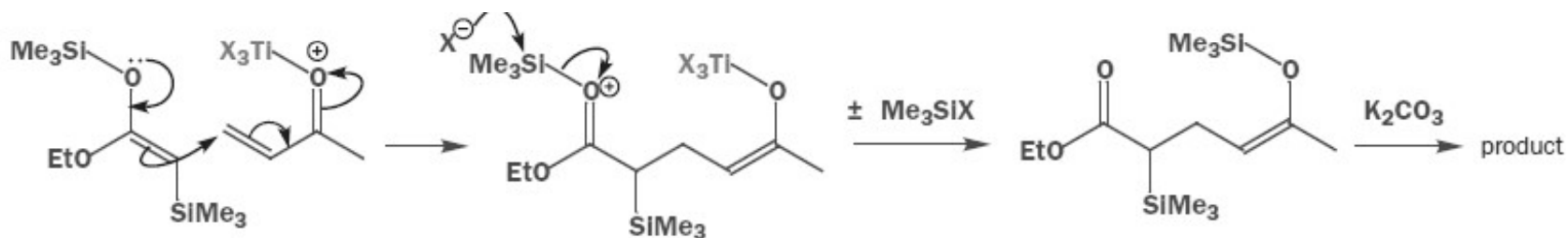
Enols



Enamines



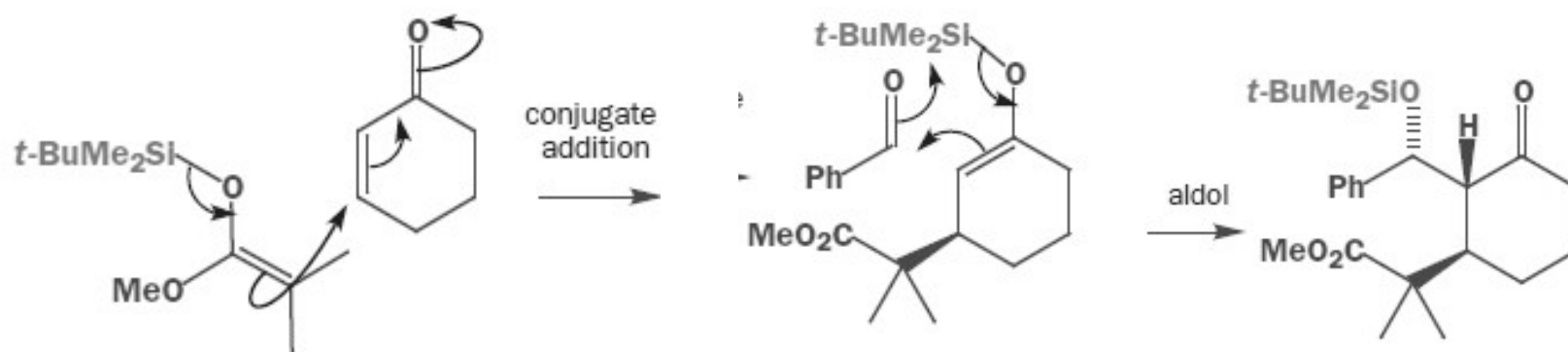
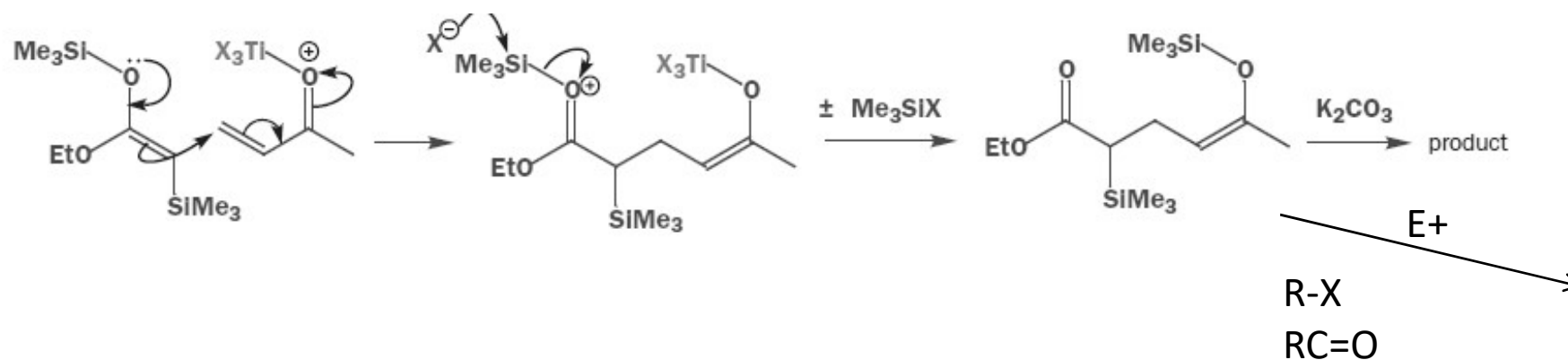
Silyl enol ethers





# Sequential (tandem) conjugate additions

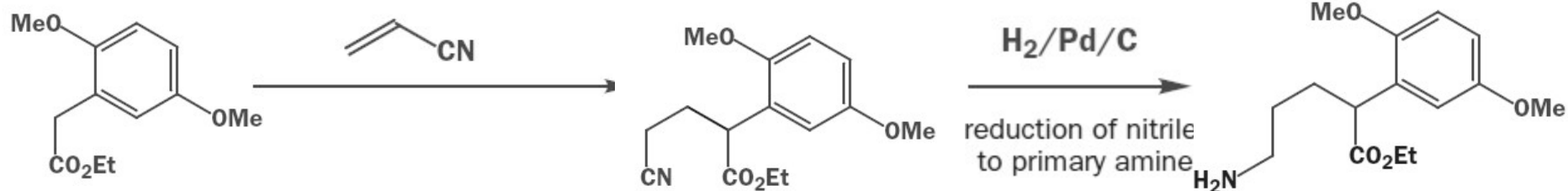
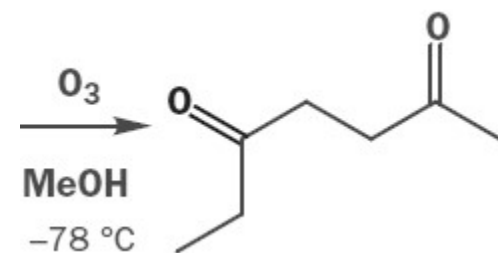
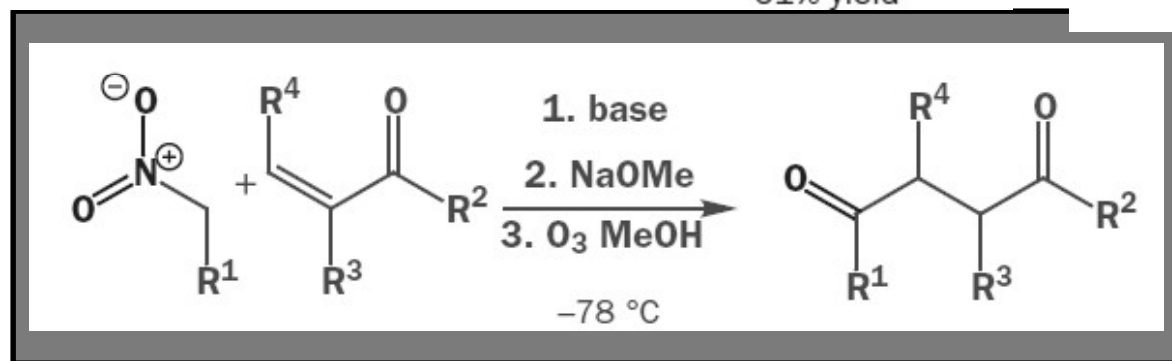
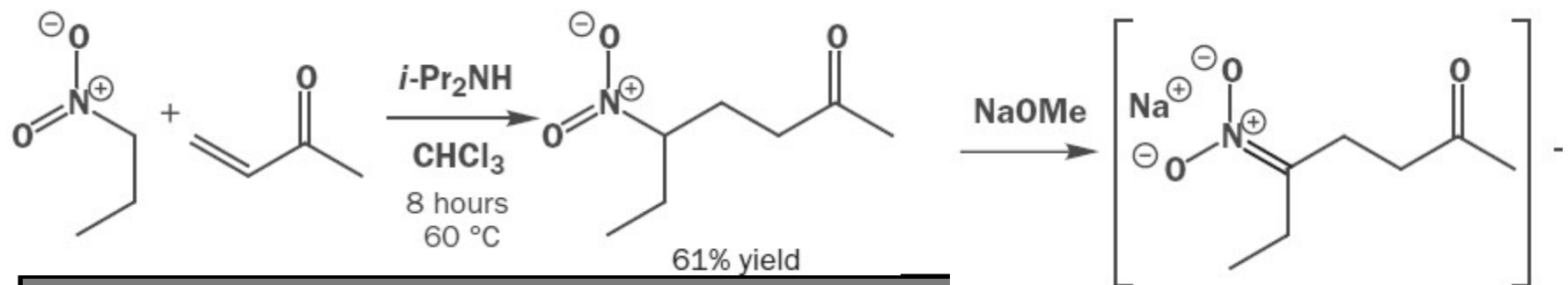
cascade reactions Or domino reaction





# 1,4-Addition (Conjugate Addition or Michael Addition)

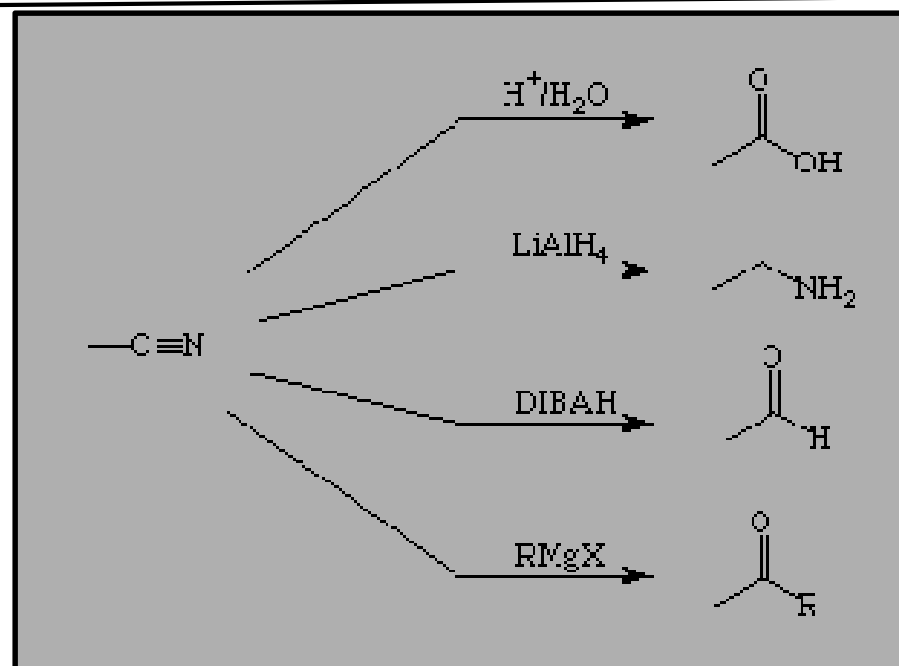
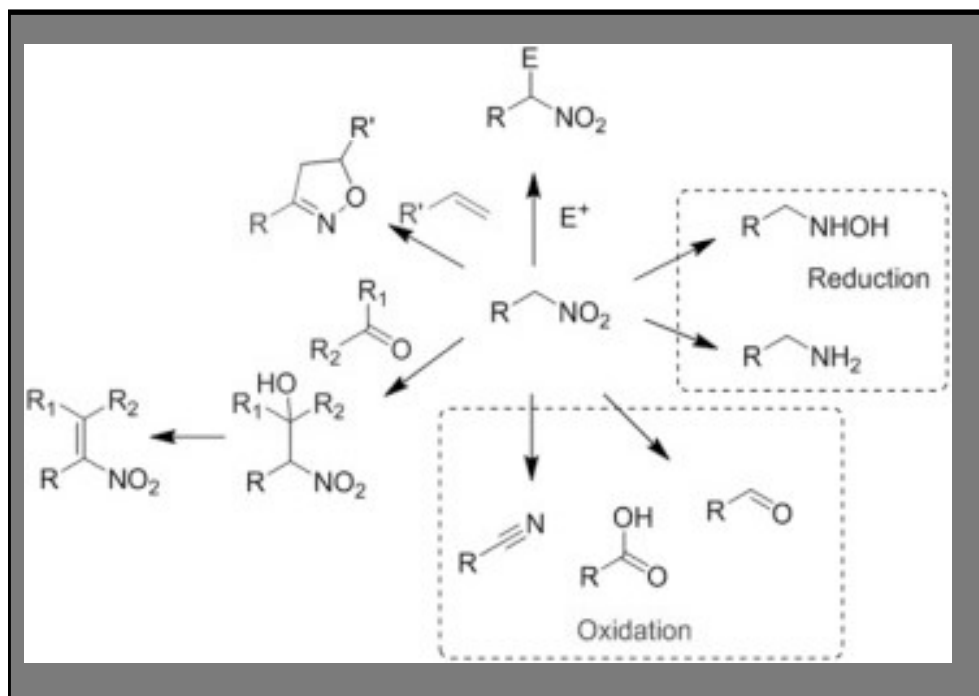
## Michael Donors: Nitro





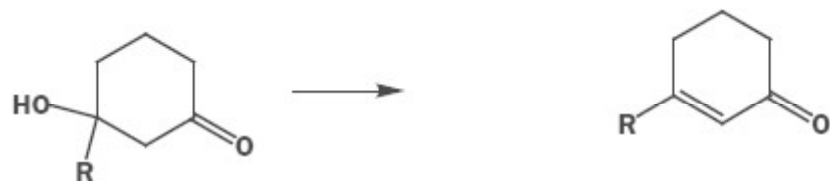
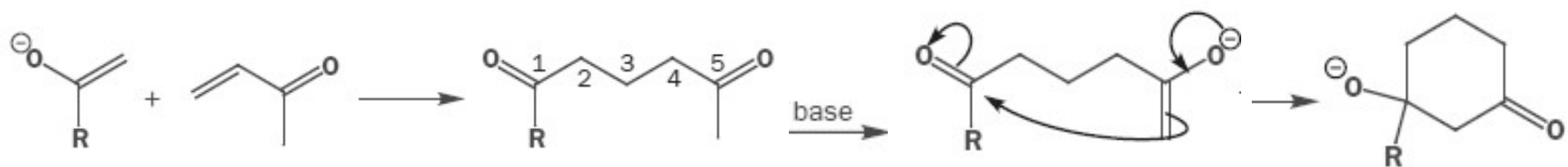
# 1,4-Addition (Conjugate Addition or Michael Addition)

## FUNCTIONAL GROUPS INTERCONVERSION OF NITRILE AND NITRO





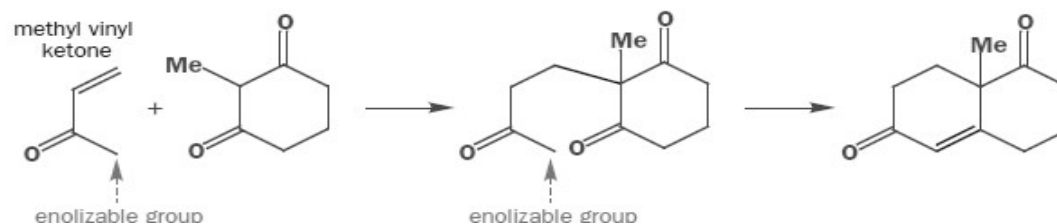
## Conjugate addition for six-membered rings



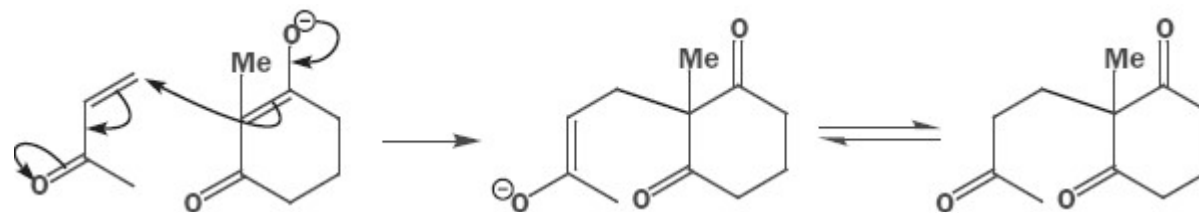


# Robinson Annulation

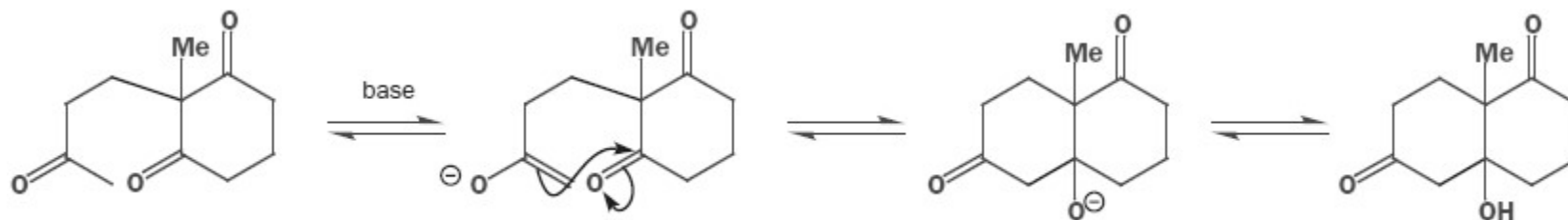
## Preparation of the Wieland-Miescher Ketone



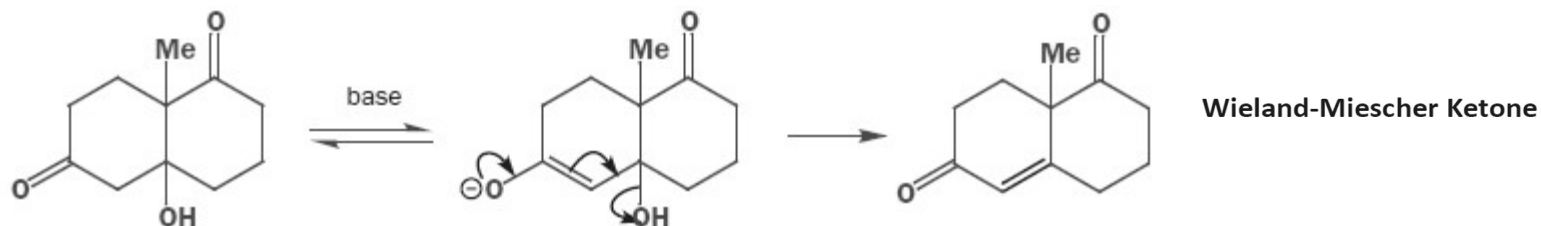
stage 1: the conjugate addition



stage 2: the intramolecular aldol reaction



stage 3: the E1cB dehydration

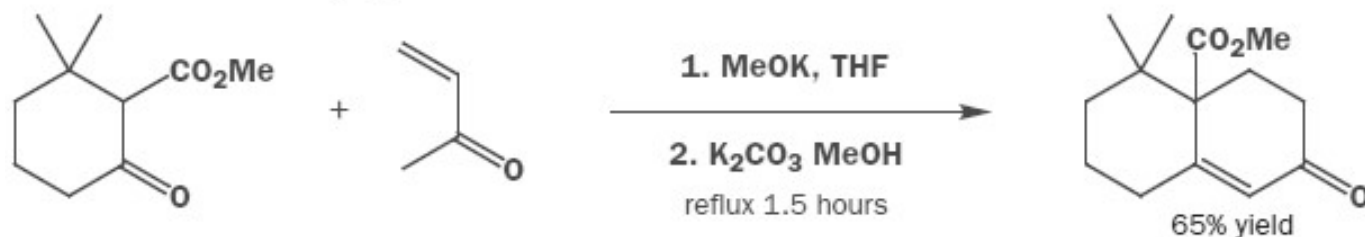




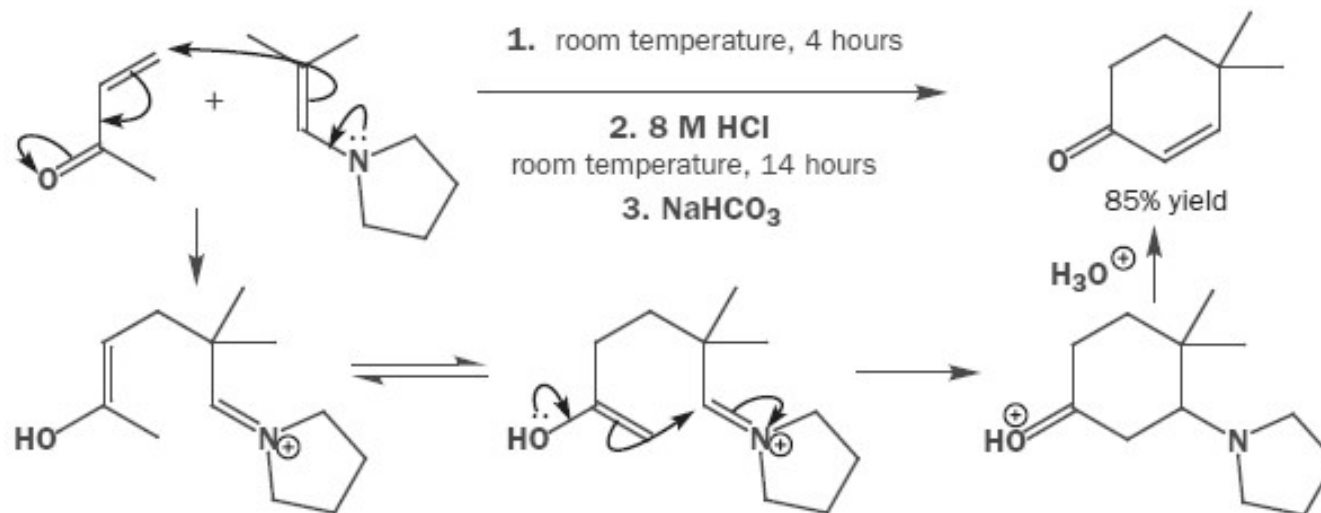


# Robinson Annulation

## Preparation of the Wieland-Miescher Ketone

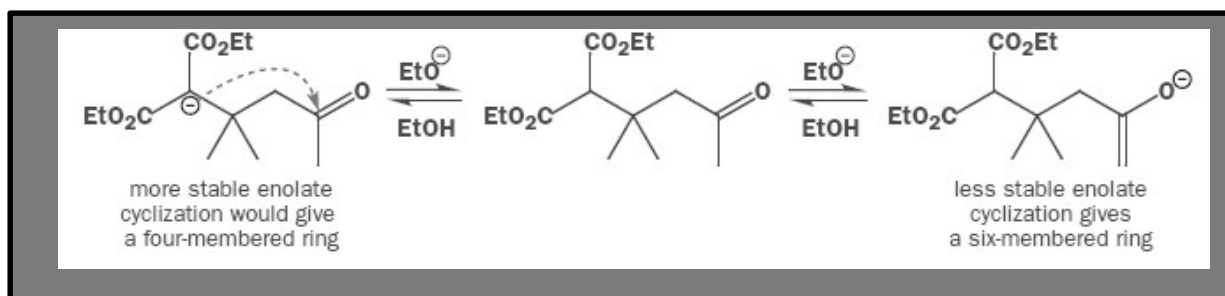
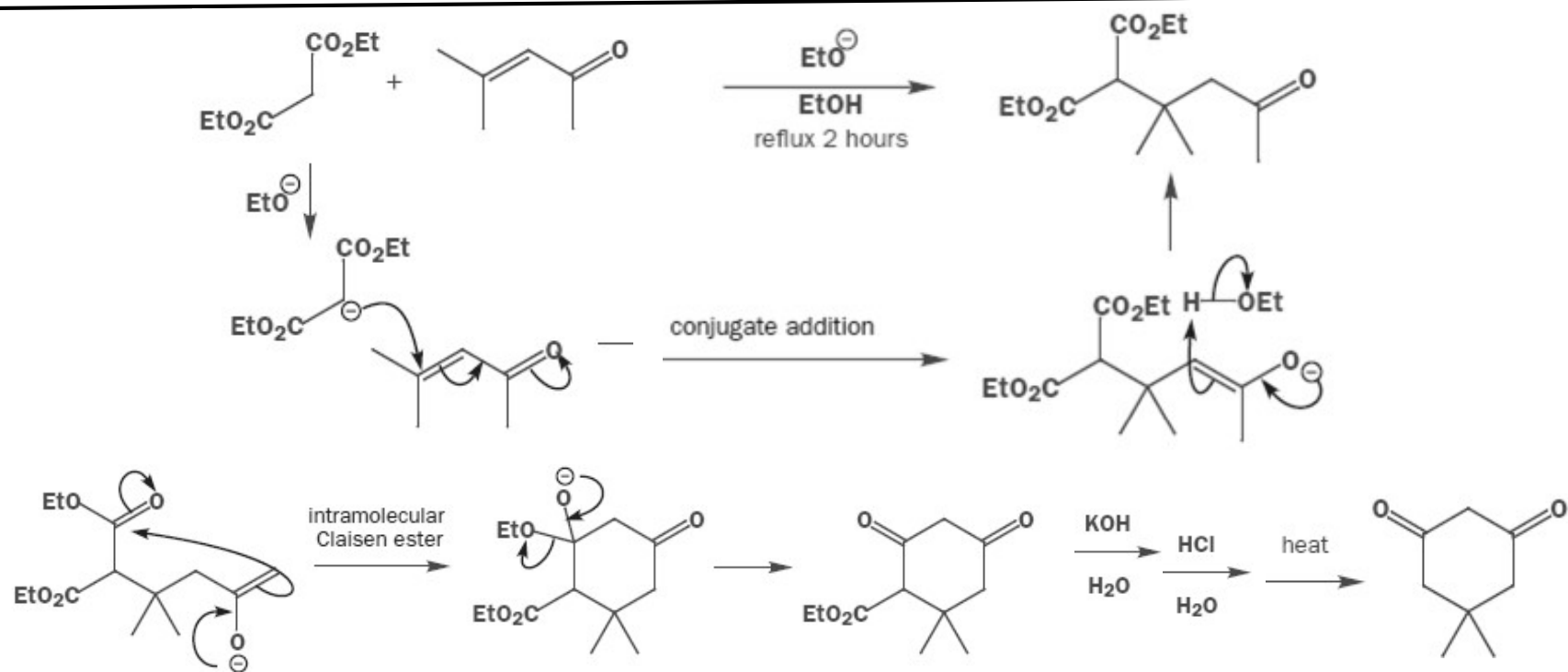


Enamine





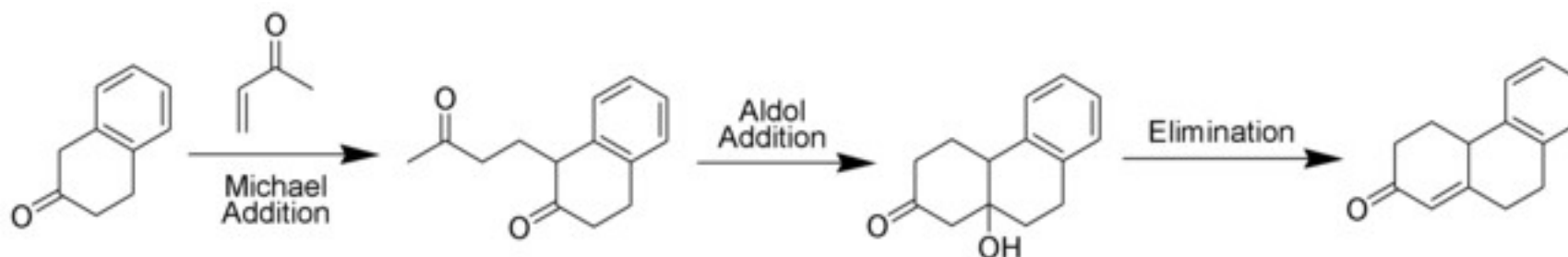
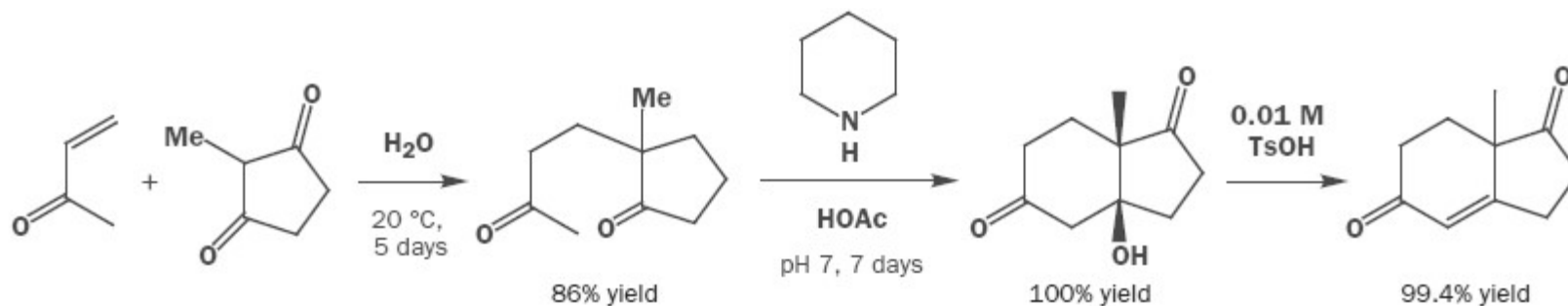
# Robinson Annulation





# Robinson Annulation

## Exercise





# Robinson Annulation

Exercise

