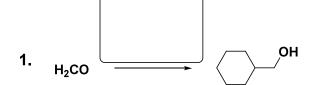
PS #5 Practice Questions – Constructing Molecular Orbitals, Nucleophilic Attack on Carbonyl Groups
Part I. Molecular orbitals (MO's). Refer to pages 95 – 110 in Clayden and Greeves for a discussion on orbitals of this type.
Draw the σ (bonding) MO that arises from the linear combination of two p orbitals.
Draw the σ^{\star} (antibonding) MO that arises from the linear combination of two p orbitals.
Draw the π (bonding) MO that arises from the linear combination of two p orbitals.
Draw the π^* (antibonding) MO that arises from the linear combination of two p orbitals.

C	onstruct the	σ and π syster	n of formalde	hyde (H₂CO).		
ch	ow +bo =* bo	ond on C-O in	formaldobyde			
)	ow the n bo	ma on c-o in	Offilaldellyde	·•		

Part II. All of the following reactions involve nucleophilic attack on the electrophilic carbonyl carbon. Fill in the boxes with the appropriate product or reagent.



- 2. C₄H₉MgBr
- 3. KCN
- 4. HO
- 5. NaOEt/EtOH
- 6. HC≡CMgBr
- 7. O OH