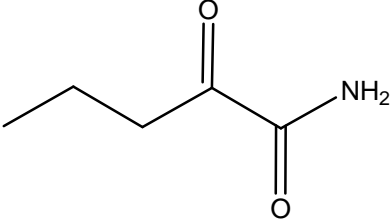
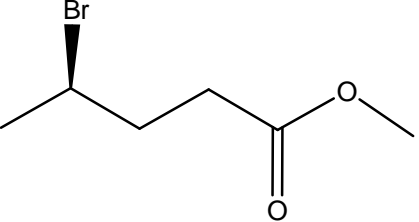
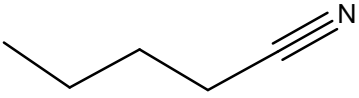
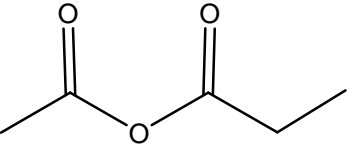
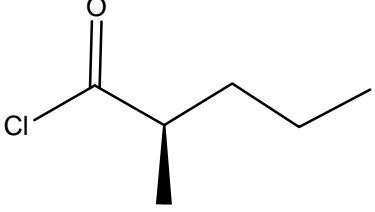
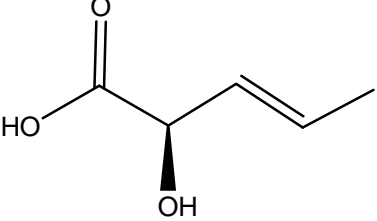
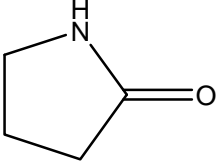
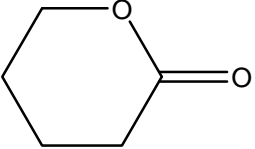


Chapter 21 Worksheet

1. Name the following compounds.

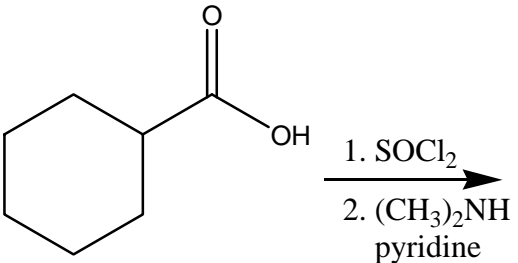
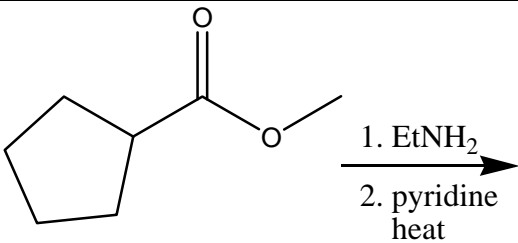
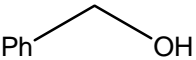
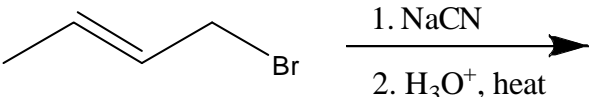
 <chem>CCCC(=O)C(=O)N</chem>	 <chem>CCCC(=O)OC[C@H](Br)C</chem>
 <chem>CCCC#CC#N</chem>	 <chem>CCOC(=O)CC</chem>
 <chem>CCCC(=O)C(Cl)[C@H](C)C</chem>	 <chem>CC=CC(=O)O[C@H](O)C</chem>
 <chem>O=C1CCNC1</chem>	 <chem>O=C1CCOCC1</chem>

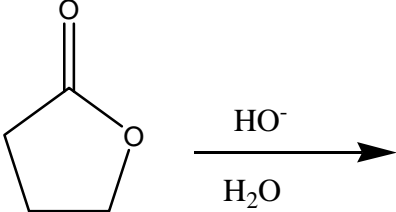
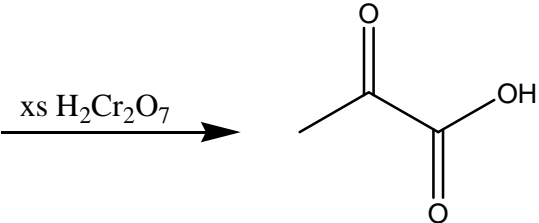
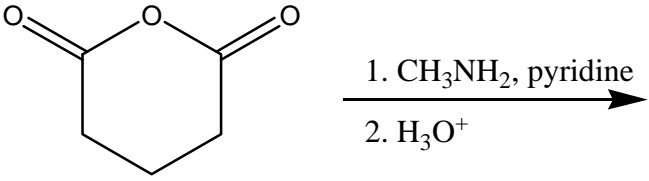
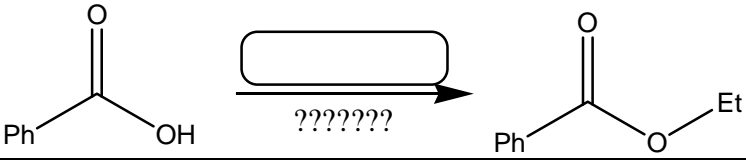
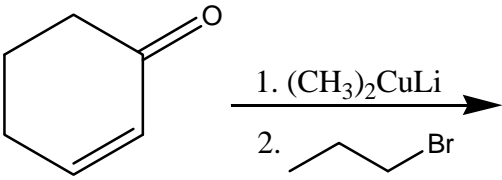
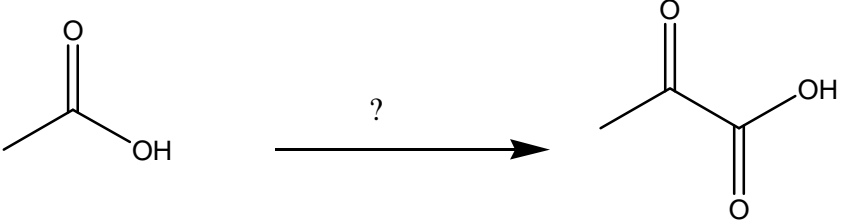
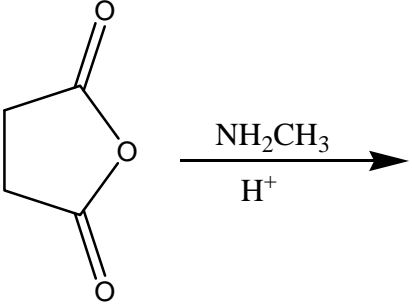
2. Draw the following compounds.

(R,E)-4-ethyl-N-methyl-3-oxohept-5-enamide

(S,Z)-isopropyl 7-amino-4-hydroxyoct-6-en-2-ynoate

3. Fill in the missing information for the following reactions.

a.	 <p>1. SOCl_2 2. $(\text{CH}_3)_2\text{NH}$ pyridine</p>
b.	 <p>1. EtNH_2 2. pyridine heat</p>
c.	<p>1. LiAlH_4 2. H_3O^+</p>  <p>Ph-CH₂-OH</p>
d.	 <p>1. NaCN 2. H_3O^+, heat</p>

e.	 <p>Reaction of succinimide with HO^- in H_2O.</p>
f.	 <p>Reaction of acetone with excess $\text{H}_2\text{Cr}_2\text{O}_7$ to form pyruvate.</p>
g.	 <p>Reaction of succinimide with 1. CH_3NH_2, pyridine; 2. H_3O^+.</p>
h.	 <p>Reaction of benzoic acid (Ph-COOH) to ethyl benzoate (Ph-COOEt) using a reagent (represented by a box) and conditions (represented by "??????").</p>
i.	 <p>Reaction of cyclohex-2-en-1-one with 1. $(\text{CH}_3)_2\text{CuLi}$; 2. $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}$.</p>
j.	 <p>Reaction of acetic acid (CH_3COOH) to pyruvate ($\text{CH}_3\text{C(O)COOH}$) using a reagent (represented by "?").</p>
k.	 <p>Reaction of succinimide with NH_2CH_3 and H^+.</p>

l.	$\text{H}_3\text{C}-\text{C}(=\text{O})-\text{NHCH}_3 \xrightleftharpoons[\text{H}_2\text{O}]{\text{H}^+}$
m.	$\text{CH}_3\text{COOCH}_3 \xrightleftharpoons[\text{H}_2\text{O}]{\text{HO}^-}$
n.	$\text{CH}_3\text{CH}_2\text{CN} \xrightarrow[\text{heat}]{\text{H}_3\text{O}^+}$
o.	$\text{CH}_3\text{CONH}_2 \xrightarrow[2. \text{H}_2\text{O}]{1. \text{LAH}}$
p.	$\text{CH}_3\text{COOH} \xrightarrow[2. \text{LiAl}(\text{tBuO})_3\text{H}]{1. \text{SOCl}_2}$

4. Propose a short synthesis for the following transformations.

a.	$\text{CH}_3\text{CH}_2\text{CH}_2\text{Br} \longrightarrow \text{CH}_3\text{CH}_2\text{COOH} + \text{HCOOH}$
b.	$\text{CH}_3\text{CH}_2\text{CH}_2\text{Br} \longrightarrow \text{CH}_3\text{CH}_2\text{CONH}_2$
c.	$\text{Cyclopentane ring with } =\text{CH}_2 \longrightarrow \text{Cyclopentane ring}-\text{CH}_2\text{CH}_2\text{CO}_2\text{CH}_3$
d.	$2 \text{ CH}_3\text{CH}_2\text{CH}_2\text{Br} \longrightarrow \text{CH}_3\text{CH}_2\text{COCH}_2\text{CH}_2\text{CH}_3$
e.	$\text{Benzene ring} \xrightarrow{+ \text{one more source of carbon}} \text{C}_6\text{H}_5\text{COOH}$

5. Write a mechanism to explain the following reactions.

