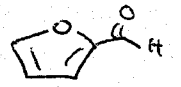
Problem Set — Ch 22

1. Predict the products:

(a) $CH_3CH_2\overset{O}{\overset{\|}{C}}CH_3$ $\xrightarrow[THF]{\left(CH_3\overset{CH_3}{\overset{|}{C}}H\right)_2N^-Li^+}$ $\xrightarrow{(CH_3)_3SiCl}$ A

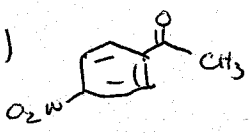
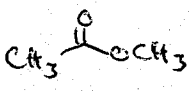
(b) $EtO\overset{O}{\overset{\|}{C}}CH_2\overset{O}{\overset{\|}{C}}OEt$ $\xrightarrow[EtOH]{EtO^-Na^+}$ A $\xrightarrow{(CH_3)_2CHBr}$ B

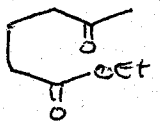
(c) $CH_3\overset{O}{\overset{\|}{C}}CH_2\overset{O}{\overset{\|}{C}}OEt$ $\xrightarrow[EtOH]{EtO^-Na^+}$ C $\xrightarrow{BrCH_2CH_2\overset{O}{\overset{\|}{C}}OEt}$ D

(d)  +  $\xrightarrow[H_2O]{NaOH}$ $\xrightarrow{H_3O^+}$ E

(e) $2\ PhCH_2\overset{O}{\overset{\|}{C}}H$ $\xrightarrow[H_2O]{NaOH}$ F

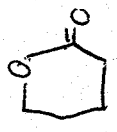
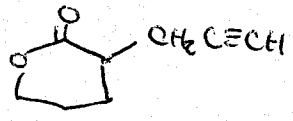
(f) $2\ CH_3\overset{O}{\overset{\|}{C}}OEt$ $\xrightarrow[EtOH]{EtO^-Na^+}$ G

(g)  +  $\xrightarrow[CH_3OH]{CH_3O^-Na^+\ (xs)}$ $\xrightarrow{H_3O^+}$ H

(h)  $\xrightarrow[H_3O^+]{1)\ EtO^-Na^+/EtOH}$ I

(i) $CH_3\overset{O}{\overset{\|}{C}}CH_3 + I_2(xs)$ $\xrightarrow[H_2O]{NaOH}$ J + K

2. Fill in reagents of products where necessary:

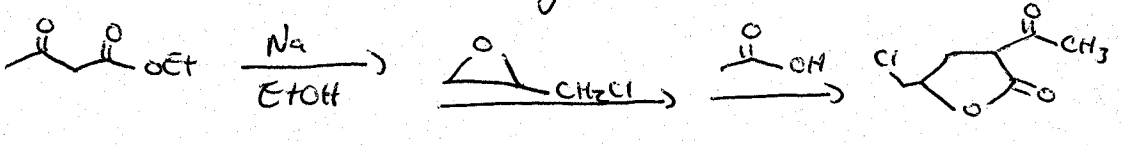
(a)  $\xrightarrow[THF, -78°C]{A}$ B $\xrightarrow[THF, -78°C]{HC\equiv CCH_2Br}$ 

(b) CH_3CCH_2COEt $\xrightarrow[EtOH]{EtO^-Na^+}$ C $\xrightarrow{CH_2=CHCH_2CH_2Br}$ D $\xrightarrow{E}$ E $\xrightarrow{(CH_3)_2CHI}$ G

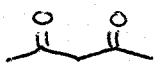
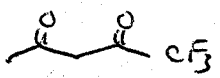
(c) $CH_3OCCH_2COCH_3$ $\xrightarrow[THF]{NaH}$ H $\xrightarrow{CH_3CH_2I}$ I $\xrightarrow[THF]{1)\ LiAlH_4}$ $\xrightarrow{2)\ H_3O^+}$

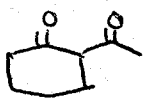
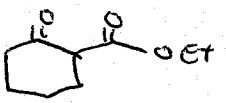
4

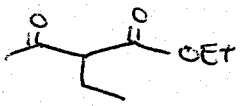
3. Propose a mechanism for the following Rxn:



4. Pick the most acidic of the pairs of acids listed below:

(a)  vs 

(b)  vs 

(c)  vs. 

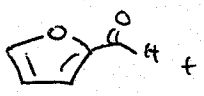
Problem Set Ch 22

1. Predict the products:

(a) $CH_3CH_2\overset{O}{\overset{\|}{C}}CH_3 \xrightarrow[THF]{(CH_3CH(CH_3))_2N^-Li^+} \xrightarrow{(CH_3)_3SiCl}$ A

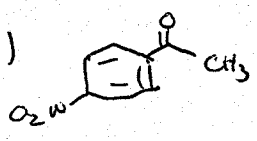
(b) $EtO\overset{O}{\overset{\|}{C}}CH_2\overset{O}{\overset{\|}{C}}OEt \xrightarrow[EtOH]{EtO^-Na^+}$ A $\xrightarrow{(CH_3)_2CHBr}$ B

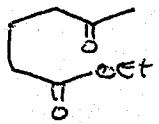
(c) $CH_3\overset{O}{\overset{\|}{C}}CH_2\overset{O}{\overset{\|}{C}}OEt \xrightarrow[EtOH]{EtO^-Na^+}$ C $\xrightarrow{BrCH_2CH_2\overset{O}{\overset{\|}{C}}OEt}$ D

(d)  $\xrightarrow[H_2O]{NaOH} \xrightarrow{H_3O^+}$ E

(e) $2\ PhCH_2\overset{O}{\overset{\|}{C}}H \xrightarrow[H_2O]{NaOH}$ F

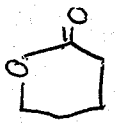
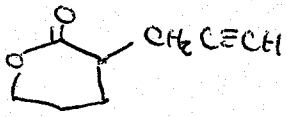
(f) $2\ CH_3\overset{O}{\overset{\|}{C}}OEt \xrightarrow[EtOH]{EtO^-Na^+}$ G

(g)  $\xrightarrow[CH_3OH]{CH_3O^-Na^+\ (xs)} \xrightarrow{H_3O^+}$ H

(h)  $\xrightarrow[H_3O^+]{1)\ EtO^-Na^+/EtOH}$ I

(i) $CH_3\overset{O}{\overset{\|}{C}}CH_3 + I_2(xs) \xrightarrow[H_2O]{NaOH}$ J + K

2. Fill in reagents of products where necessary:

(a)  $\xrightarrow[THF,\ -78°C]{A}$ B $\xrightarrow[THF,\ -78°C]{HC\equiv CCH_2Br}$ 

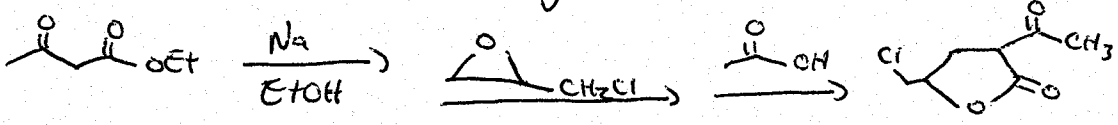
(b) CH_3CCH_2COEt $\xrightarrow[EtOH]{EtO^-Na^+}$ C $\xrightarrow{CH_2=CHCH_2CH_2Br}$ D $\xrightarrow{E}$ E

E $\xrightarrow{(CH_3)_2CHI}$ G

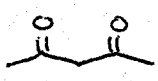
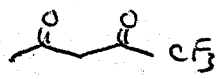
(c) $CH_3OCCH_2COCH_3$ $\xrightarrow[THF]{NaH}$ H $\xrightarrow{CH_3CH_2I}$ I $\xrightarrow[THF]{1)\ LiAlH_4}$ $\xrightarrow{2)\ H_3O^+}$

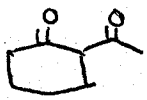
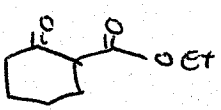
4

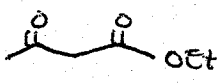
3. Propose a mechanism for the following Rxn:



4. Pick the most acidic of the pairs of acids listed below:

(a)  vs 

(b)  vs 

(c)  vs.