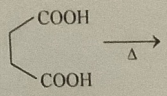
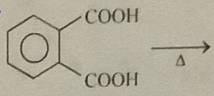

G
O
D
O
O
O
O
D

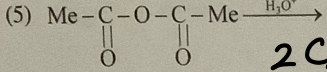
Q.1 Give major products of following reactions : [25, 0]

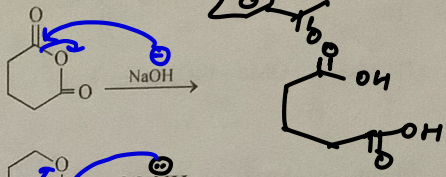
(1) $EtCOCl + EtCOONa \longrightarrow$

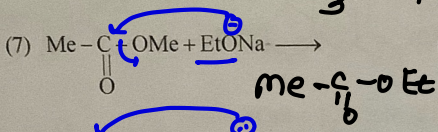
(2) $EtCOOH + EtCOOH \xrightarrow[\Delta]{Conc.\,H_2SO_4}$

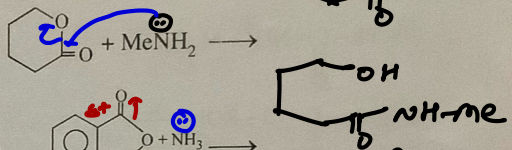
(3) 

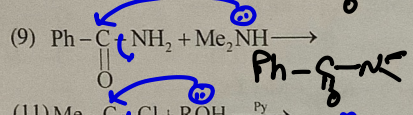
(4) 

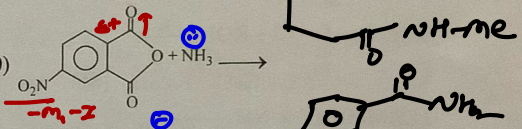
(5) 

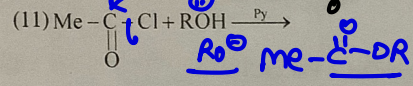
(6) 

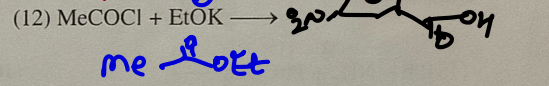
(7) 

(8) 

(9) 

(10) 

(11) 

(12) 

(13) $MeCOCl + NH_3 \longrightarrow$

(14) $Ph - NH_2 + MeCOCl \longrightarrow$

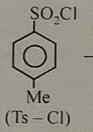
(15) $Ph - NH_2 + PhCOCl \longrightarrow$

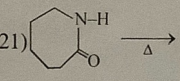
(16) $PhOH + PhCOCl \longrightarrow$

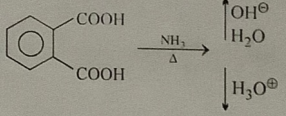
(17) $RNH_2 + PhSO_2Cl \longrightarrow$

(18) $R_2NH + PhSO_2Cl \longrightarrow$

(19) $ROH + KCN \longrightarrow$

(20) $ROH +$  $\longrightarrow X \xrightarrow{KCN}$

(21) 

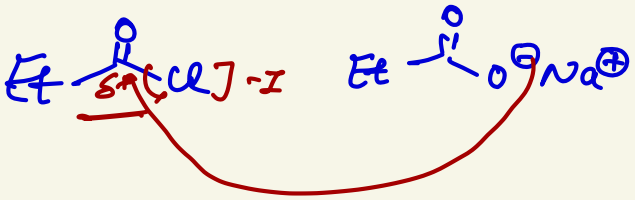
(22) 

(23) $Me - \underset{\underset{O}{\|}}{C} - NH_2 \xrightarrow[\Delta]{NaOH}$

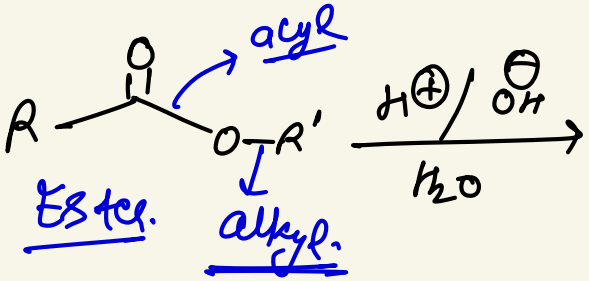
(24) $Me - \underset{\underset{O}{\|}}{C} - NH_2 \xrightarrow[\Delta]{P_2O_5}$

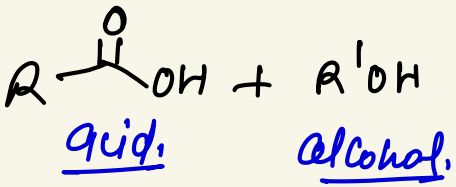
(25) $Me - \underset{\underset{O}{\|}}{C} - NH_2 \xrightarrow[\Delta]{PCl_5}$

8504084320



Ester Hydrolysis :





B_{AC}^{2} B_{AC}^{1}

B_{AL}^{2} B_{AL}^{1}

A_{AC}^{2} A_{AC}^{1}

A_{AL}^{2} A_{AL}^{1}

AL → alkyl Cleavage

Ac → acyl Cleavage

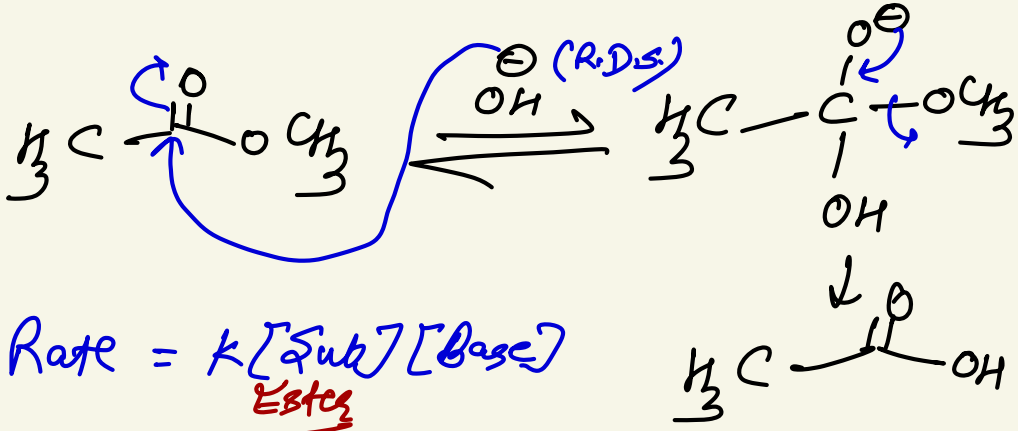
B → basic

A → Acidic

1/2 → order of Rxn.

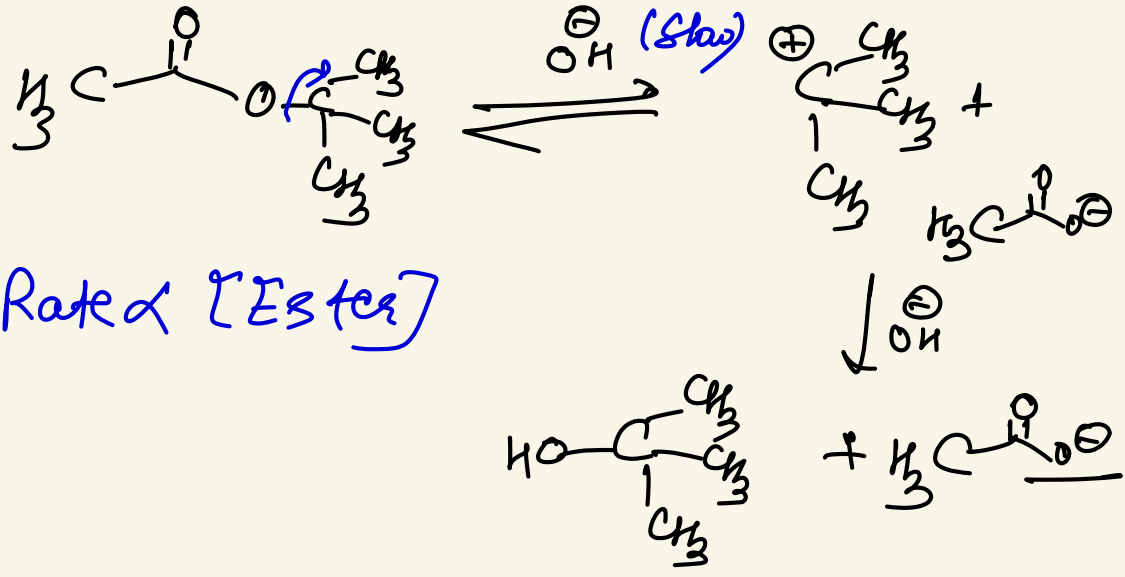
Basic medium :

$B_{AC}2$

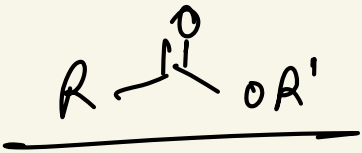


Rate = k [Sub] [Base]
Ester

$B_{AL}1$



Rate ∝ [Ester]



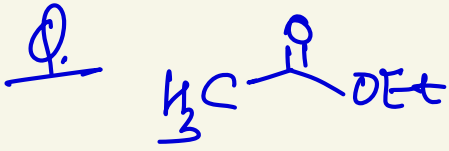
gp $R' =$ $-CH_2-Ph$

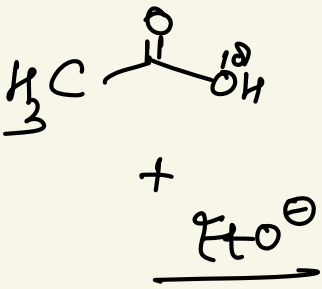
$-CMe_3$

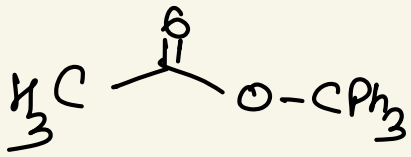
$-CEt_3$

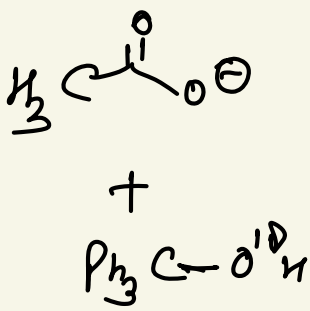
$-CPh_3$

alkyl Cleavage

Q. 

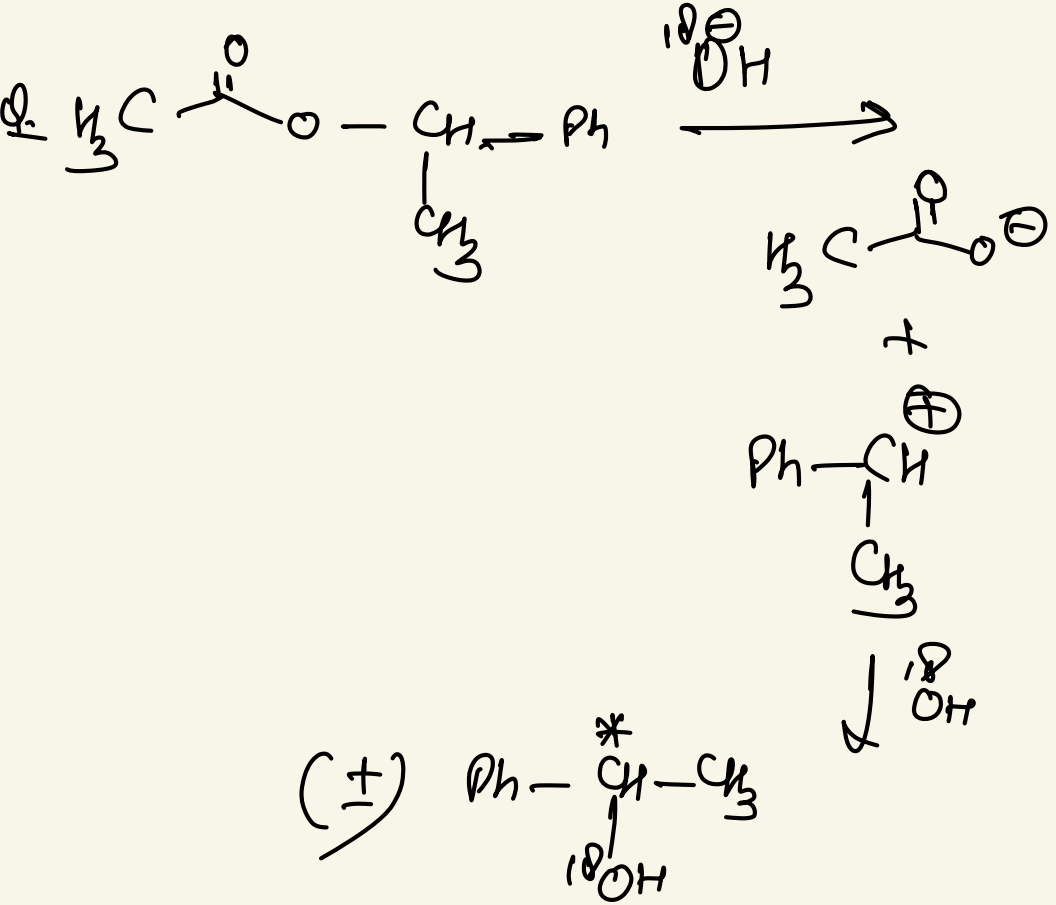


Q. 



* gp ^{18}OH is attached with alkyl group then alkyl cleavage.

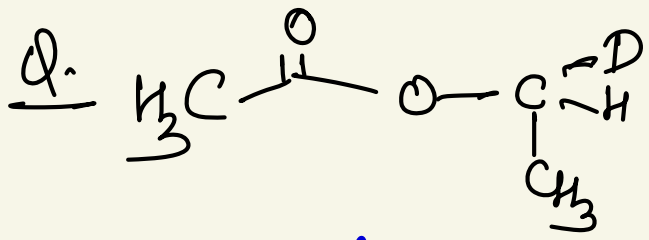
* If ^{18}OH is attached with acyl group then acyl Cleavage.

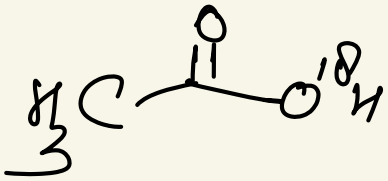


$(\pm)$ Ph — CH — CH_3 (* at CH, ^{18}OH below CH)

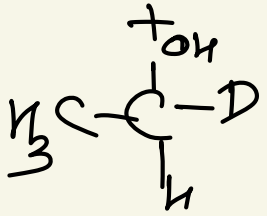
Racemic mix.

Q.



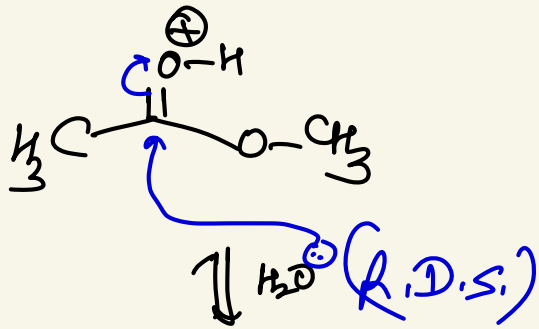


Retention in config.

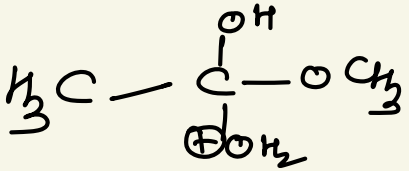


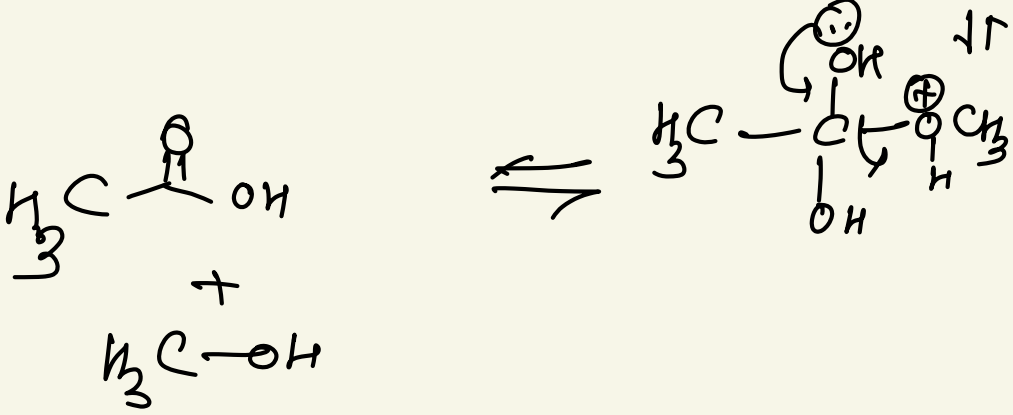
Acidic medⁿ :-

$A_{Ac}2$

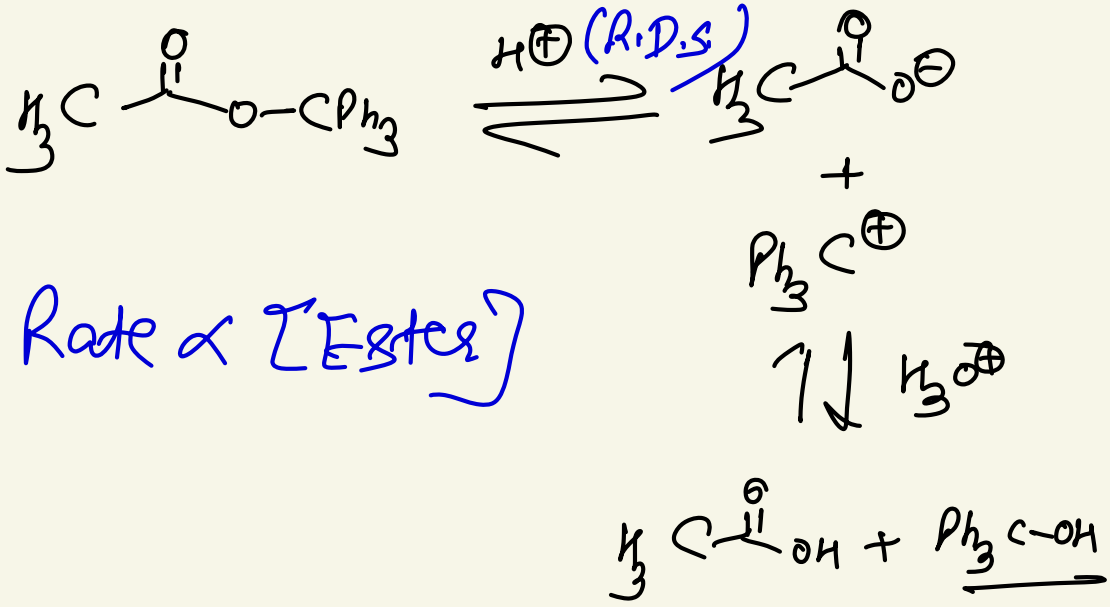


Rate $\propto$ [Ester] $[H_3O^+]$



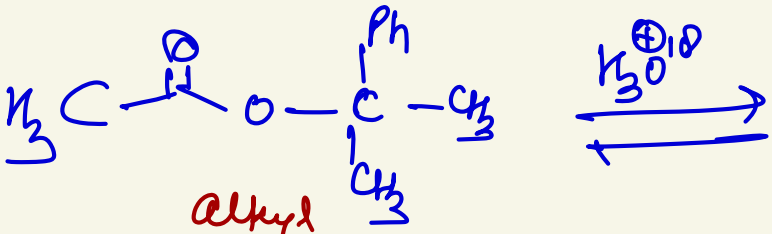


$A_{AL}1$

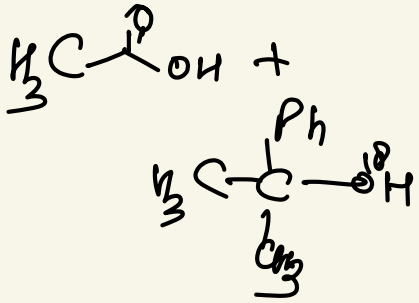


Rate $\propto$ [Ester]

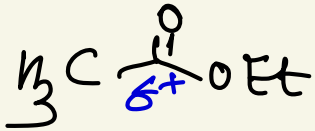
Q.

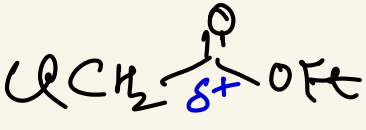


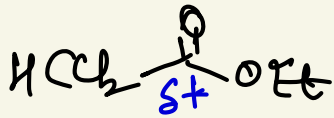
alkyl cleavage.

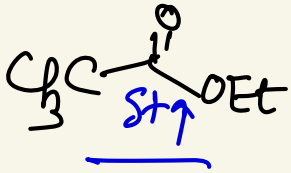


Q. Compare Reactivity order of Ester Hydrolysis:-

a) 

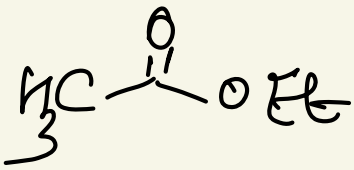
b) 

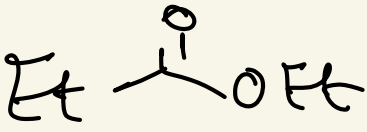
c) 

d) 

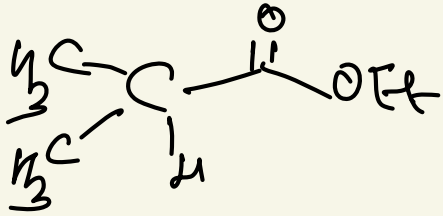
d > c > b > a

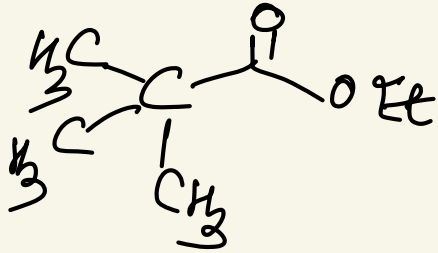
Q Compare reactivity order of Ester Hydrolysis:-

a) 

b) 

a > b > c > d

c) 

d) 

Steric crowding ↑ $Nu^{\ominus}$ attack ↓

Some tests in Carboxylic acid :-

i) $NaHCO_3$ (Sodium bicarbonate test)

$$RCOOH + NaHCO_3 \rightleftharpoons RCOO^{\ominus}Na^{\oplus} + CO_2\uparrow + H_2O$$

Brisk effervescence of CO_2.

Tollen

$$H\text{-}C(=O)\text{-}OH + Ag_2O \longrightarrow CO_2 + H_2O + 2Ag\downarrow$$

Silver mirror

Fehling

$$H\text{-}C(=O)\text{-}OH + CuSO_4 \longrightarrow CO_2 + H_2O + Cu_2O$$

Red ppt.

$$H\text{-}C(=O)\text{-}OH + HgCl_2 \longrightarrow CO_2 + \underbrace{Hg_2Cl_2}_{\text{white ppt.}} + H_2O$$

Other Carboxylic acid don't give above 3 tests

20. $H_3C-\overset{O}{\overset{\|}{C}}-O-\underset{Ph}{\underset{|}{C}}=CH_2 + H_2O \xrightarrow{H_3O^+} X + Y$

X and Y are :

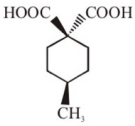
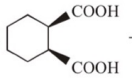
(A) X is $CH_3-\overset{O}{\overset{\|}{C}}-O-CH_2-Ph$

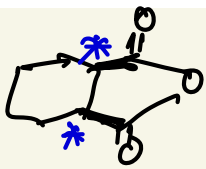
(B) Y is PhCHO

(C) Y is $H_3C-\overset{O}{\overset{\|}{C}}-OH$

(D) X is $Ph-\underset{O}{\overset{\|}{C}}-CH_3$

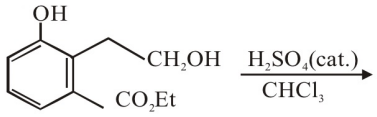
1. Match the following question :

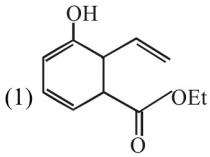
Column - I (Reaction)	**Column-II** (Products)
(A) $HOOC-\underset{H}{\overset{CH_3}{C}}-\underset{C_2H_5}{\overset{D}{C}}-COOH \xrightarrow{\Delta}$ P, S	(P) Diastereomers
(B) $HOOC-\underset{Ph}{\overset{CH_3}{C}}-COOH \xrightarrow{\Delta}$ Q, S	(Q) Racemic mixture
(C)  $\xrightarrow{\Delta}$ P, S	(R) Meso comp.
(D)  $\xrightarrow{\Delta}$ R	(S) CO_2 gas will evolve

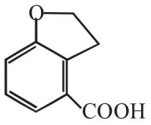


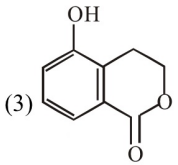
Meso

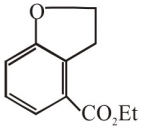
28. The major product of the following reaction is: **[JE**

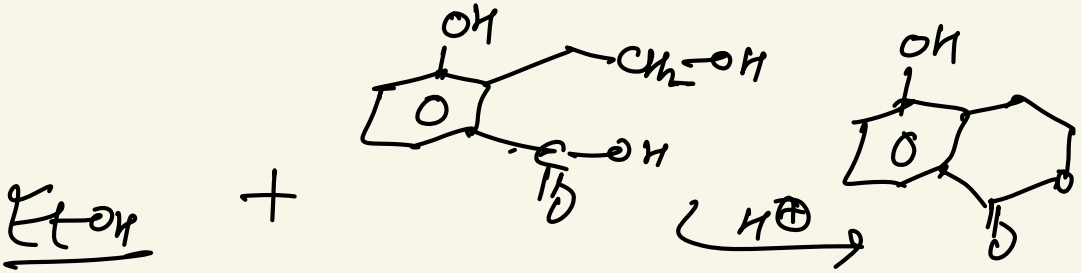


(1) 

(2) 

(3) 

(4) 



Amines:-

General methods of Prep. of Amines:-

① $R-\overset{O}{\overset{\|}{C}}-OH + NH_3 \xrightarrow{\Delta} R-\overset{O}{\overset{\|}{C}}-NH_2$ $\xrightarrow{LAH}$ $R-CH_2-NH_2$

② $R-NO_2 \xrightarrow{Sn+HCl} R-NH_2$

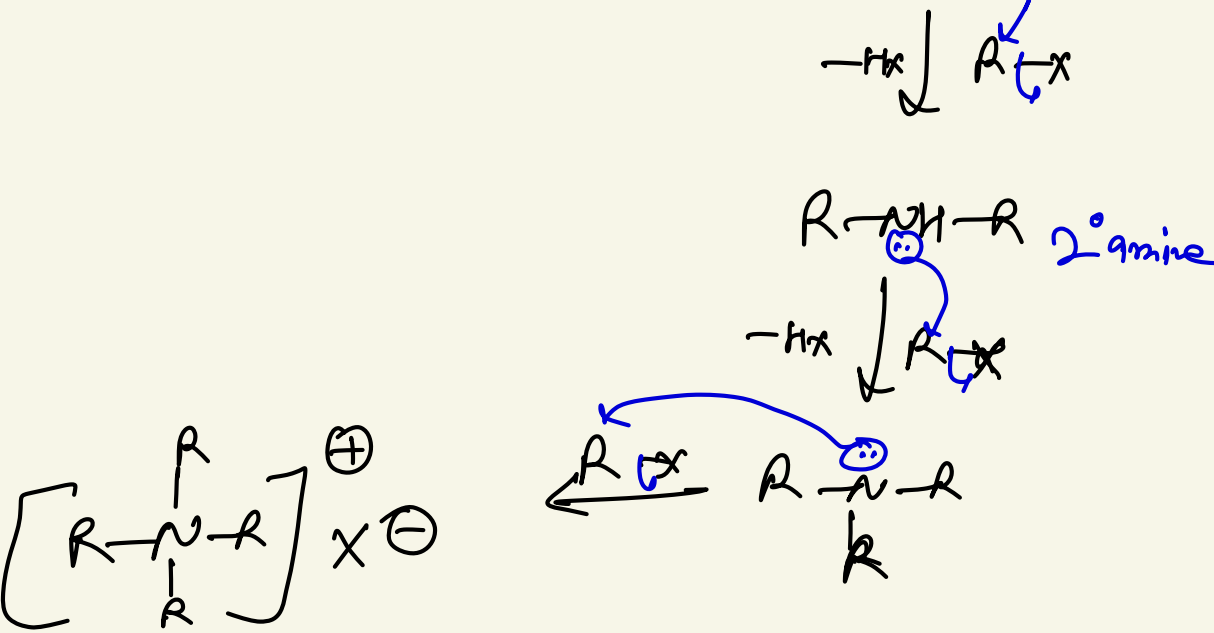
③ $R-\overset{\oplus}{N}\equiv\overset{\ominus}{C} \xrightarrow{LAH} R-NH-CH_3$

④ $R-CH=NH$ (imine) $\xrightarrow[\text{OR}\ NaBH_4\ \text{OR}\ Na[BH_3CN]]{LAH}$ $R-CH_2-NH_2$

⑤ $RMgX + NH_2-Cl \longrightarrow R-NH_2 + ClMgX$

⑥ **Ammonolysis:-**

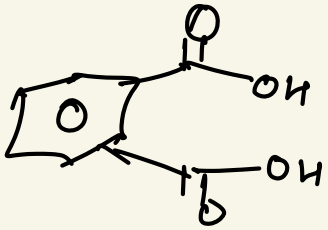
$R-X + NH_3 \xrightarrow{-HX} R-NH_2$ (1° amine)

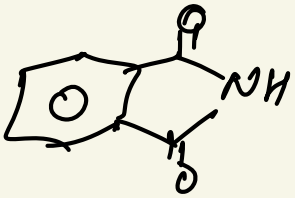


Quarternary ammonium salt.

(7) $R-N=C=O \xrightarrow{H_3O^{\oplus}} R-NH_2 + H_2CO_3$

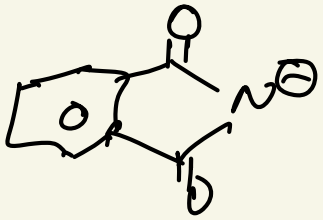
Gabriel phthalimide Synthesis:



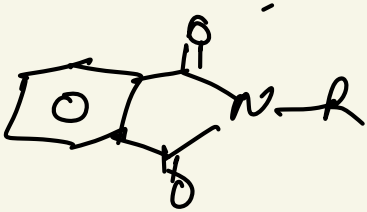


Phthalimide

$-H_2O$ ↓ aq. KOH



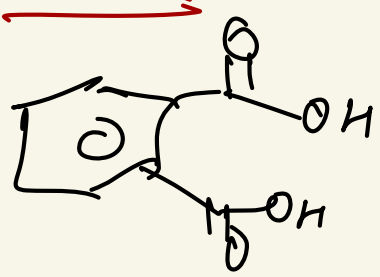
S_N2 ↓ R–X



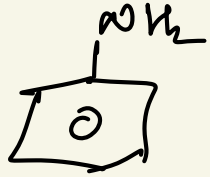
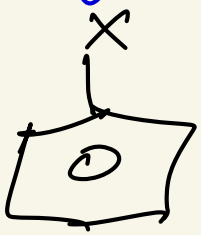
H_2O ←

$R-NH_2$

1^0 amine

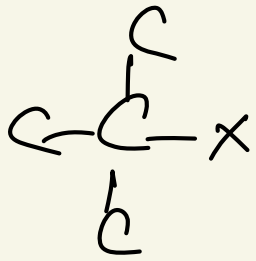


Which of the following amines cannot be prepared by Gabriel phthalamide Synthesis:-

i)  

ii) $H_2C=CH-NH_2$ $H_2C=CH-X$

iii) H_3C-NH_2 H_3C-X

iv) $H_3C-\underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}}-NH_2$ 

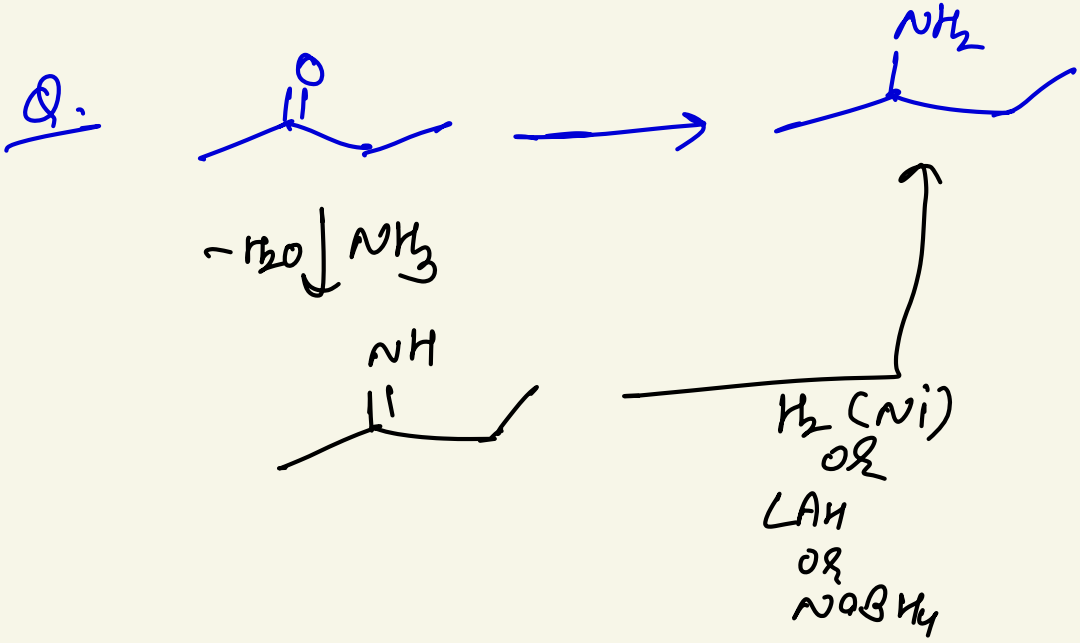
v) Et_3C-NH_2

vi) 

{ Those which cannot show S_N2 }

Q. $R-COOH \longrightarrow R-CH_2-NH_2$

$R-COOH \xrightarrow{LAH} R-CH_2-OH \xrightarrow{SOCl_2} R-CH_2-Cl \xrightarrow{NH_3} R-CH_2-NH_2$

Q. 

Q. Butane nitrile $\longrightarrow$ n-Butyl amine

$CH_3-CH_2-CH_2-C\equiv N \longrightarrow CH_3-CH_2-CH_2-CH_2-NH_2$

$CH_3-CH_2-CH_2-C\equiv N \xrightarrow{H_3O^+} CH_3-CH_2-CH_2-COOH \xrightarrow[ii)\ CH_2N_2]{i)\ SOCl_2} CH_3-CH_2-CH_2-COOH$

iii) Ac_2O
iv) H_2O

H.W:

O-I
1-20

JA
1-8, 13, 14, 23

(Carboxylic acid and amine)