REAZIONI

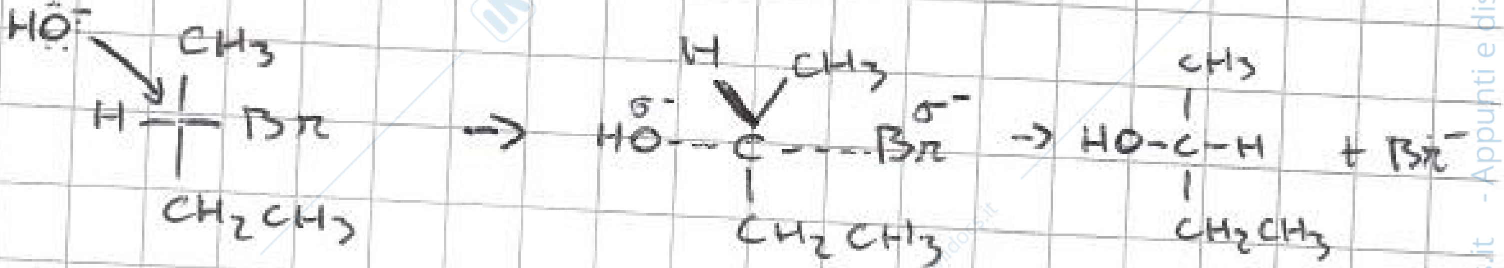
ALCANI sostituzione

$CH_4 + Br_2 \rightarrow CH_3Br + HBr$

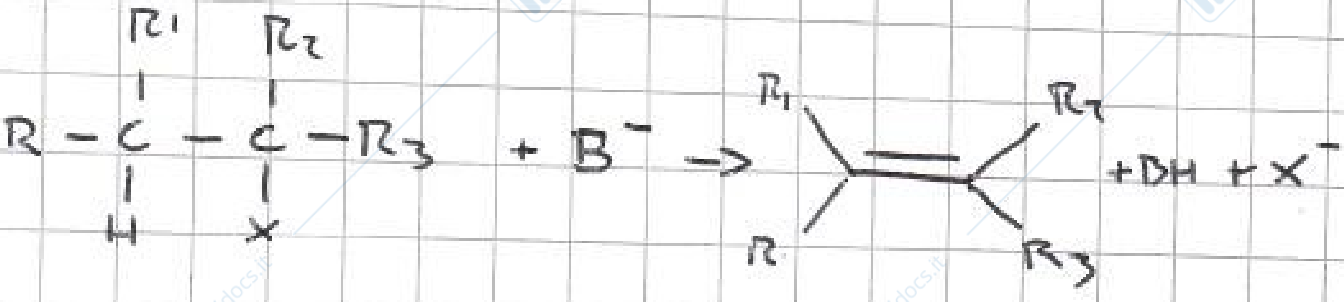
ALOGENODERIVATI sostituzione nucleofila

SN1 se 3° → stadio lento, carbocatione

SN2 se 0 1° 2° → rottura parziale C-X e parziale formazione C-Nu nello stadio lento, inversione di configurazione

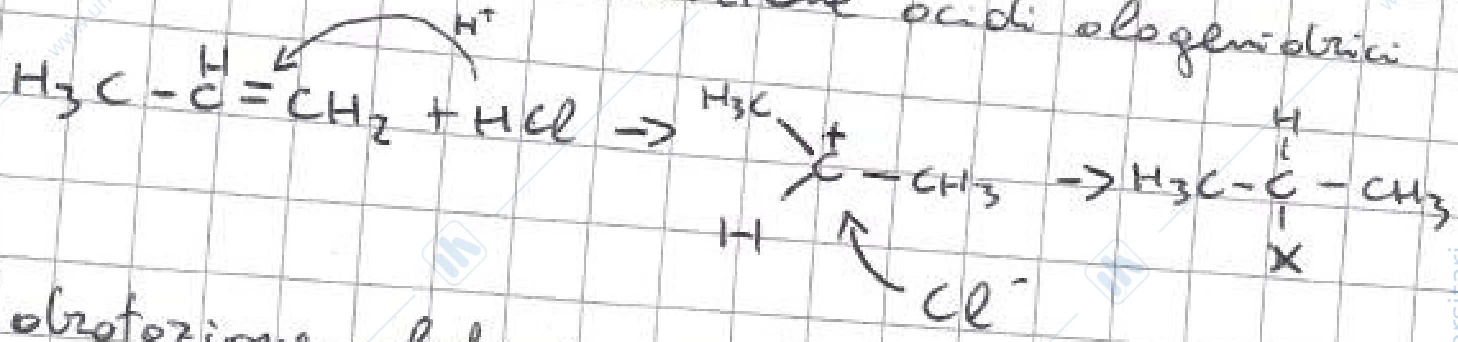


Eliminazione (spesso avvengono assieme)
alogenuro deve avere almeno un H in posizione adiacente



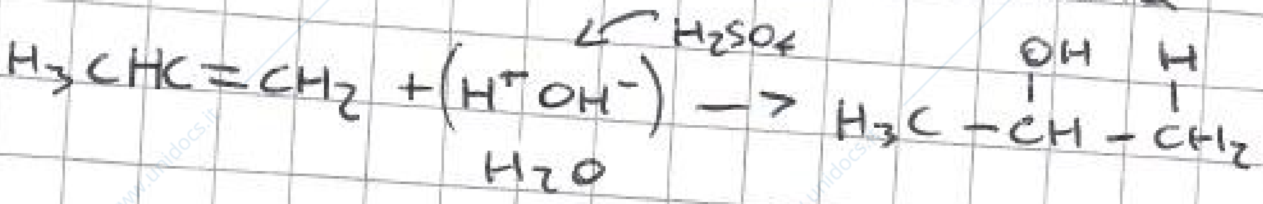
ALCHENI

addizione acidi alogenidrici



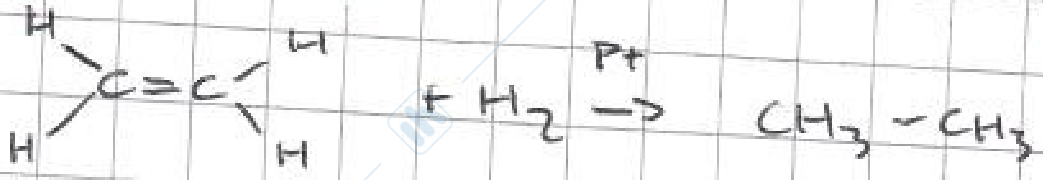
$$H_3C-\overset{H}{C}=CH_2 + HCl \xrightarrow{H^+} H_3C-\overset{+}{C}H-CH_3 \xrightarrow{Cl^-} H_3C-\underset{X}{\overset{H}{C}}-CH_3$$

Idratazione alcheni acido catalizzata



$$H_3CHC=CH_2 + \underset{H_2O}{(H^+OH^-)} \xrightarrow{H_2SO_4} H_3C-\overset{OH}{CH}-\overset{H}{CH_2}$$

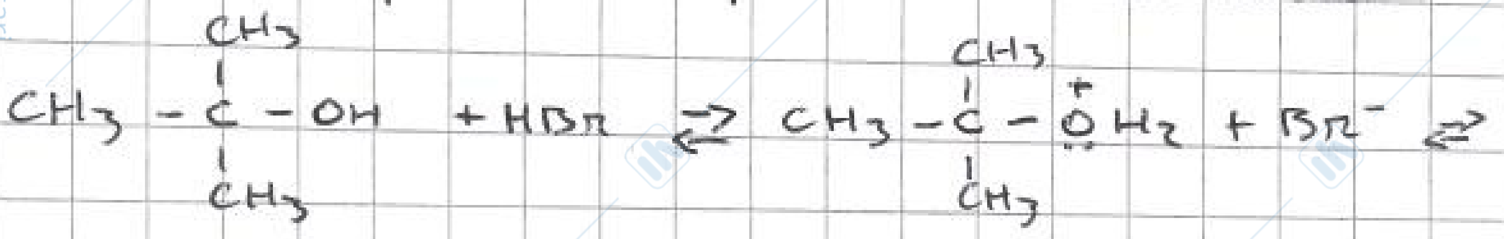
riduzione ad alcano con H_2 + metallico



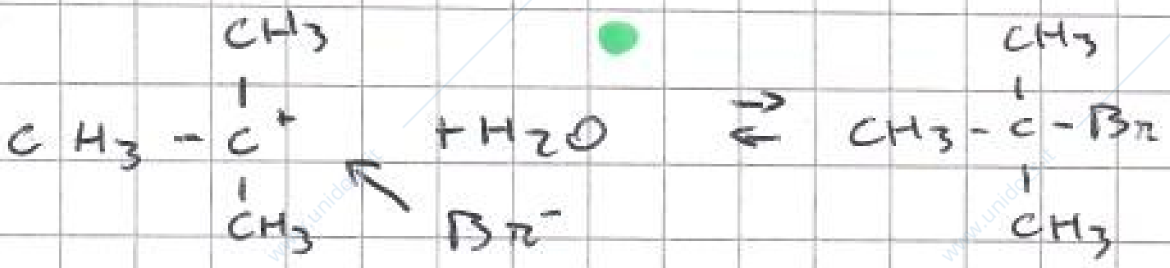
$$H_2C=CH_2 + H_2 \xrightarrow{Pt} CH_3-CH_3$$

ALCOLI

con acidi forti si comportano da basi deboli

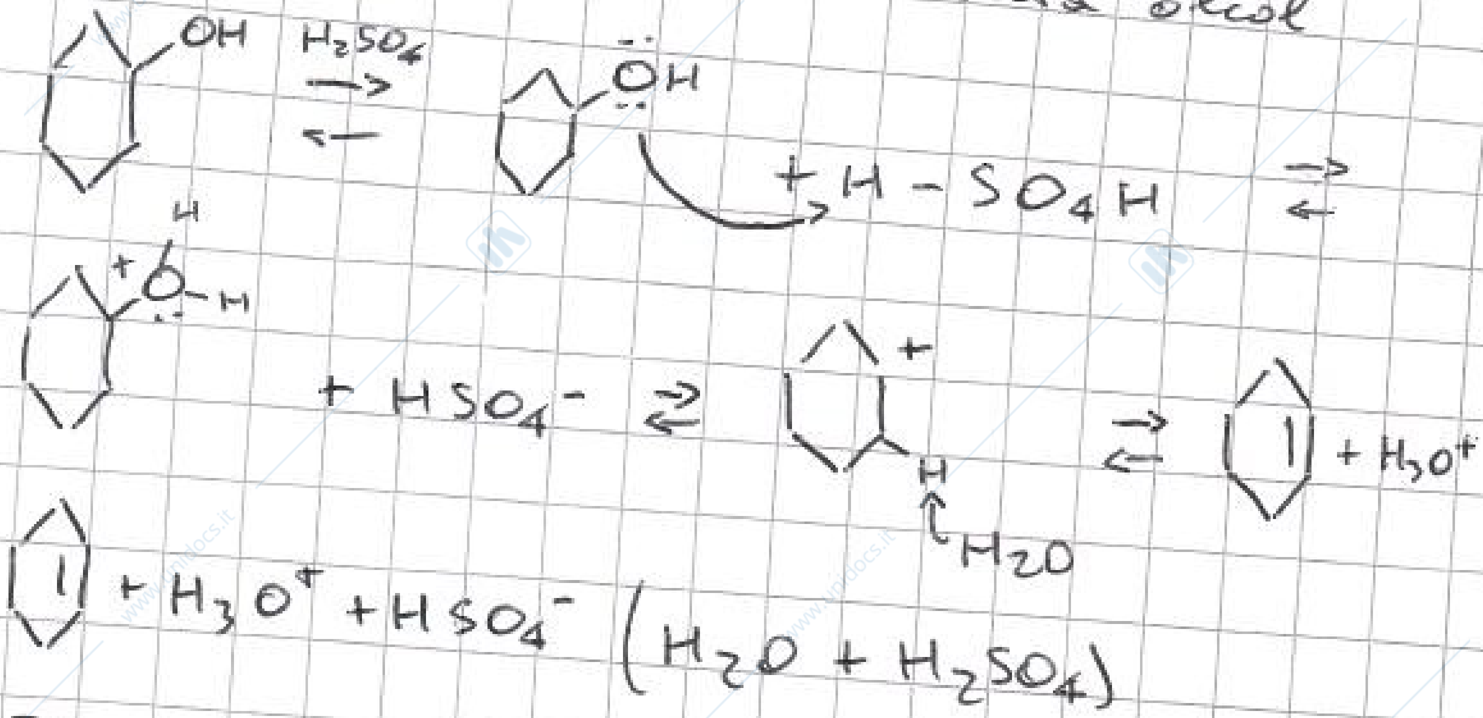


$$CH_3-\underset{CH_3}{\overset{CH_3}{C}}-OH + HBr \rightleftarrows CH_3-\underset{CH_3}{\overset{CH_3}{C}}-\overset{+}{\ddot{O}}H_2 + Br^- \rightleftarrows$$

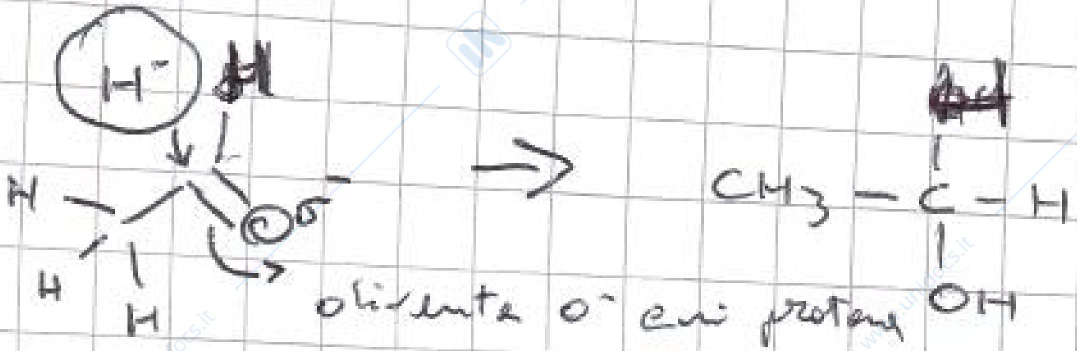


$$CH_3-\underset{CH_3}{\overset{CH_3}{C^+}} + H_2O \quad Br^- \rightleftarrows CH_3-\underset{CH_3}{\overset{CH_3}{C}}-Br$$

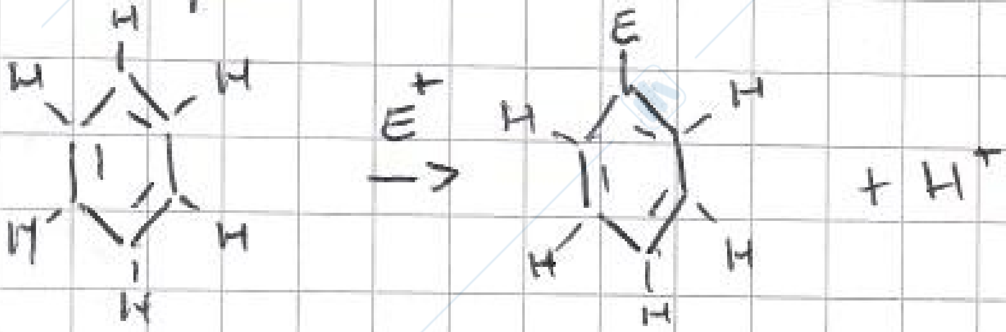
Disidratazione acida catalizzata alcol



Preparazione alcol da acido carbossilico

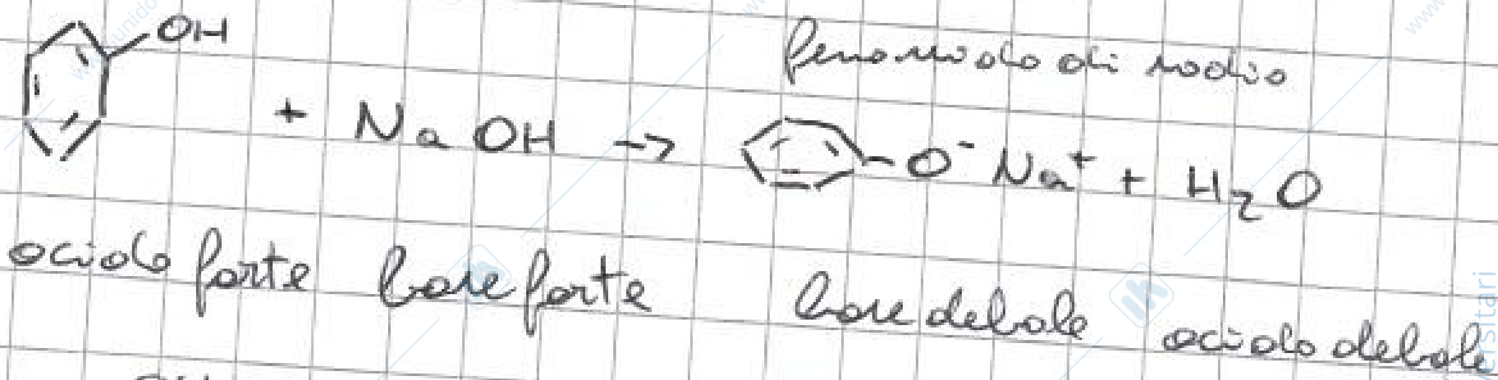


Composti aromatici



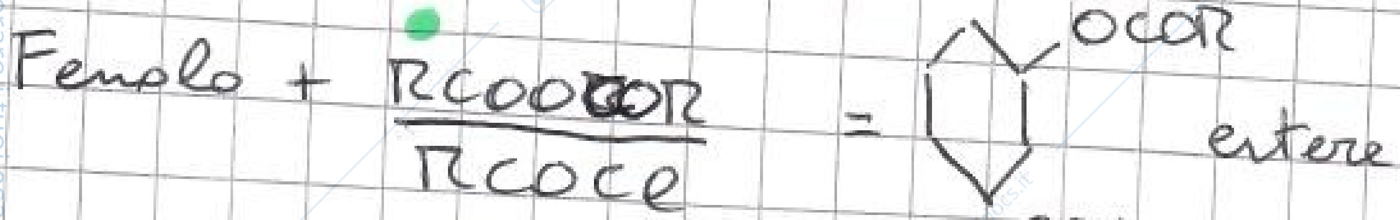
fanno solo sostituzione elettrofila

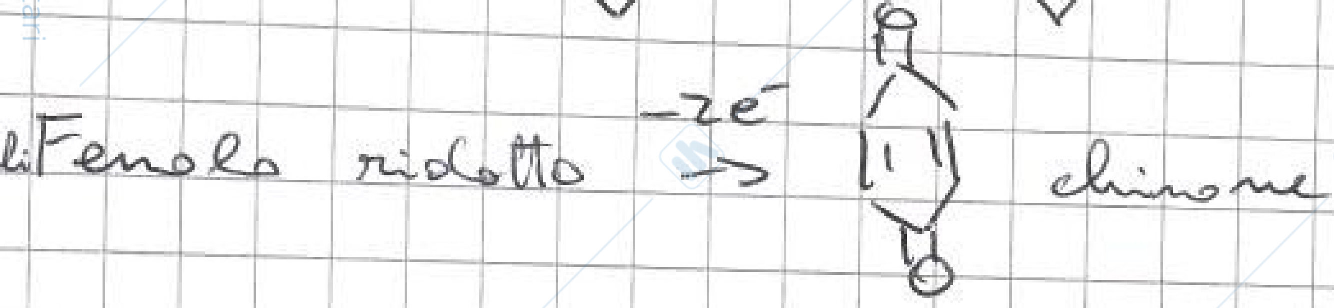
FENOLI



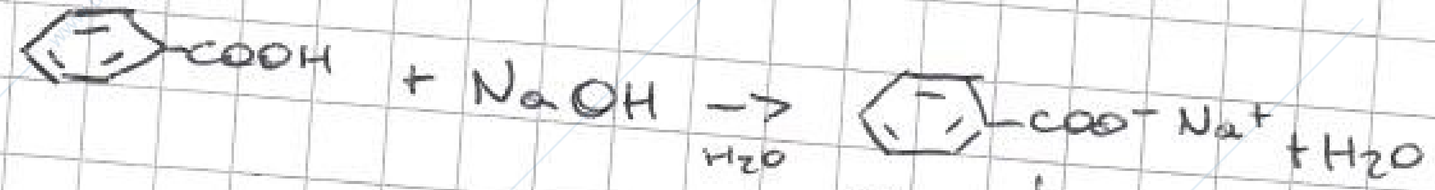
Non avviene perché l'equilibrio è verso sinistra

I fenoli non subiscono reazioni di sostituzione e di eliminazione



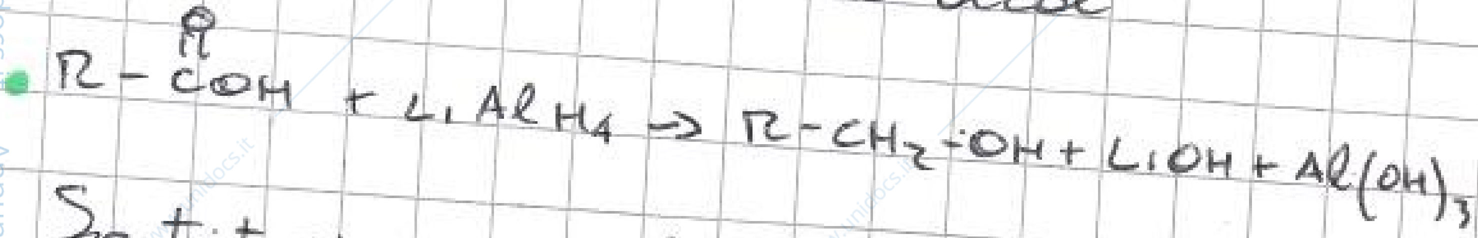


ACIDI CARBOSSILICI



Benzoato di sodio

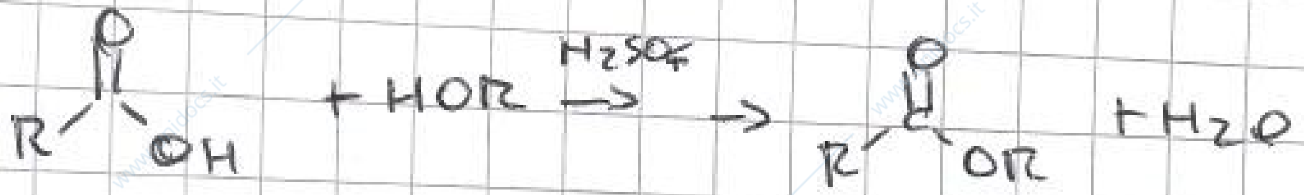
Possono essere ridotti ad alcol



$R-\overset{O}{\overset{\|}{C}}OH + LiAlH_4 \rightarrow R-CH_2-OH + LiOH + Al(OH)_3$

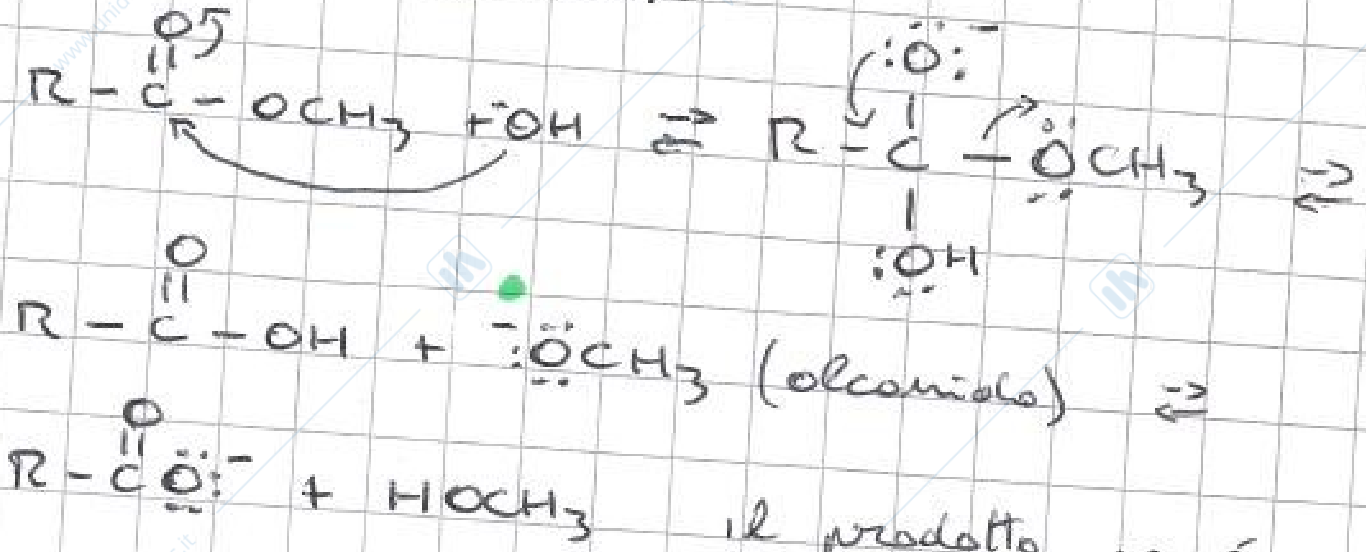
Sostituzione nucleofila acilica

Esterificazione di Fisher



Esteri

Idrolisi

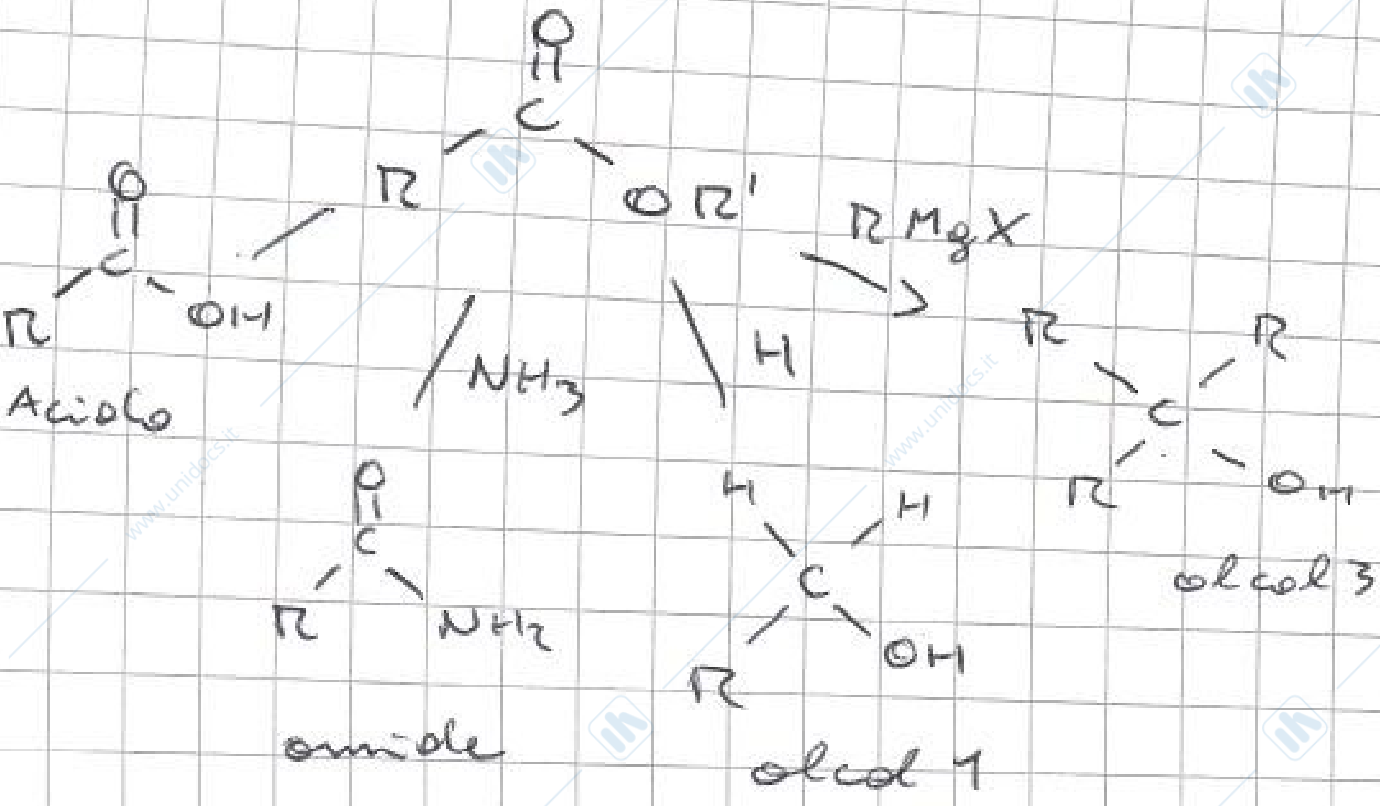


$R-\overset{O}{\overset{\|}{C}}-OCH_3 + {}^-OH \rightleftharpoons R-\overset{:\ddot{O}:^-}{\overset{|}{\underset{:\ddot{O}H}{\underset{|}{C}}}}-\ddot{O}CH_3 \rightleftharpoons$

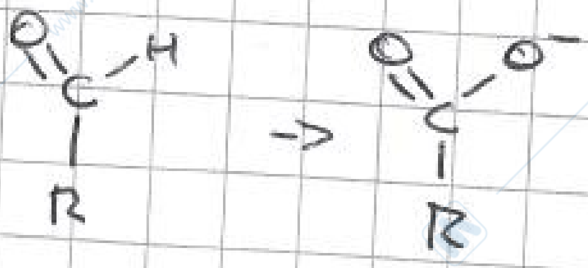
$R-\overset{O}{\overset{\|}{C}}-OH + {}^-:\ddot{O}CH_3$ (alcossido) $\rightleftharpoons$

$R-\overset{O}{\overset{\|}{C}}\ddot{O}:^- + HOCH_3$

il prodotto non é un acido carbossilico ma un sale



Ossidazione zuccheri

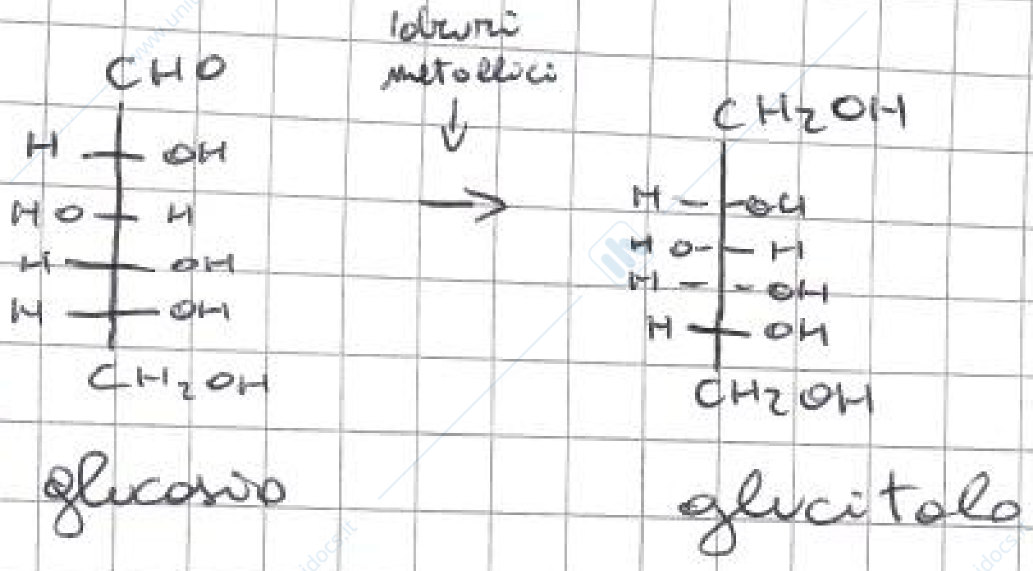


Siccome avviene in ambiente basico non si riducono a gruppo carbossilico

Saggio di Tollens
Saggio di Fehling e Benedict

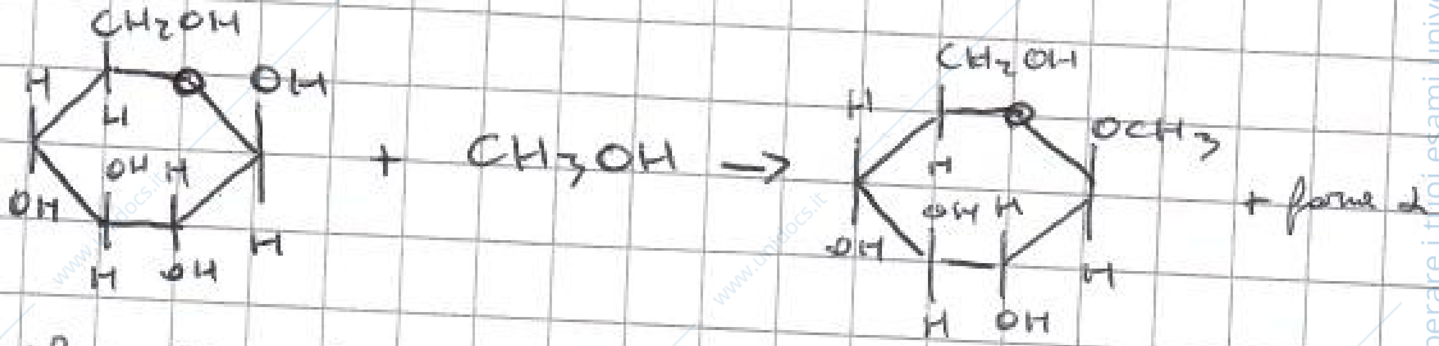
se é chetoso → enolica → aldosa → ossidazione

Zuccheri riducenti → capaci di ridurre Cu^{2+} a Cu_2O o Ag^+ ad Ag metallico



LEGAME GLICOSIDICO

Il trattamento di un monosaccaride che esiste come emiacetale ciclico con un alcol genera un acetale



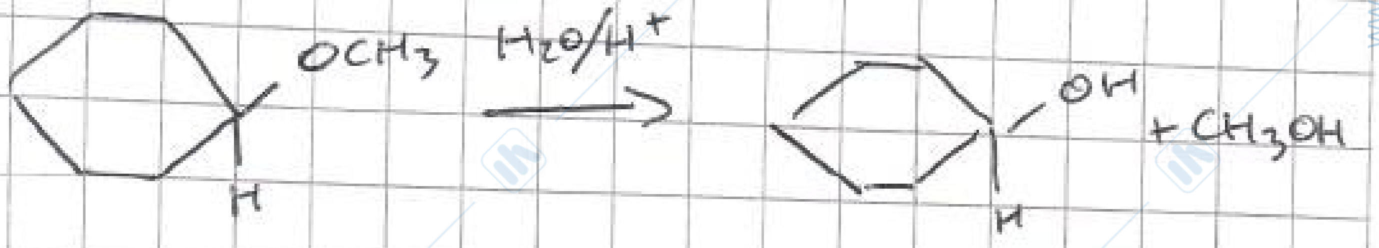
β glucopiranosio

Metil β glucoside

$+ NH_2CH_3 \rightarrow$ N-glicoside

contengono carbonio anomerico bloccato

Idrolisi glicoside con acido

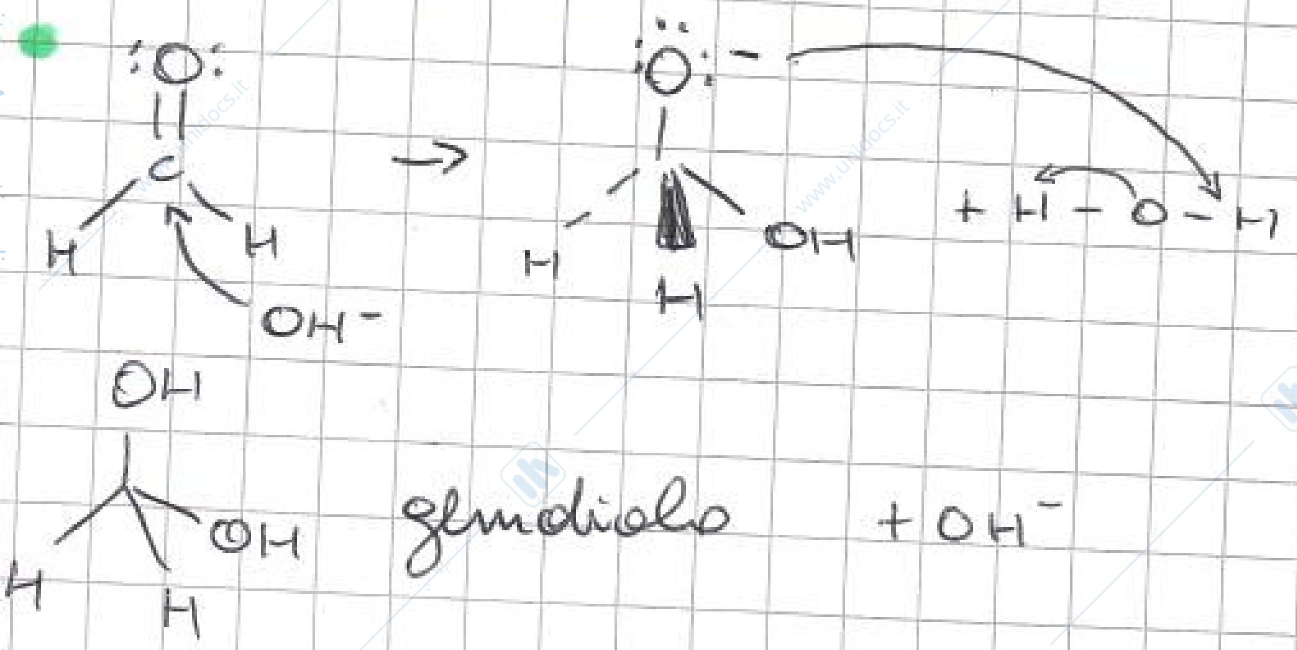


Aldeidi e chetoni

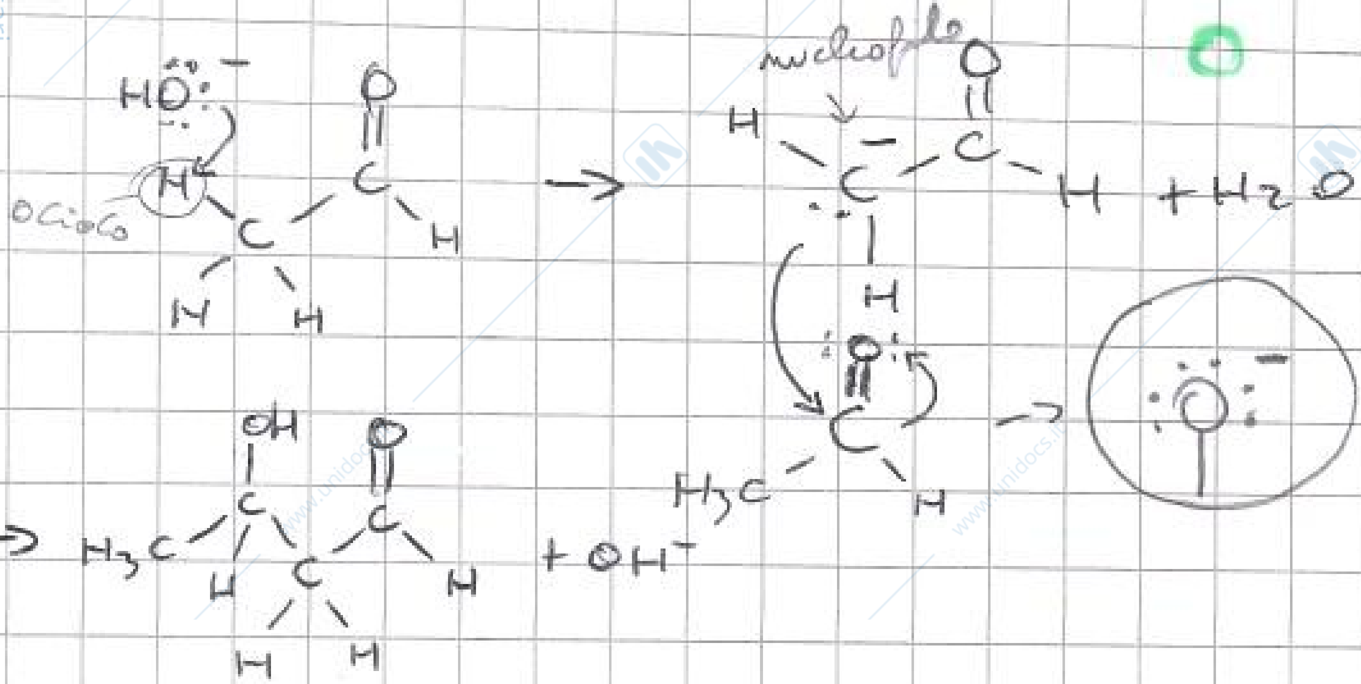
Alcol 1° $\xrightarrow{redox}$ aldeide $\xrightarrow{redox}$ Acido carbossili

Alcol 2° $\xrightarrow{redox}$ chetone $\cancel{\xrightarrow{redox}}$ bloccata

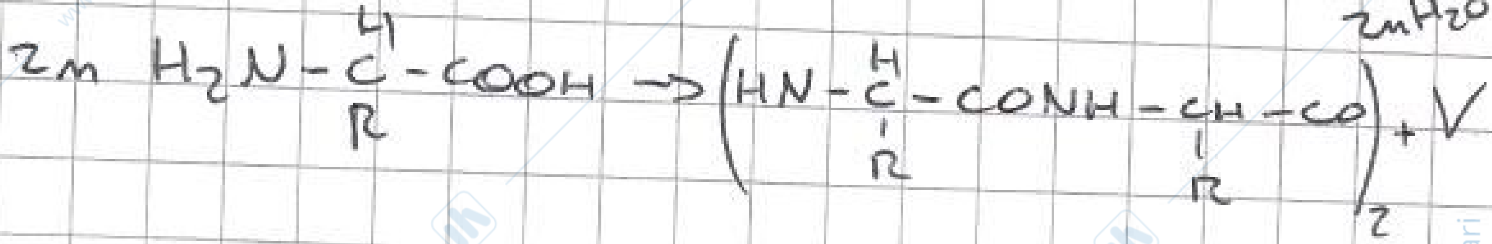
Idratazione aldeide



Condensazione aldolica

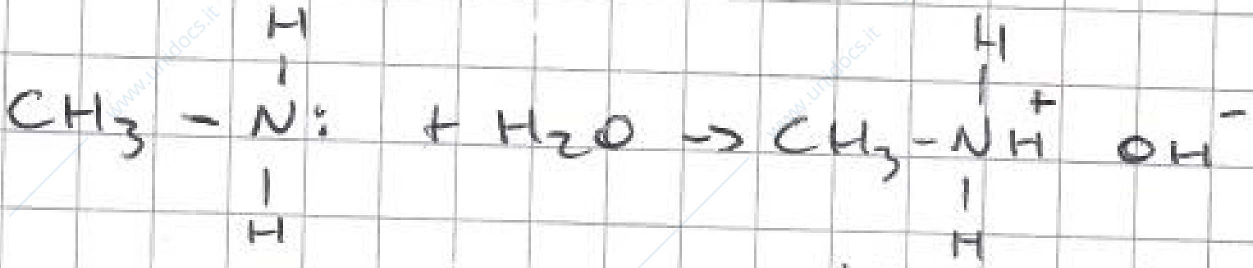


Legame peptidico



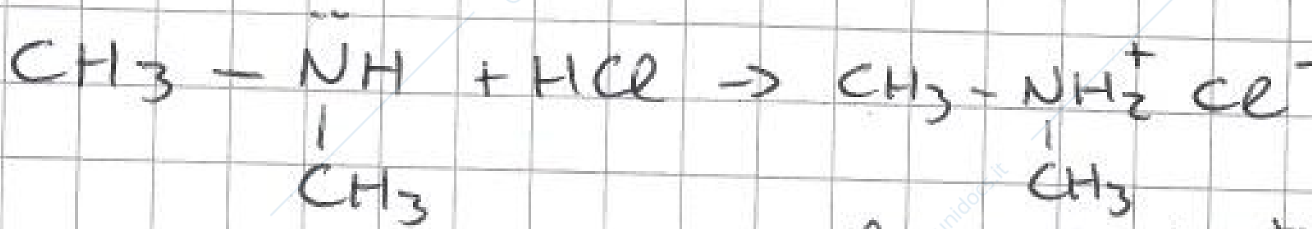
$$2n\, H_2N-\overset{H}{\underset{R}{C}}-COOH \rightarrow \left(HN-\overset{H}{\underset{R}{C}}-CONH-\underset{R}{CH}-CO\right)_2 + 2nH_2O$$

Reazioni Ammine



$$CH_3-\overset{H}{\underset{H}{N}}: + H_2O \rightarrow CH_3-\overset{H}{\underset{H}{N}}H^+\ OH^-$$

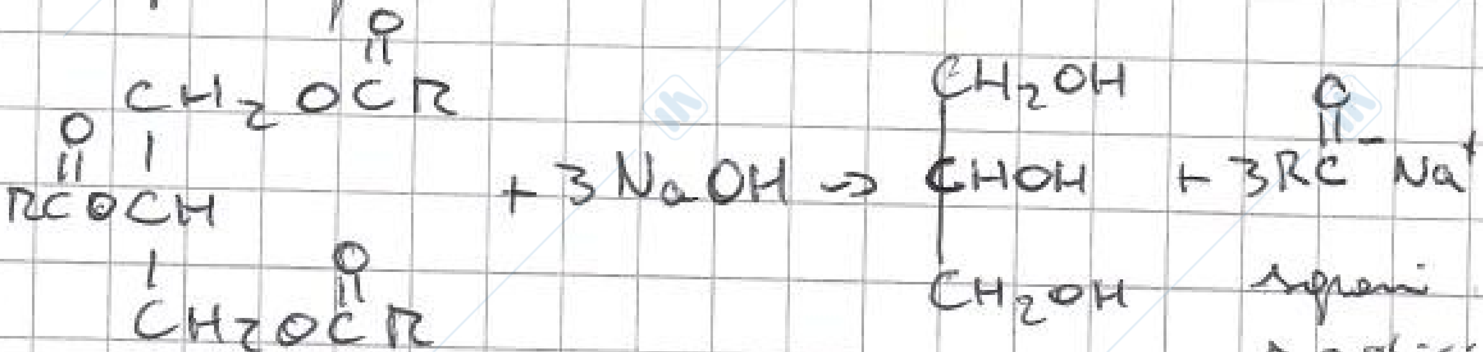
idrossido di metilammonio



$$CH_3-\underset{CH_3}{\ddot{N}H} + HCl \rightarrow CH_3-\underset{CH_3}{NH_2^+}\ Cl^-$$

cloruro di dimetilammonio

Saponificazione



$$\begin{array}{l} CH_2O\overset{O}{\overset{\|}{C}}R \\ R\overset{O}{\overset{\|}{C}}OCH \\ CH_2O\overset{O}{\overset{\|}{C}}R \end{array} + 3NaOH \rightarrow \begin{array}{l} CH_2OH \\ CHOH \\ CH_2OH \end{array} + 3R\overset{O}{\overset{\|}{C}}{}^{-}\ Na^+$$

saponi sodici