~~Alcohols~~ Alcohols

– primary alcohols are characterised by the presence of $-CH_2OH$ group

e.g –

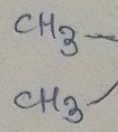
$H-CH_2OH$ — Methyl alcohol

CH_3-CH_2OH — Ethyl alcohol

= Secondary alcohols are characterised by the presence of $>CHOH$ group

~~group~~

e.g –



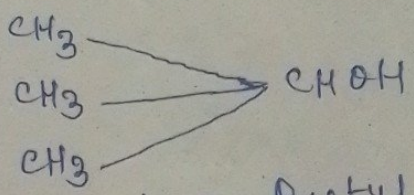
Isopropyl alcohol

$CH_3CH_2CHOHCH_3$

Secondary butyl alcohol

≡ Tertiary alcohols are characrised by the presence of $\rightarrow C-OH$ group

e.g –



tertiary - Butyl alcohols

= Distinction between primary, secondary and Tertiary alcohols.

= Oxidation Method, with $K_2Cr_2O_7$ and H_2SO_4

primary alcohols on oxidation 1st gives an aldehyde and then an acid. both containing the same number of c atoms as the original alcohols. Secondary alcohols birst gives ketone containing same number of carbon atoms and then an acid containg lesser number of c-atom. Tertiary alcohols birst gives ketone and then acid both containg lesser number of c-atoms.

Primary
CH_3OH
Ethyl alcohol
(2 c-atoms)
↓O
CH_3CHO
Acetaldehyde
(2 c-atom)
↓O
CH_3COOH
Acetic acid
(2c-atom)

Secondary
CH_3
CH_3 > $CHOH$
Isopropyl alcohol
(3 c-atoms)
↓O
CH_3
CH_3 > CO
Acetone
(3c-atoms)
↓O
CH_3COOH
Acetic acid
(2c-atom)

Tertiary
CH_3
CH_3 > COH
CH_3
trisary-Butylalcoho
(4c-atom)
↓O
CH_3
CH_3 > CHO
Acetone
(3c-atom)
↓O
CH_3COOH
Acetic acid
(2c atoms)

(iii) Dehydrogenation - By passing the vapours of alcoho over copper at 300°c. primary alcohols gives aldehyde wh Secondary and tertiary alcohols yields ketone and olefin respectively.

$CH_3CH_2OH \xrightarrow[300]{Cu} CH_3CHO + H_2O$
Acetaldehyde

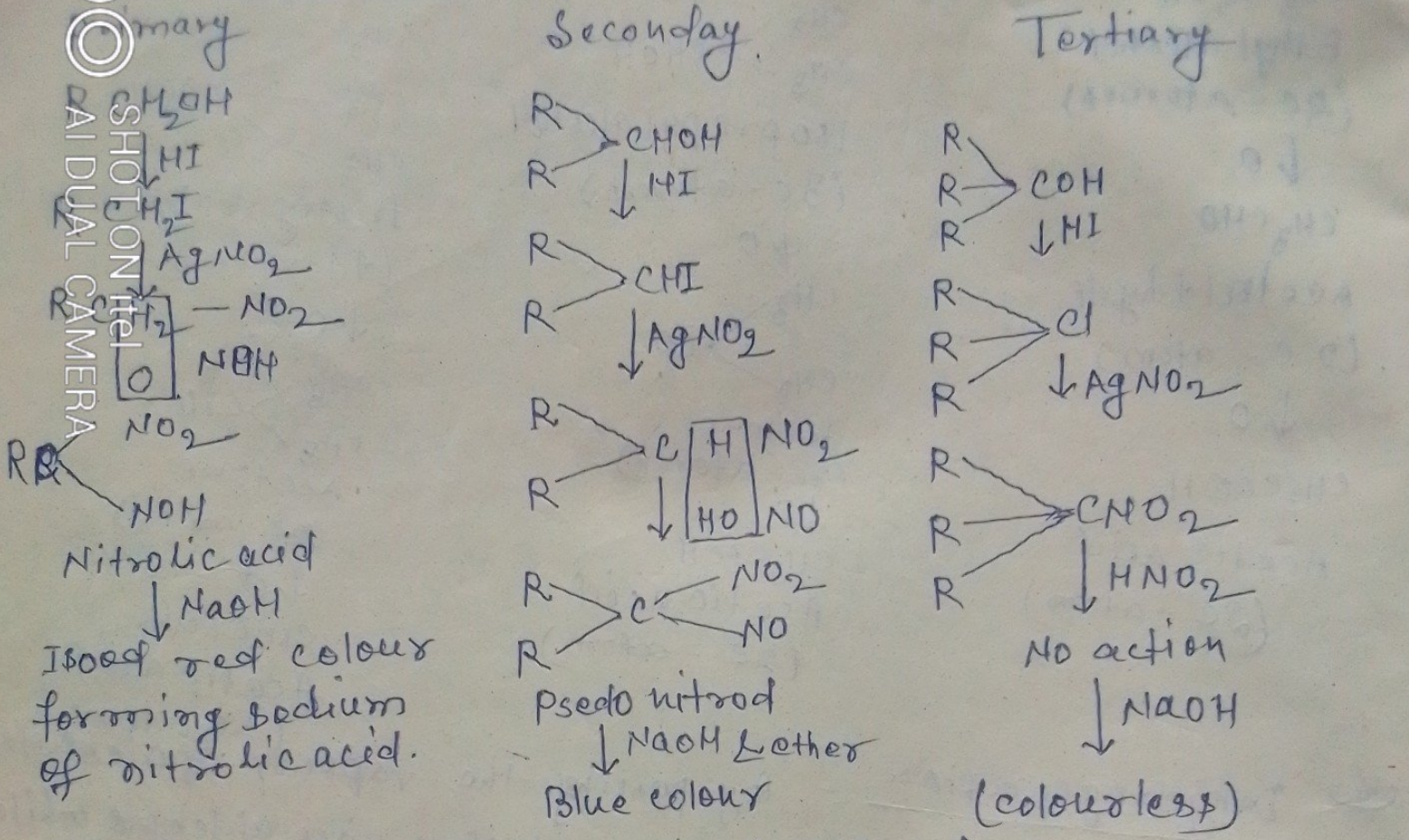
CH_3
CH_3 > $CHOH$
Isopropyl alcohol

CH_3
CH_3 > $CO + H_2$
Acetone

CH_3
CH_3 > $C-OH$
CH_3
t-Butyl alcohol

CH_3
CH_3 > $C=CH_2 + H_2O$
Isobutylene

(b) Victor Meyer's Method:-



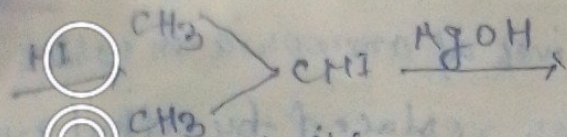
This is infact the practical method of distinction. The alcohols are first converted to alkyl halides. And then nitro into nitro paraffin which on treatment with HNO_2 yield different type of products.

(c) Conversion of P- into 2alcohol.

By 1st converting alcohols into olefines and then adding HI, followed by subsequent ~~to alkyl halides. and then into paraffins with which~~ hydrolysis.

$$CH_3 \cdot CH_2 \cdot CH_2OH \xrightarrow{PCl_5} CH_3 \cdot CH_2 \cdot CH_2Cl \xrightarrow[KOH]{alc.} CH_3 \cdot CH = CH_2$$

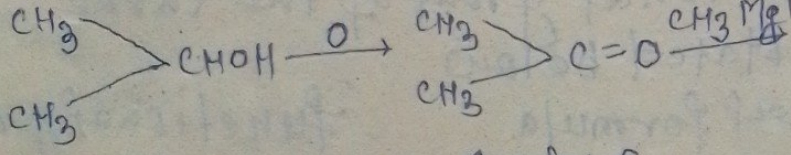
n-propyl alcohol (primary) — n-propyl chloride — propylene



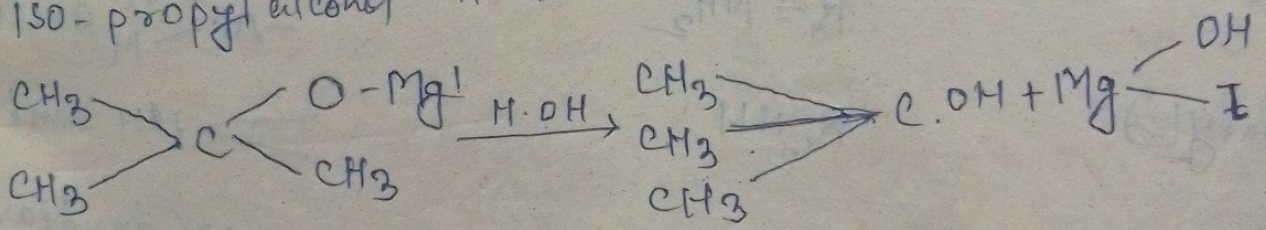
Iso-propyl iodide — Iso-propyl alcohol (Secondary)

Conversion of P- into T- alcohols

(i) By first converting into Secondary as above and then converting the latter in tertiary.

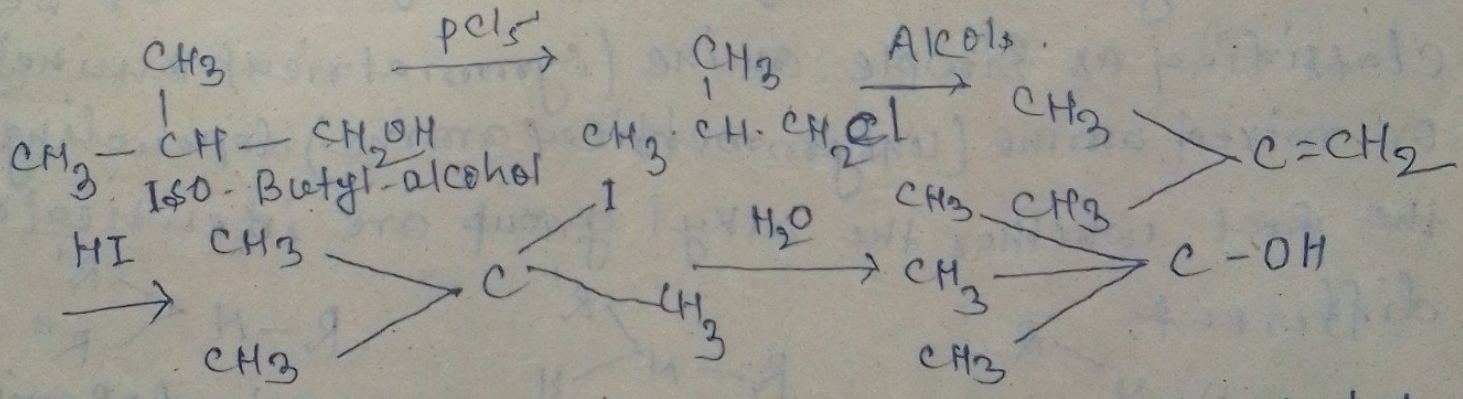


Iso-propyl alcohol — Acetone



t-Butyl alcohol.

(ii) By directly converting into tertiary alcohol.



t-Butyl alcohol