

=> separation technique

=> sublimation

=> distillation

=> simple distillation

=> fractional distillation

=> distillation under reduced pressure

=> steam distillation

=> quantitative estimation of elements

C; H; N; S; X; P.

=> Duma.

=> Kjeldahl } Nesslerization

=> Carius } S & X. (halogen); Br.

=> Leibig } C & H.

=> } Testing P;

chromatography

x

vacuum distillation.

Sublimation: Solid \rightarrow gas
One cpd should sublime; impurities should not be sublimated.

a) NH_4Cl & common salt NaCl

<u>sublime</u>	<u>does not sublime</u>
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separate. Ans: Sublimation.

b) Anthracene vs any cpd (does not sublime)
Camphor vs any cpd (" " ").
color of sublimate

Distillation:

A \neq B

b.p difference

$>40^\circ\text{C}$.

* glycerol can
be separated from
(spent lye) by

distillation under HgCl_2
reduced pressure
or

vacuum
distillatn.

Hg_2Cl_2

HgS

HgCl_2

SbCl_3

Sb_2S_3

S

U

B

L

I

M

E

S

white.

Black

Orange

=> can be separated by
simple distillation.

b.pt difference $[0-25^\circ\text{C}]$
A \neq B

=> can be separated by fractional
distillation.

=> CH_2OH glycerol is formed as bipdt
 CH_2OH or
 CH_2OH bipdt in soap industry. **
bipdt = high.

Q Methyl alcohol & Acetone can be separated by.

① 64.7°C . 56°C .

Ans. Fractional distillation.

(2) generally isomeric upd o, m, p isomer; chain Isomers.
n-butane, Isobutane.
geometrical Isomers
Cis but 2-one & Trans 2-one } they are separated by fractional distillati.

(3) Simple distillation technique

a) chloroform & anilene

b) n-hexane & Toluene

$\text{CHCl}_3 : 61.2^{\circ}$



181.4°C .

110°C .

n-hexane: 69°C

can be used to separate.
~~c) Ether & sol toluene.~~

~~c) Ether & sol toluene.~~
d) all of these. Correct answer.

$\text{Et-O-Et} : 34.6^{\circ}\text{C}$.

(4) The increasing order of boiling point for the following compounds.

(1) EtOH (H bonding)

1 > 2 > 4 > 3.

a) Boiling point order

(2) Et-Cl

(3) Et-OMe

(4) Et-OMe

Hydrocarbon

M. wt is the
deciding factor.

H-bonding

a) ROH > RSH

b) HF > HI > HBr > HCl

c) H₂O > H₂Te > H₂Se > H₂S

M. wt.

g) R-S-R > R-O-R (M. wt)

h) CH₃F < Cl₃Ca < CH₃Br < Cl₃I
M. wt dominates

i) Cl₃Ca < CH₂Cl₂ < CHCl₃ < CD₄
M. wt > Polarity

d) SbI₃ > AsH₃ > NIB > PI₃

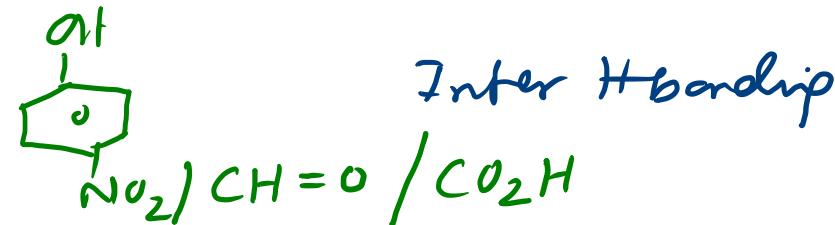
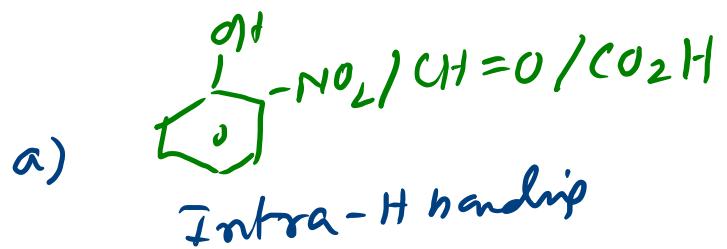
M. wt dominates.

H-bonding
not dominates

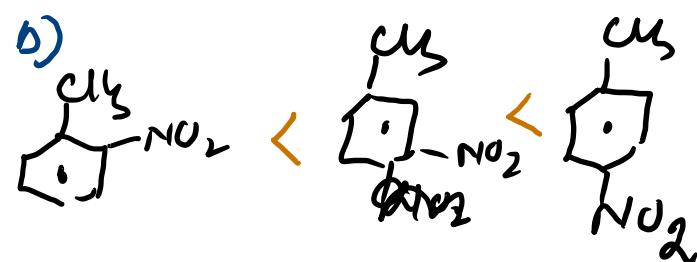
e) CH₃OH
CH₂OH
CH₃COOH
> CH₂OH
CH₃OH
> CH₃COOH

f)

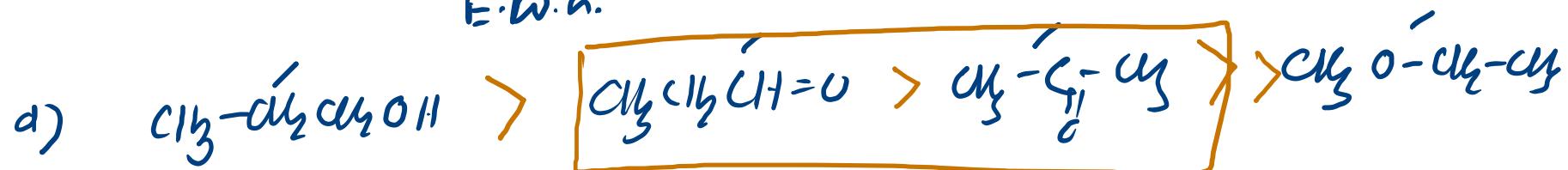
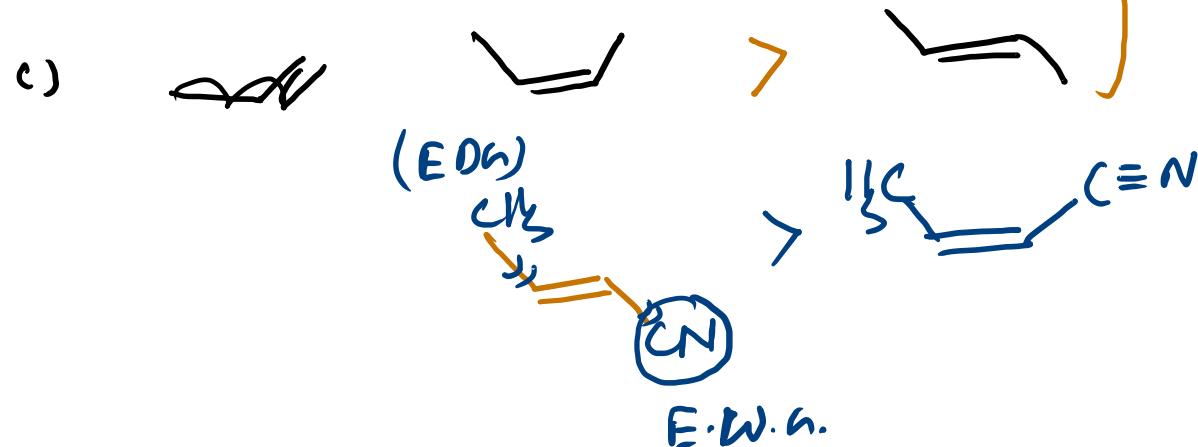


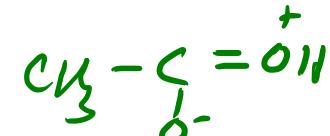
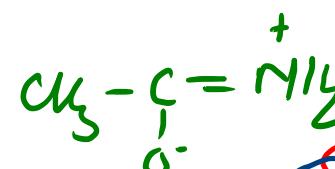
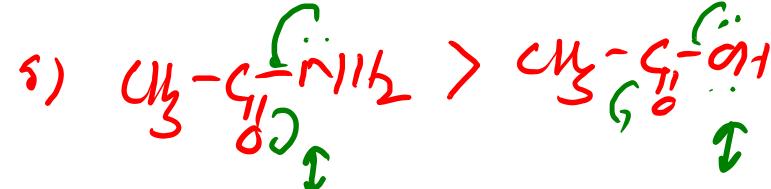
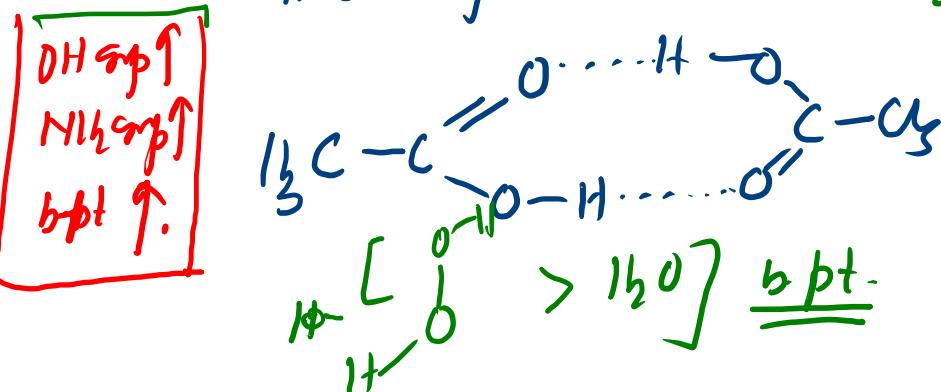
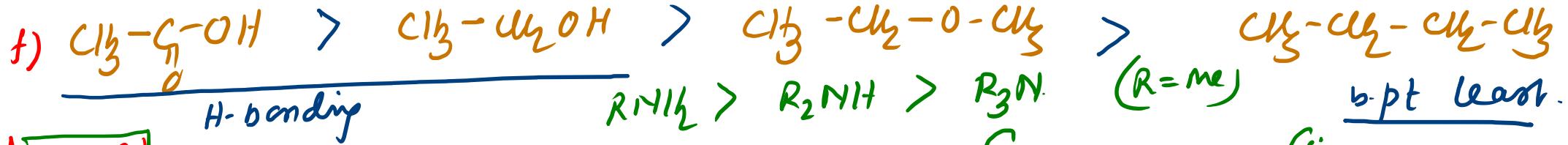


they are separated by fractional distillation.

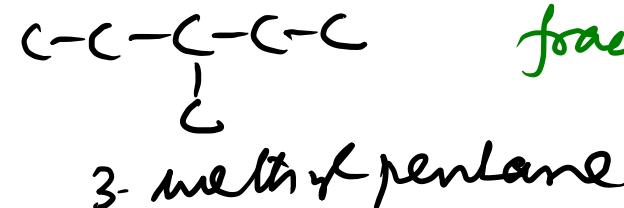
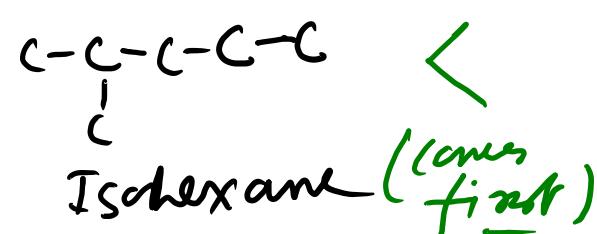


Isomeric cpd if having different polarity, more polar cpd having more b.p.





(b.pt)



} b.pt ↓
Branching ↑.
surface area.

when it undergoes
fractional distillation
which comes first?
(b.pt less)

To separate aniline from anilene water mixture, steam distillation is run up.

Anilene + Water $\xrightarrow{\Delta}$ Steam↑.
 (less volatile vol. gets separated out & can be separated)
 (water insoluble)

: Quantitative Estimation:



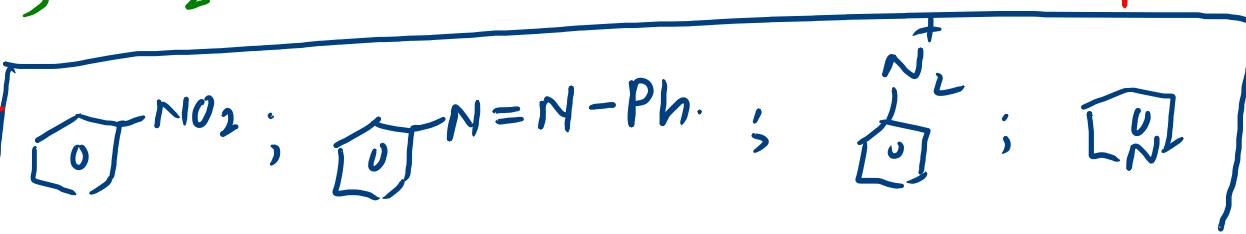
absorbed in KOH soln.

Kjeldahl.



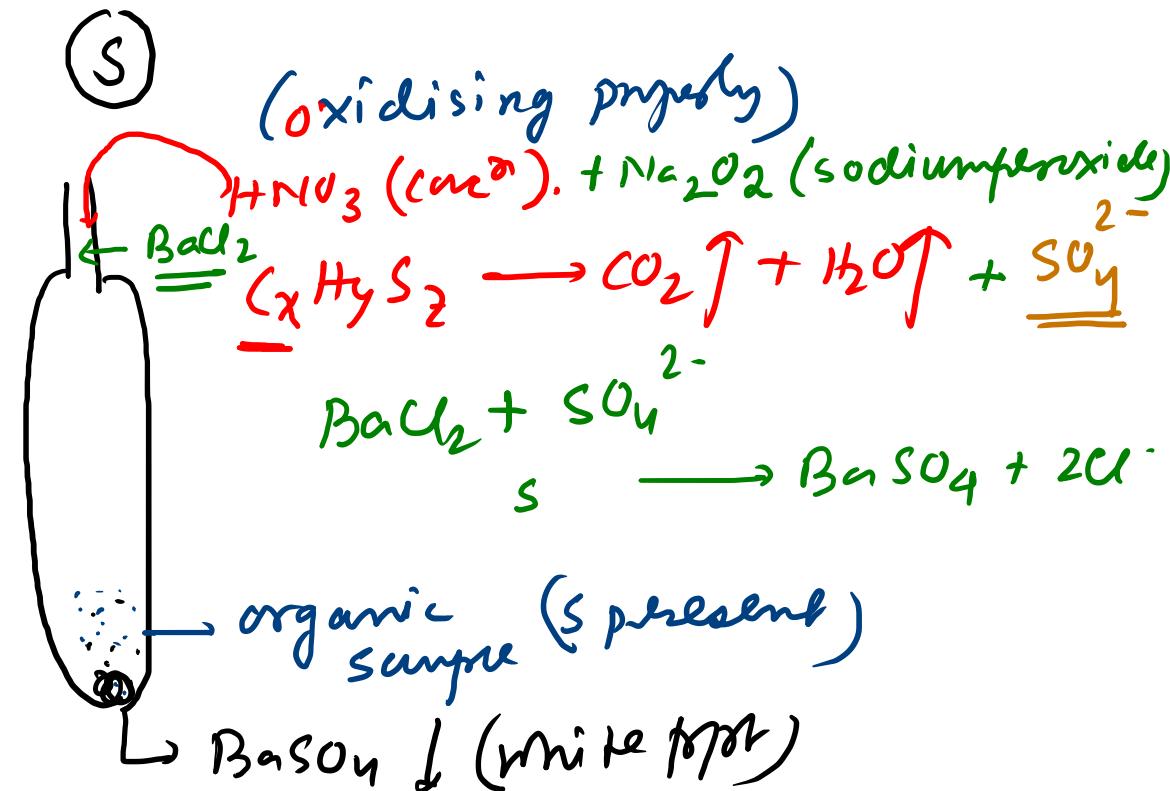
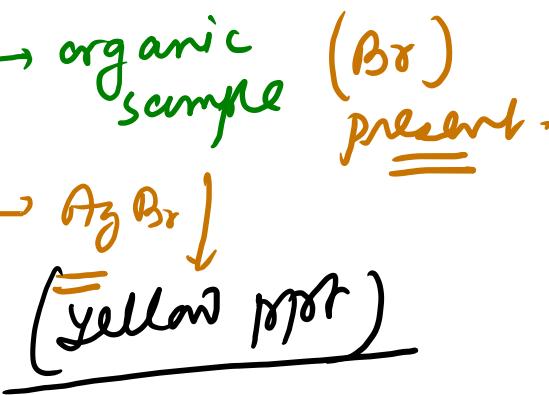
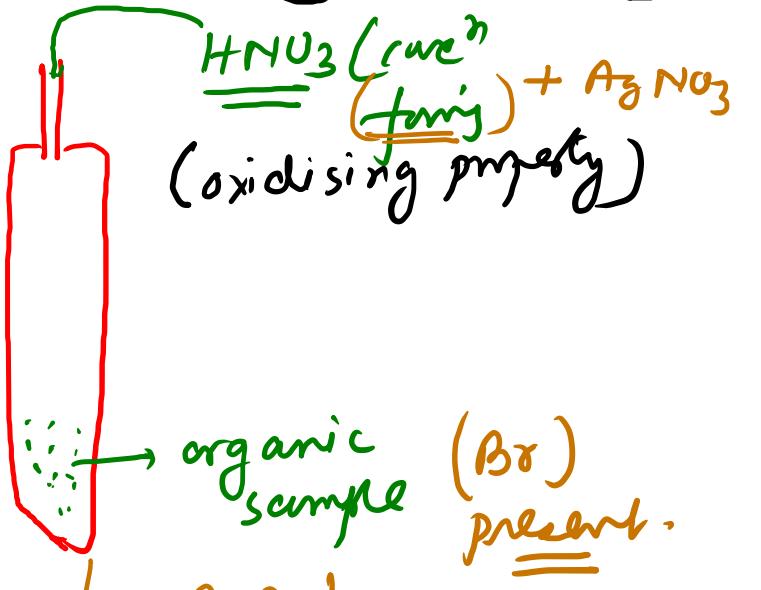
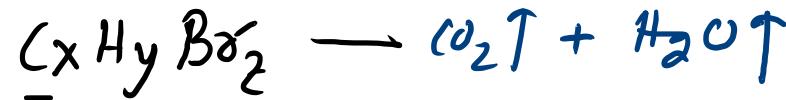
- $\begin{matrix} \text{---} \\ \text{---} \\ \text{---} \end{matrix} \text{NH}_2$; - $\text{N}(\text{H})_2$; - $\text{N}(\text{H})\text{---}$; - N^-

MAINS PAPER & NCERT:



→ Kjeldahl is not applicable, because it can over give NH_3

Carius: B_r



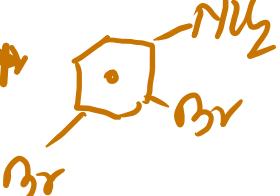
Q uotient
in NTA

In Carrius Method 0.48 gm of an organic cpcl gives 0.699 gm
 $\frac{\text{g BrSO}_4}{\text{g Br}} = ?$ The % sulphur in the cpcl is

a) 15 b) 35 c) 20 d) 30.

$\text{BrSO}_4 = \underline{233}.$ 0.172 gm

In Carrius method. for Br; An organic cpcl shows presence of $0.08 \text{ gm } \text{Br}_2$. Which of these is the correct structure of organic cpcl?



M_r = 24.

Br = 80

Ba = 137.

Su_y = 96.

P = 31.

233 gm $\text{BrSO}_4 \Rightarrow 32 \text{ gm S}$

~~0.172~~ " " $\Rightarrow \frac{32}{233} \times 0.699$
~~0.699~~ " " $= 0.096 \text{ gm.}$

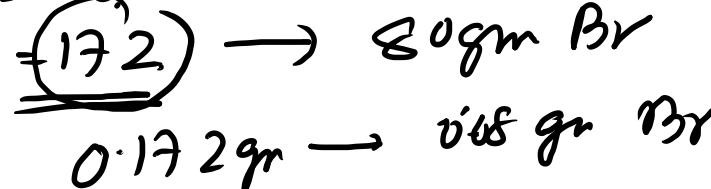
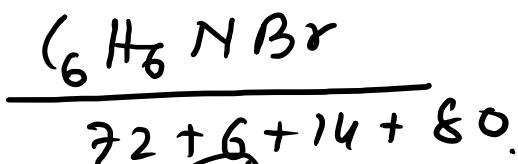
0.096 gm S $\rightarrow 0.48 \text{ gm.}$

100 "

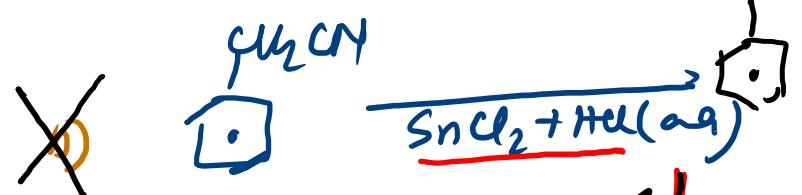
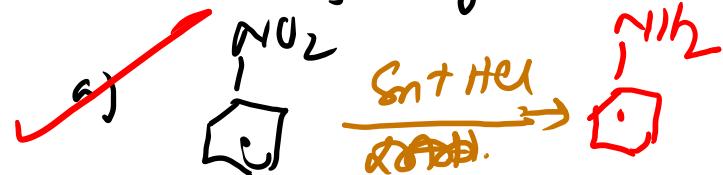
0.48 gm Sample $\Rightarrow 0.096 \text{ gm S}$

100 "

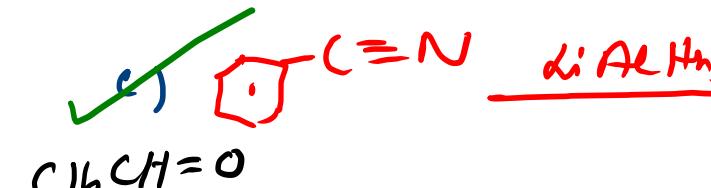
$\frac{0.096}{0.48} \times 100$
 $= 20 \%$



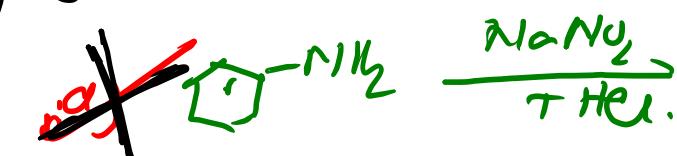
The Kjeldahl method of nitrogen estimation fails for which of the following reaction products.



a) a & d



c) a, c, d.



d) b & c.



i) Lucas test

ii) Dumas's Method

iii) Kjeldahl Method

iv) Hinsberg Test.

v) Gassing for Br.



i) $\rightarrow S$

ii) $\rightarrow R$

iii) $\rightarrow T$.

iv) $\rightarrow P$.

(v) $\equiv Q$.

- a) Phenelzine \rightarrow P) Pyrimidine ring.
- b) Chlorglycend. \rightarrow Furam ring.
- c) Urael. \rightarrow Hydazine
- e) Rani lidine \rightarrow S) Phenol system.
- d)

a \rightarrow R
b \rightarrow S
c \rightarrow P.
d \rightarrow Q.