



R. K. GROUP OF COLLEGE

BEHIND KALWAR POLICE STATION, KALWAR, JAIPUR (RAJ.)

CHEMISTRY



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21	Calculate conduct concentration.				
22	By the method of Kellary calc. of $KMnO_4$.				S. H. M. S.
23	Calculate Conc. of $K_2Cr_2O_7$ solution.				

Object:- formation of potassium di-oxalato di aqua chromate (III) $(K_2Cr(C_2O_4)_2 \cdot 2H_2O)$.

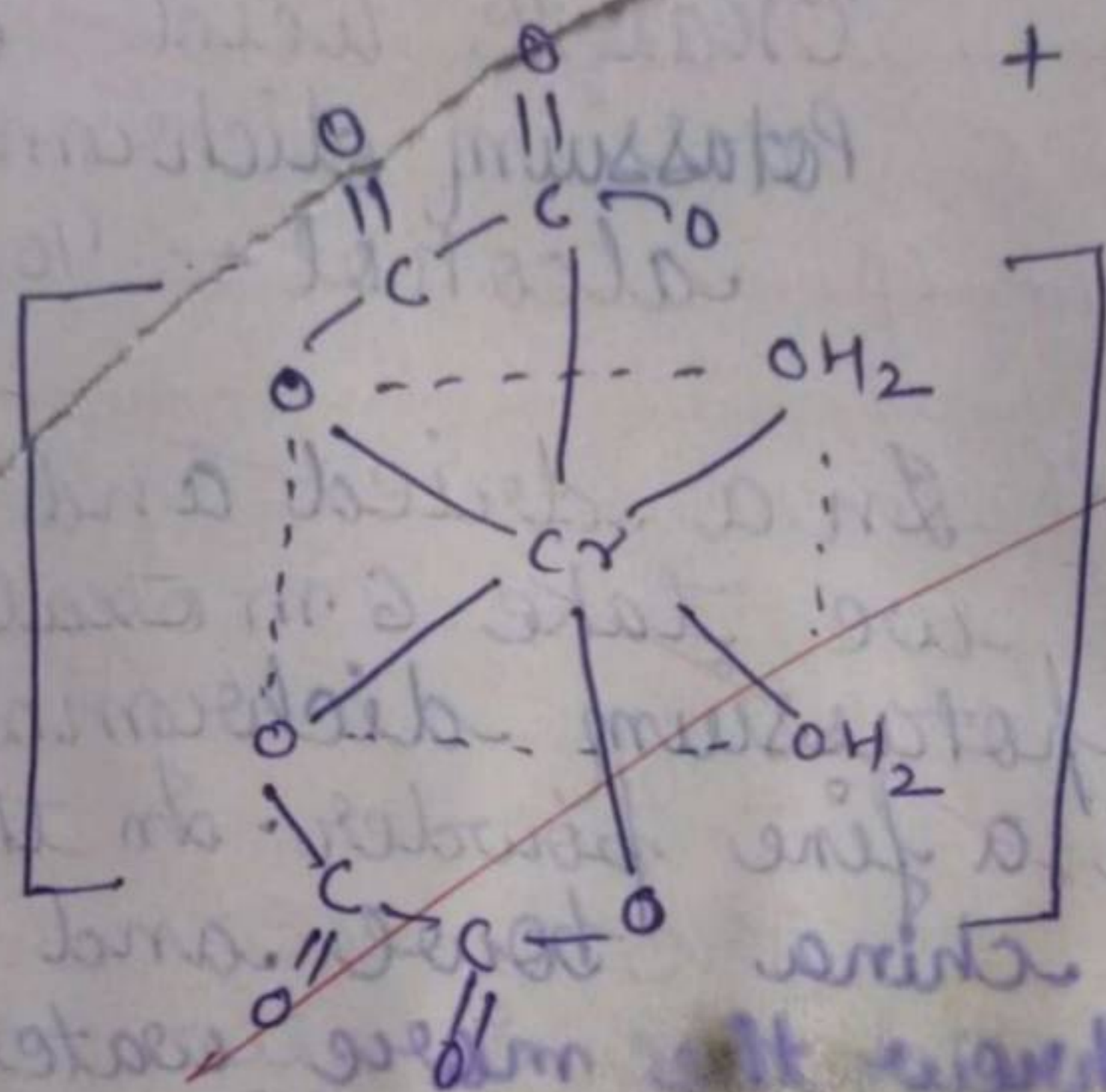
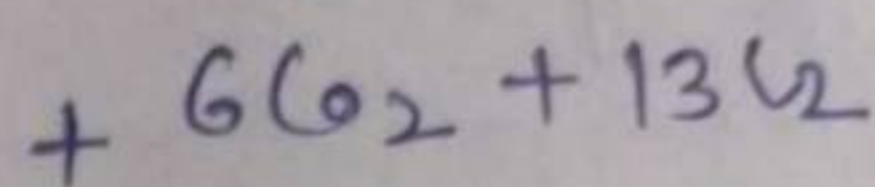
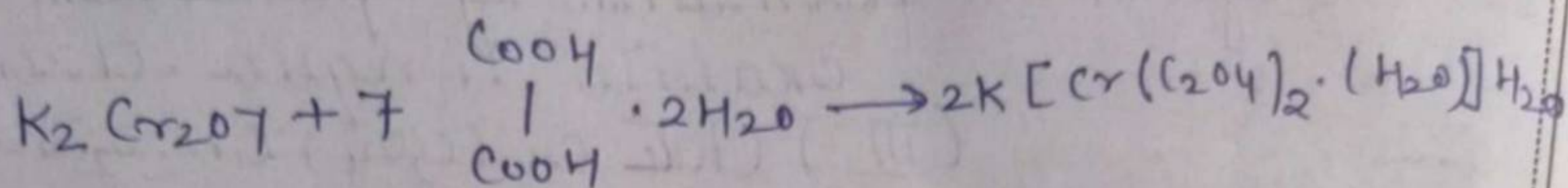
Reagent:-

Oxalic acid - 6gm

Potassium dichromate - 2gm

Alcohol - 40 g/ml.

Method:- In a dried and clean beaker we take 6 gm oxalic acid and 2 gm potassium dichromate and crush to make a fine powder. In this powder take a china bowl and wet this. and throw the more water. now this water cover with watch glass and heat it with low. when it substance heat then reaction is fastly. and with high smell the CO_2 gas removed. and this mixture converted into liquid dark colour. and this put out to burner and mix. 20ml alcohol the Spatula then to move. it makes a solid substance. if solid substances are not formed then this made liquid filtered and remaining solution put 20ml alcohol and mixed it in Spatula. For this substance make solid. and this moved and heat it.



In which crystals are formed. This crystals are dark pink black coloured.

Result :-

By above method the potassium di-oxalato diaqua chromate (III) obtained.

→ This is black coloured solution.

3.2gm produced

Precautions :- Beaker and flask both are checked and clean.

→ and heated the solution of china dish slowly. by which it does not blast

→

→ In hot solution the alcohol mixed time the burner should be closed. By which there is no risk of burn.

Silva
12/04/2021

Object: →

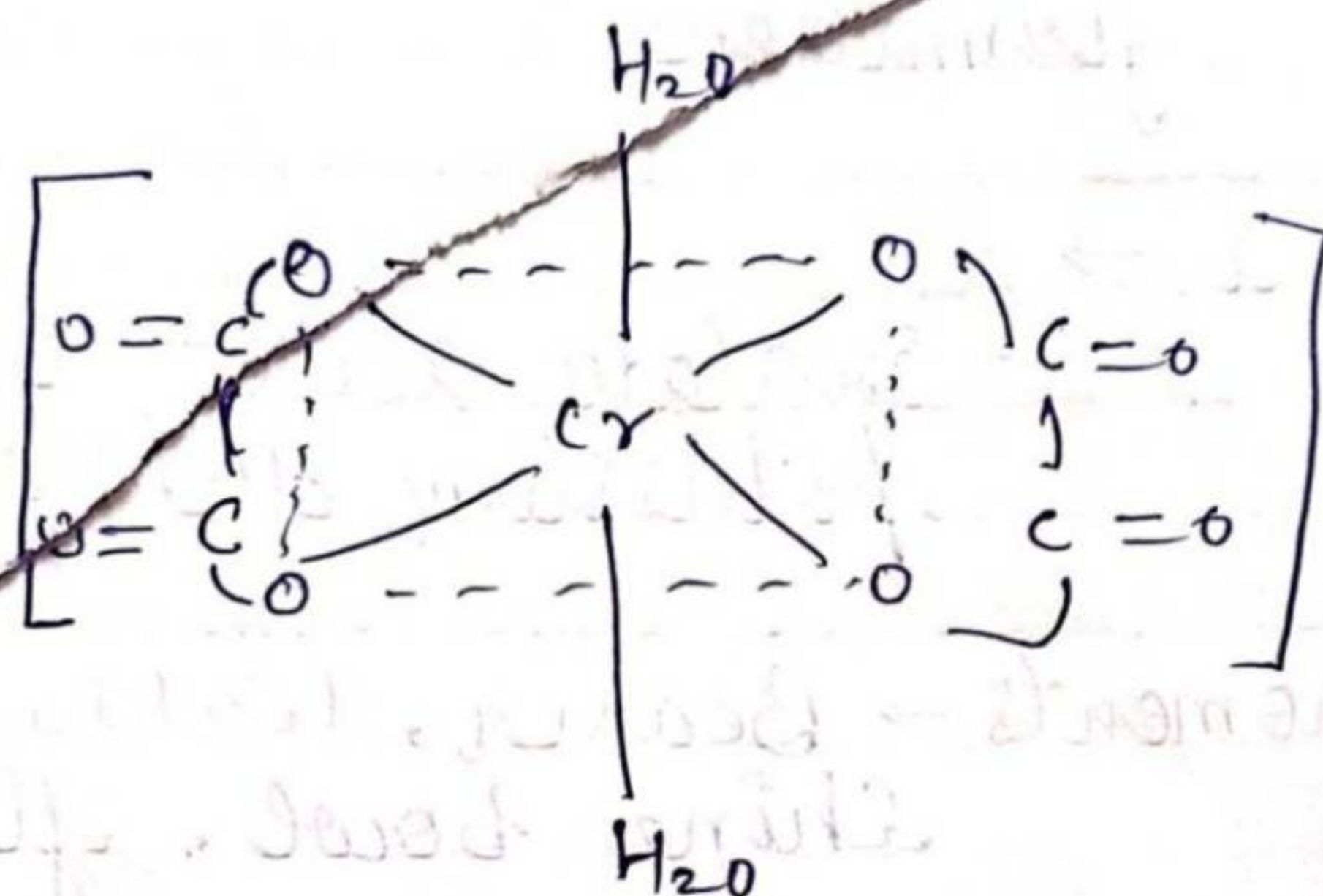
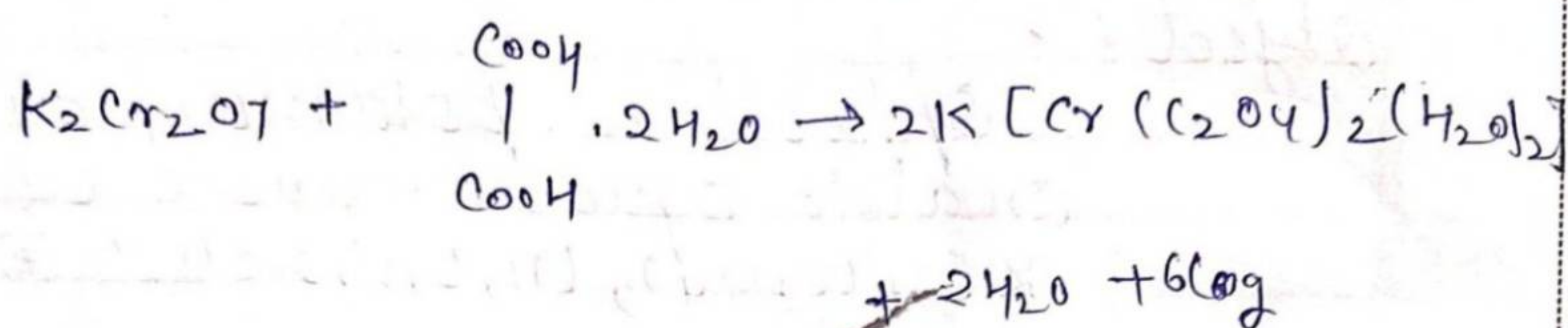
Opposition potassium di-
oxalato aqua chromate (III)
 $K[Cr(C_2O_4)_2(H_2O)_2] \cdot 2H_2O$ ~~and~~
formation.

Reagent →

Oxalate acid - 6gm
potassium dichromate - 2gm

Equipments → Beaker, watch glass,
China bowl, filtered pipe.

Method: → In a 250gm beaker mixed 6gm
oxalic acid and mix it with
lower amount and heat it. and
by this method in filtered tube we take
2gm potassium dichromate put in
and heat it. now this solution put it
in beaker and cover with watch glass.
because reaction is highly. now both
solution then mixed and make dark
colour liquid. And put it on china bowl
then in One third heat it. and Cold it
on room temperature. and crystals are
formed in china bowl. and Wash this
crystals with cold water. and in last alcohol



washed and crystals are formed of pink colour.

Result: $\rightarrow$ above method the opposition potassium di oxalato di - aqua Chromate (III) produced which colour is pink and light brown.

Wt: $\rightarrow$ 5.3 gm

Precaution: $\rightarrow$ beaker is cleaned and dried.

$\rightarrow$ china bowl substance heated with slow flame.

Object: $\rightarrow$ tetra-ammine copper sulphate
 $[\text{Cu}(\text{NH}_3)_4\text{SO}_4]$ formed.

Necessary Equipment $\rightarrow$

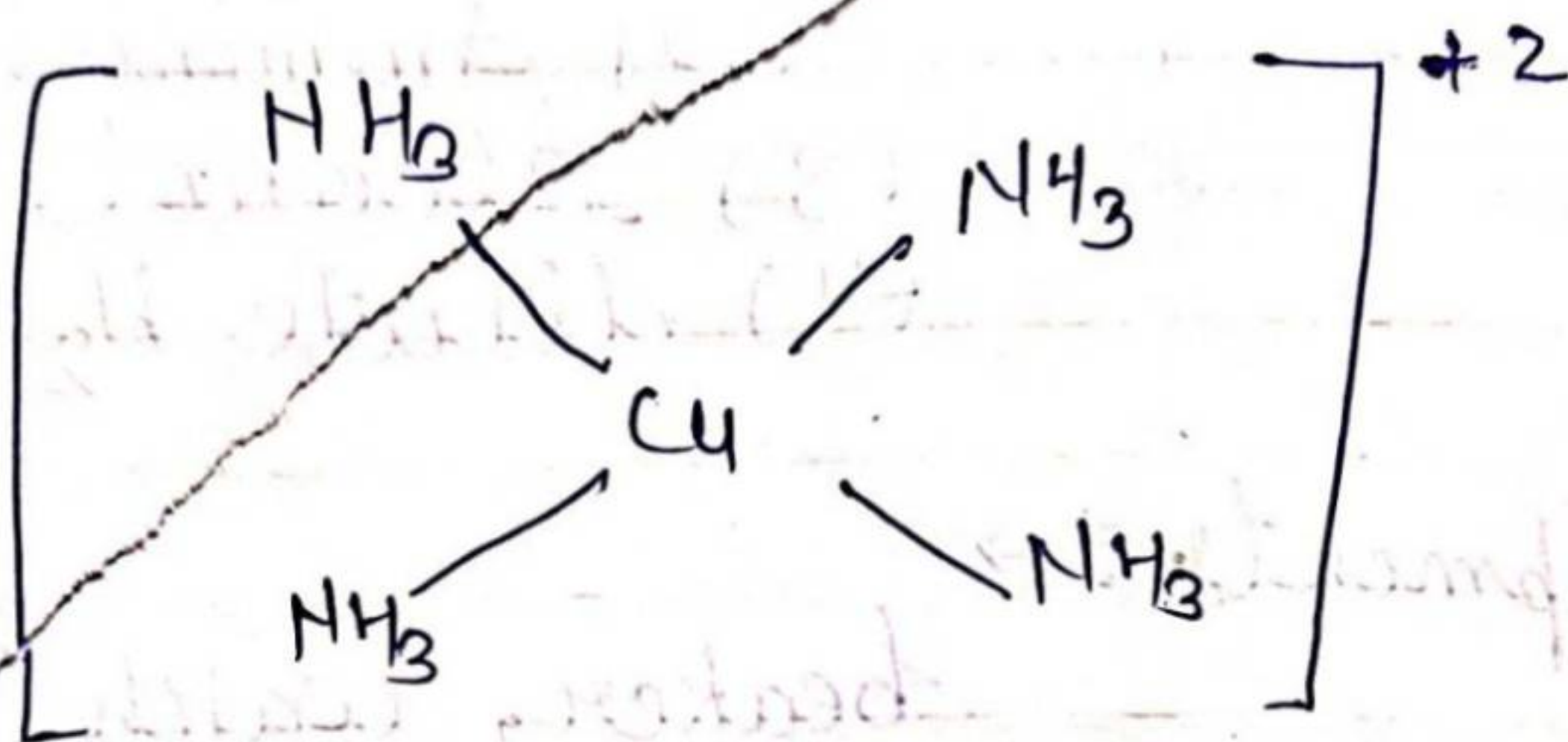
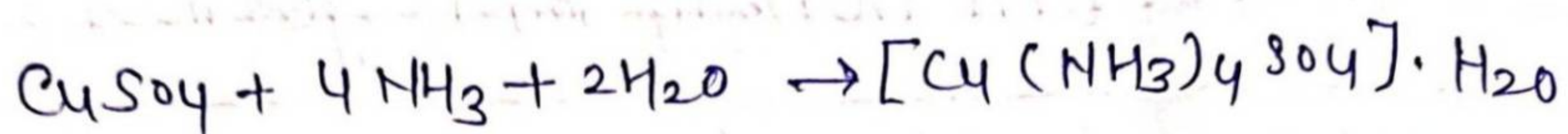
- (1) copper sulphate - 5 gm
- (2) ammonia beaker - 10 ml
- (3) alcohol - 40 ml
- (4) dilute H_2SO_4 - 1-2 drops

Equipments: $\rightarrow$

beaker, watch glass.

Method: $\rightarrow$ 3 gm copper sulphate powder
take in beaker and solved
in low amount of water. and
some drops mixed of H_2SO_4 .

- $\rightarrow$ Now, In this NH_3 solution ($\therefore$ 1) moved
regularly because cupric hydroxide
blue the solution becomes dark blue
coloured. and smell of NH_3 comes.
- $\rightarrow$ Now, this blue colour solution moved
regularly and put in beaker. after
this heat for 10-15 minute on 60°C -
 70°C . beaker cool and in this needle
shaped crystals are separated.
- $\rightarrow$ and dried in the filter paper
and separated.



tetraammine Copper (II)

Result: →

By above method diamine copper sulphate (II) obtained: which colour is blue.

Yield: → 4 gm.

Precaution: → beaker should be clean and dried.

Object :- nickel dimethylglyoxime
Complexn $[Ni(DMG)_2]$

Necessary Equipment :-

- (i) Nickel Chloride - 6g
- (ii) Dimethylglyoxime - 10%
- (iii) Ammonia solution - 1:1

Equipments :- Beaker, watch glass

Method :-

One 400ml. Beaker given
nickel sulphate 6 gm Heat at $72-80^\circ C$
and this solution put in 42-50ml.
Dimethylglyoxime. After this is
in solution. 1:1 ammonia solution
drop by drop in watch glass.

In Beaker the water. Heat at $20-30^\circ C$
the down dropped read clear sum
Dimethylglyoxime reagent mixed and
test it. that the solution is complete
or not. Beaker put for Half-Hour.
this is separated by funnel and
this is washed with water. two
three time. and in last the
solution of washed 5 ml. alcohol.

And added - it.

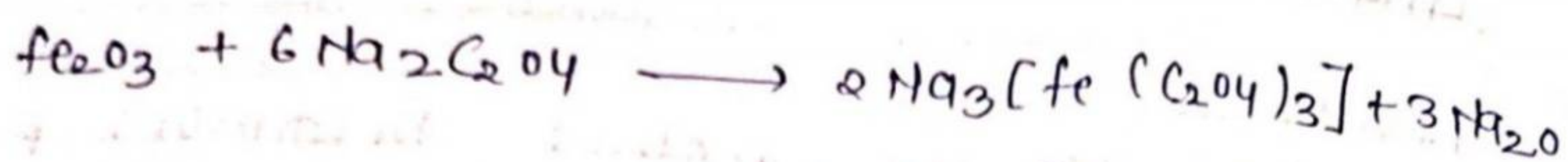
Result:-

above method Ni (DMG) prod
used Red Colour Solution.

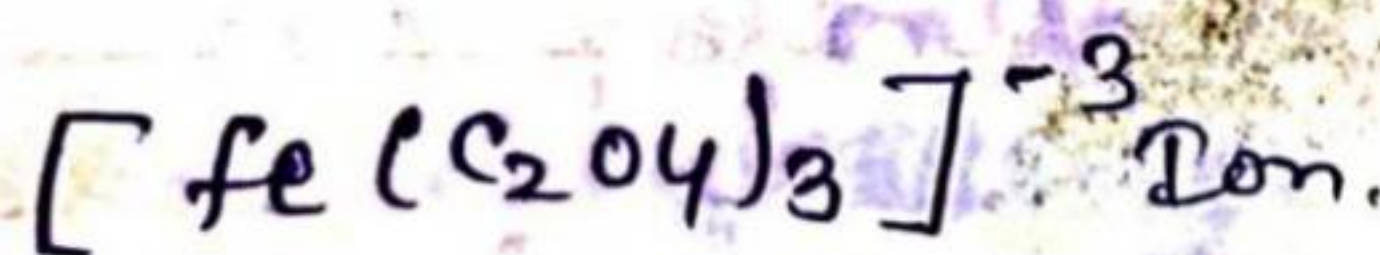
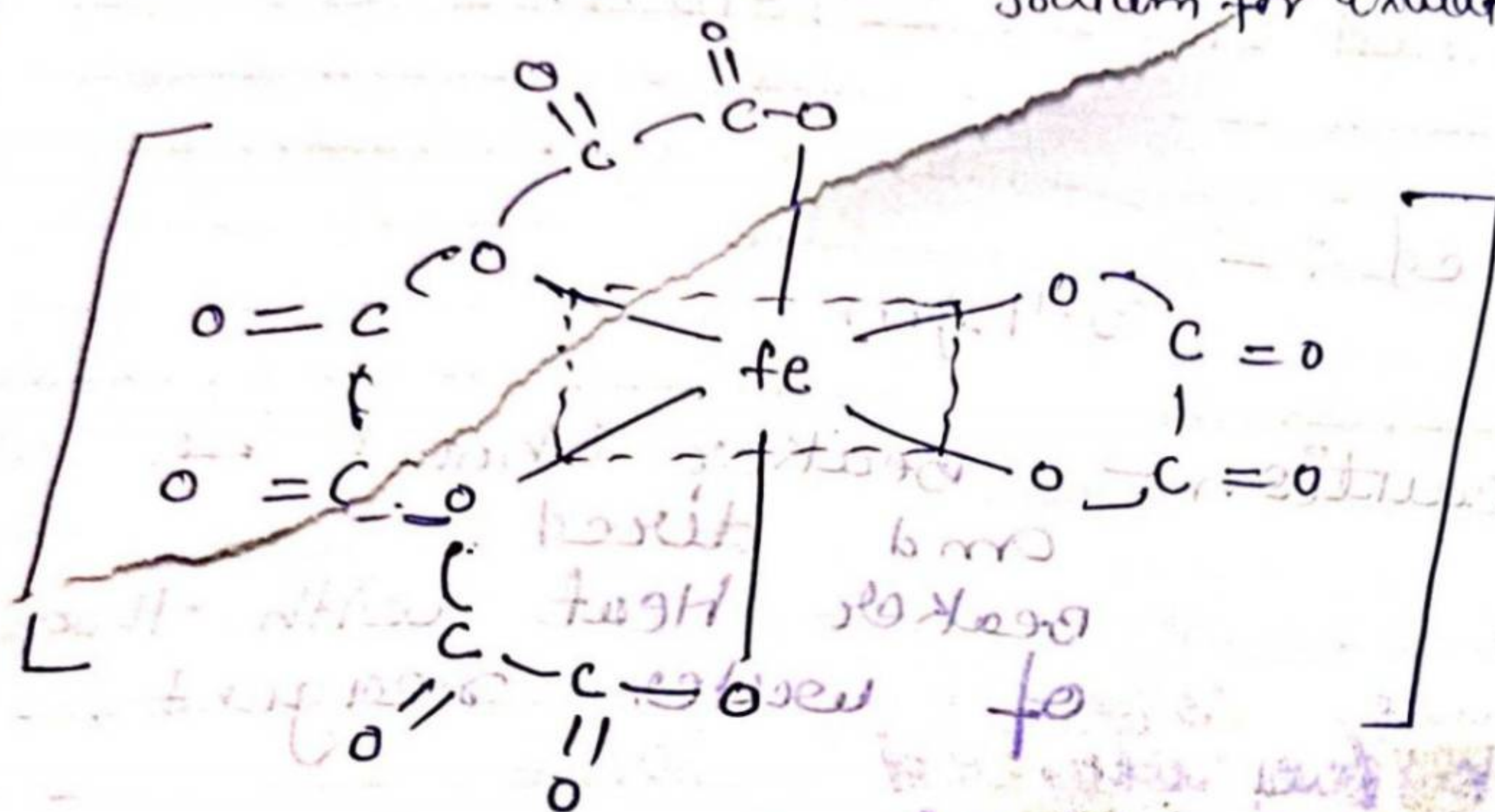
~~gained :-~~

3-4 gm

precaution - beaker should be clean
and dried.
beaker Heat with the help
of water reagent.



Sodium ferrioxalate



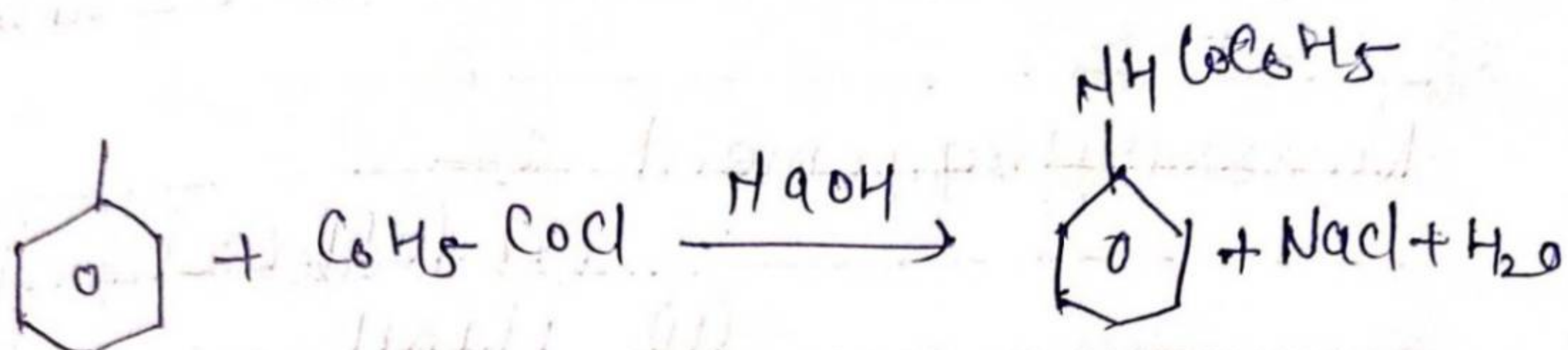
Object:- Sodium dioxafate (III)
 $\text{Na}_3[\text{Fe}(\text{C}_2\text{O}_4)_3]$ formation

Necessary Equipment :-

- ① ferric chloride 10 gm
- ② NaOH - 12 gm
- ③ oxalic acid - 12 gm

Necessary Equipment :- Beaker and glass.

Method:-> In a beaker 10 gm ferric chloride 10 ml water 3 gm NaOH 5 ml H_2O mixed now ferric chloride solution mixed in few amount of NaOH solution then ferric hydroxide is produce. Now one another Beaker mixed 12 gm oxalic acid in this solution two mixed 9 gm NaOH oxalate solution produce now with the help of glass rod the water solution mixed in ferric hydroxide solution and heat it. Now this solution filtered and cooled and filtered. the filtered cooled water and alcohol put for 2-3 days.



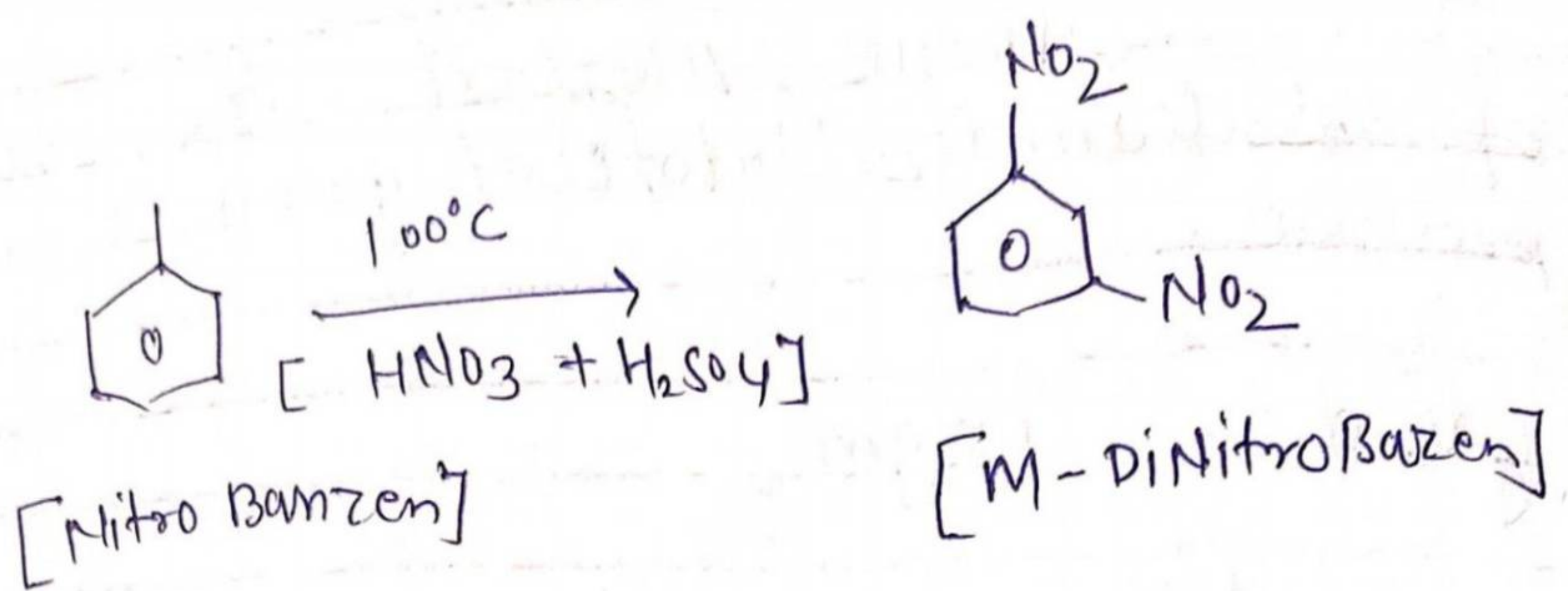
Result :-

Above method the crystal of Isosaccharindioxylutiferat green colour produce.

Yield :- 15 gm

precaution :-

The Beaker should be cleaned properly.



Object:-

preparation of benzaldehyde from aniline.

Necessary reagent:-

- (1) aniline - 5 ml
- (2) 10% NaOH solution 15 ml
- (3) 100 ml Benzoyl chloride

Equipment:- 250 ml conical flask, Beaker keep.

Method :-

250 ml conical flask mixed 5 ml aniline and 15 ml 10% NaOH solution and 100 ml Benzoyl chloride. mixed on the flask the clock move it for 15-20 min. Benzaldehyde washed with distilled water and dried the product. after it heat 100°C and mixed alcohol/crystal. By this method pure benzaldehyde be separated.

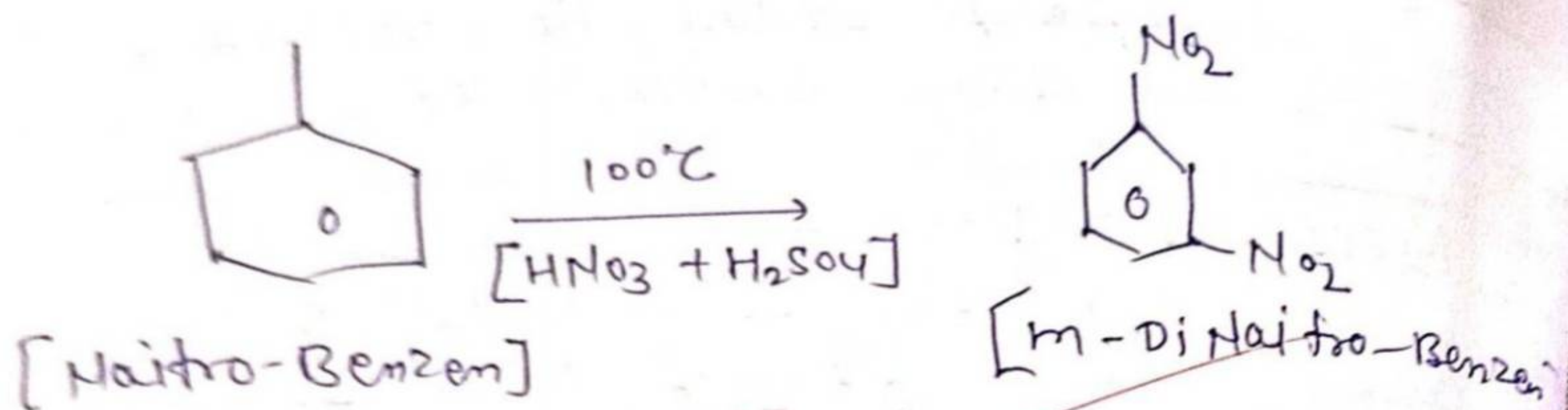
Result:- By this method Benzaldehyde produced.

physical state:- white crystal solid substance

yield:- 8 gm

melting point - 165°C

Teacher's Signature.....



Object:- preparation of m-dinitro Benzene from Nitro Benzene

Useful Reagent:-

Nitro-Benzene 5ml
 Conc H_2SO_4 - 15ml
 Conc HNO_3 - 15ml
 Alcohol

Equipment :- 10ml Round Steel
 flasks air mixed and
 250ml Beaker

Method:- In 100ml Round flask
 Shaped Beaker 15ml Conc
 HNO_3 in this 15ml Conc H_2SO_4
 mixed and moved and the flask
 Be Cold in this Nitritication
 mixture the 5ml Nitro Benzene mixed
 in flask. after this in flask 4-5 small
 fresh of water able mixed in
 4 One Hours. Now flask mixer.
 Be Cold and one 250ml Beaker
 put sum ice. m-Dinitro Benzene is
 a yellow solid. and it dried
 with the Help of filter paper and
 test melting-point

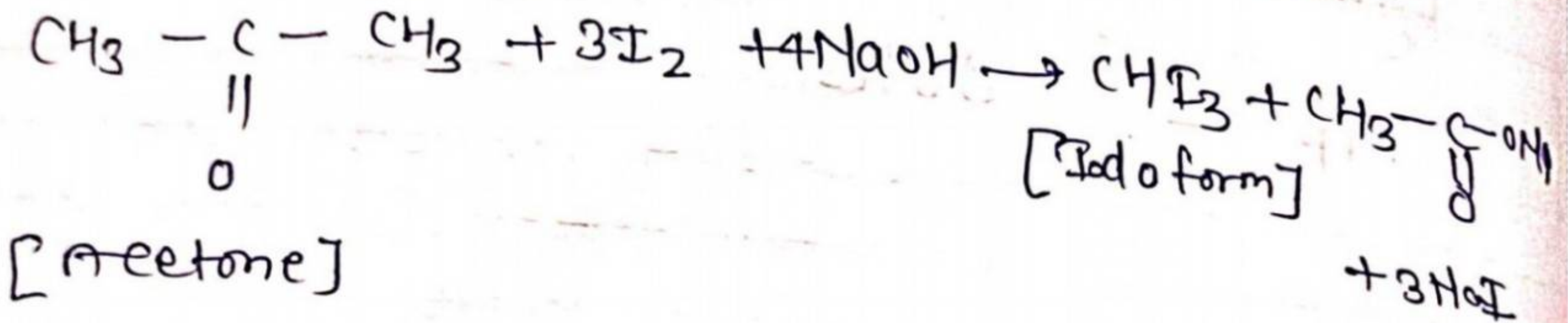
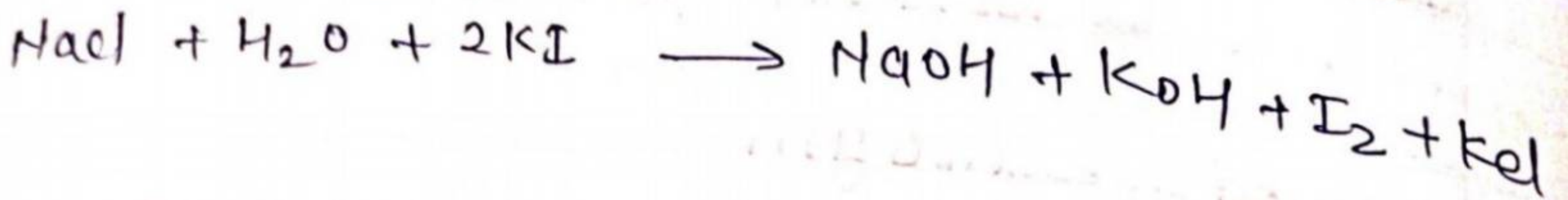
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DATE

Result:- By above method M-Dinitro
Benzene produced.

gained:- 6.0 gm

M.p :- 90°C



Object :- preparation of iodoform from acetone

Useful Reagent :- ① acetone - 20ml
 ② KI - 6gm - 100ml
 ③ 5% Na-Hypochlorite - Solid

Equipment :- 250ml flask, keep

Method :- In a 250ml flask take 20ml acetone 6gm potassium Chloride put and it mixed in 80-100ml water. Now this mixed solution and 5% Na-Hypochlorite - solution of Iodoform on this mixed iodoform make yellow crystal. in which Hypochlorite solution mix and iodoform yellow crystal be separated the flask put for 15-20 mint. Now iodoform be separated by funnel and washed with water and dry with filter paper this solid yellow substance crystallized by ethanol methylated spirit.

Result :- About reagent make formation of Iodoform.

physical state :- solid yellow colour solid crystal.

gained :- 3-4gm

m.p $\rightarrow$ 120-122 $^{\circ}\text{C}$

Object:- preparation of methyl orange from Sulphonic acid.

Useful Reagent:-

- ① Sulphonic acid - 5 gm ② dehydrated H₂O 2 gm
 ③ Sodium nitrite - 2 gm ④ Dimethyl aniline - 3 gm
 ⑤ Conc - HCl ⑥ Dil - HCl - 15 ml
 ⑦ Sodium chloride ⑧ 20% NaOH solution - 20 ml
 ⑨ Ice ⑩ useful

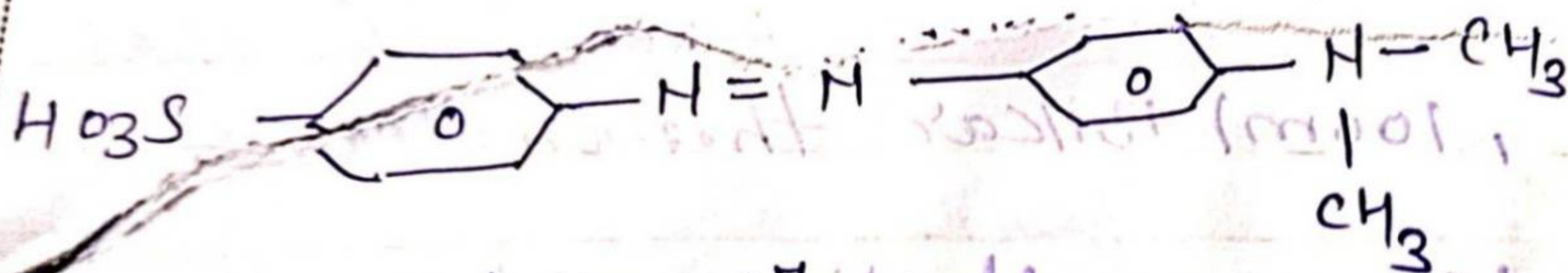
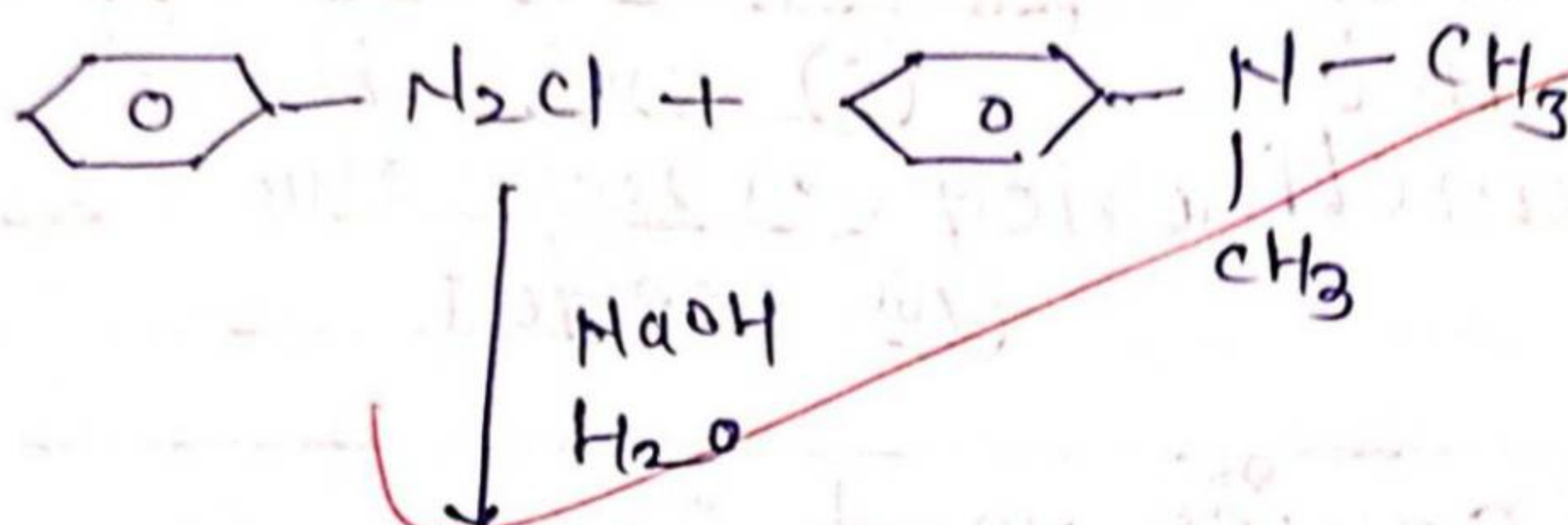
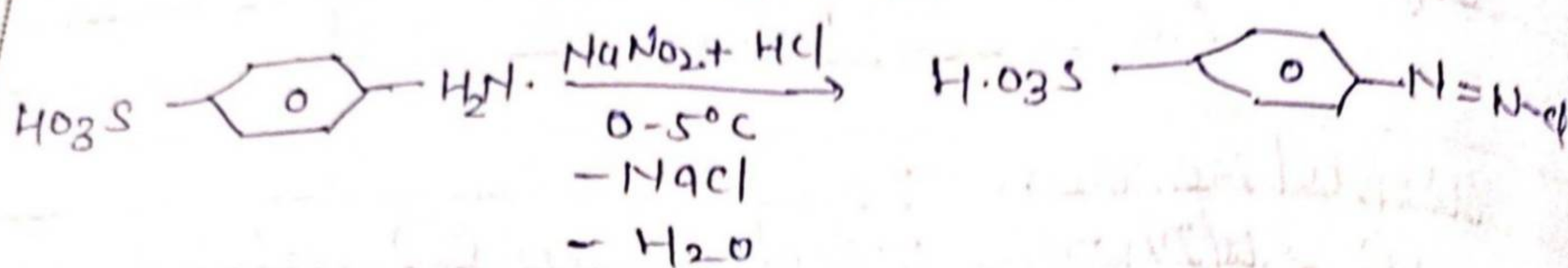
Useful equipment :-

250 ml Conical flask, 100 ml Beker thermometer

Method:- 5 gm methyl orange acid and 2 gm D-Hydroxy NaO₂ put in flask and make a solution in 5 ml water. In this 2 gm Na nitrite and 10 ml solution in water. By this method solution produced 0.25 °C cold and put in flask in this 8 ml dil HCl mixed solution. The yellow color temperature 10 °C Not be increased.

- One another Beker 3 ml Dimethyl aniline and 15 ml Conc HCl solution and cobalt

- This solution the above mixed movement is stable and mixture moved four times



[methylorange]

In this 25 ml 20% NaOH solution 6 gm NaCl mixed and moved, solid solution filter and wash with cool water this solid substance on crystallisation the hot water produced orange colour crystals produced which are filter and dry with the help of filter-paper. By which methel orange is a salt and this mp is not confirmed.

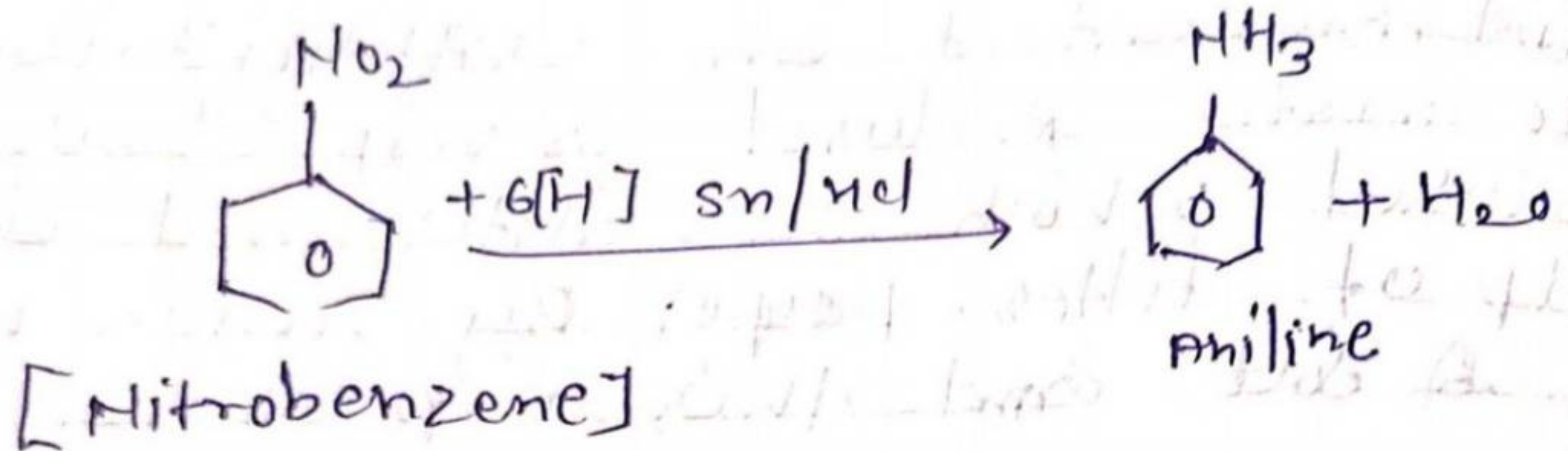
Result:- By above method methel orange produced.

Physical State :-

Dark orange red colour crystals

gained :- 6.0 gm.

Redn:-



Object:- preparation of Aniline from Nitrobenzene.

Useful Reagent:- (i) Nitrobenzene 5ml

(ii) Tartine 10gm

(iii) Conc-HCl - 20ml

(iv) Na Hydroxide - 15gm

Equipment:- Round Conical flask 250ml
point keep wear and other
necessary equipment.

Method:-

In a flask 5ml Nitrobenzene and 10gm ~~to~~ Crystal tin took. Now in this move with fastley turn 20ml Conc-HCl mixed and cool it after this mixture this Heat with one H₂O₂. it H₂O₂ while the smell of Nitrobenzene coming. Now in this NaOH solution and cool it and mixed water move it by which the aniline droplets be separated the point separated by keep or Aniline also separated.

Result:-

above method Aniline produced.

physical state:-

Colourless liquid.

gained:-

0.4ml

m.p:- 183°C

Object :-

In given organic mixture separated the organic compounds and identified the compound A and B and derived.

1. Starting Test :-

Physical state - Base
 Colour - colourless
 Smell - odourless smell
 Solubility - insoluble in water.

Testing Table :- Test for compound 'A'

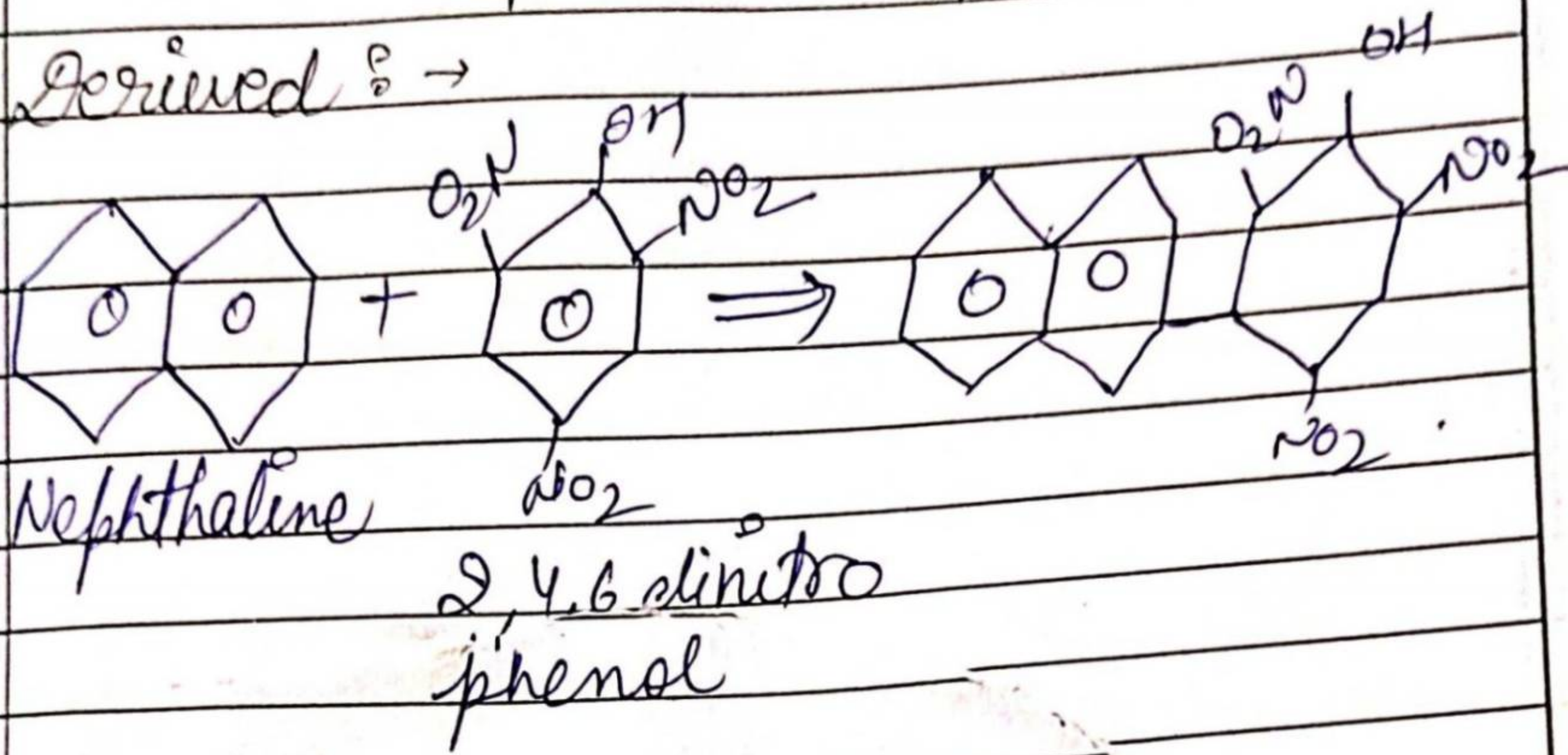
S.No	Experiment	Test	Result
2.	Flame Test :- To burn the take small amount of substance	It burns with smog flame.	This is aromatic compound.
3.	Litmus Test :- Component + red litmus paper	is change	Compound is indifferent.

Teacher's Signature.....

4.	Element Test:-		
(i)	Red acetate benzene solution + $(\text{CH}_3\text{COO})_2\text{Pb}$. (lead acetate).	Black colour is not pro. duced.	Sulphur is absent.
(ii)	Sodium nitroide + benzene solution + $\text{Na}_2\text{Fe}(\text{CN})_2\text{NO}$	Violet colour is not produced.	S- Absent
(C)	Helogen Test: - benzene solution + dil HNO_3 + and cool AgNO_3 .	Yellow & white precipitate is not prod.	X - Absent
5.	Functional group Test: - Compound + dehydrate AlCl_3 + dried $\text{CHCl}_3 + \Delta$.	green yell colour obtained.	C_{10}H_8 may be Naphthalene.
6.	M.P.	79°C obtain	C_{10}H_8 maybe
7.	Special test of Compound: -		
(1)	Compound + KMnO_4 solid + $\text{Con. H}_2\text{SO}_4$ + Δ + Recocinol + Δ + NaOH + sol ⁿ .	green precipitate produced	May be confirmed C_{10}H_8 .

111)	Compound + $\text{CHCl}_3 + \text{AlCl}_3$ dehydrate	green colour present	C_{10}H_8 confirmed.
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Derived :- $\rightarrow$



Test for compound 'B'.

1. Primary Test:-

Physical state - solid
 Smell - smellless
 Colour - colourless
 Solubility - soluble in water.

Testing table:-

S.No.	Experiment	Test	Result.
2.	Flame Test:- The small amount of	Organic comp. burn with smokeless	Organic compound is aliphatic

Subst. take in test tube & heat it

flame Teacher's Signature.....

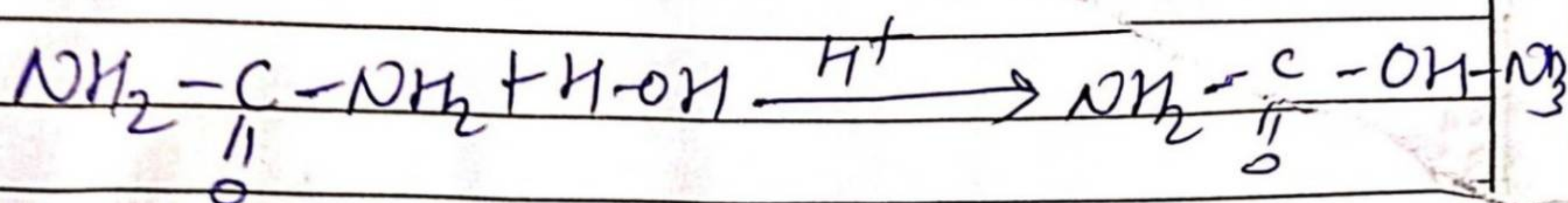


3.	Litmus Test → comp. + Red litmus in Blue litmus	No changes	Compound is Indiff- erent.
4.	Element Tests		
(a)	N ₂ Test → lamane sol. + FeSO ₄ (Pure) + FeCl ₃ + di HCl.	produced blue colour solution	Nitrogen absent.
(b)	Sulphur Test: - CH ₃ COOH + lamane sol. + (CH ₃ CO) ₂ Pb	black preci- -pitate obtained.	Sulphur is absent
(c)	Halogen Test: - lamane sol. + dil HNO ₃ + Δ + cool + AgNO ₃	white & yellow preci. obtained.	
5.	Functional group Test: - Main subst. + dil HCl + NaNH ₂ on mixed solution	more smell produced.	NH ₂ - C(=O) - NH ₂ group.

6.	Melting Point	130°C	$\text{NH}_2 - \underset{\text{O}}{\underset{ }{\text{C}}} - \text{NH}_2$
7.	Compound Test		
	Compound + NaOH + Δ + dil CuSO ₄	purple colour	$\text{NH}_2 - \underset{\text{O}}{\underset{ }{\text{C}}} - \text{NH}_2$ confirmed.

Derivate of Urea:-

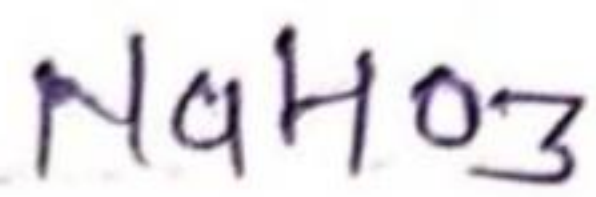
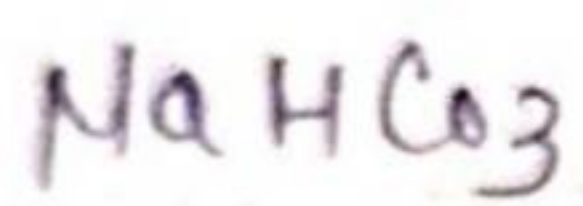
On water decomposition produced derivate:-



Result:-> In given organic mixture to separate organic compound the group A - Nephthaline
B - Urea produced.

Melting Point:- 79°C and 13°C produced and derivate of Nephthaline is private.

Mixture



[A]

[B]

Object: → In given organic mixture be separate the organic compound and identify the compound A and B and derivate one out of two.

Test for compound 'A'.

1. Primary State: -

Physical state - solid

Colour - colourless

Smell - odourless smell

Solubility - Insoluble in water

Table: -

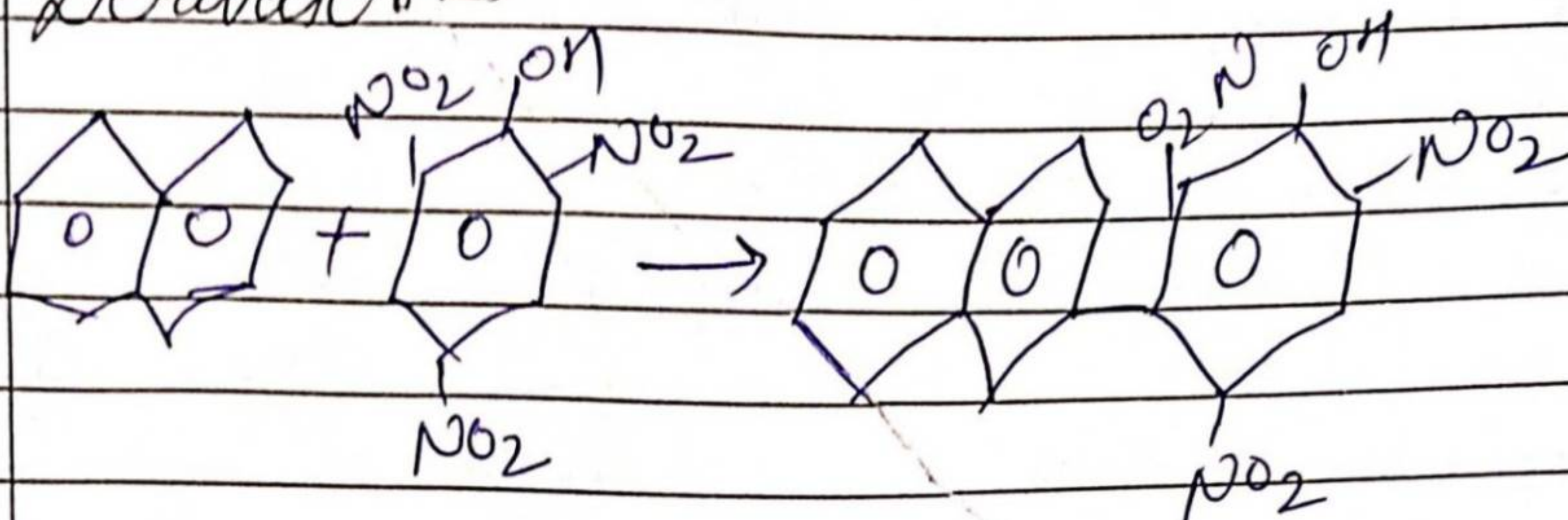
S. No.	Experiment	Test	Result
1.	Flame Test: - Take compound on spatula and burn it.	compound burn with smoke flame.	Aromatic compound.
2.	Litmus Test: - compound + Red / blue litmus paper	No Reaction	Compound is derivate.

4.	Elementary Test		
(a)	N_2 -test + Lem- -ane solution + $FeCl_3$ + dil HCl.	NO Reaction	Nitrogen absent.
(b)	Sulphur test/ Lead acetate Test CH_3COOH + Lemane solution + $(CH_3COO)_2 Pb$	NO Reaction	Sulphur absent.
(c)	Halogen Test? - Lemane sol. + dil HNO_3 + cool + $AgNO_3$	NO Rx ⁿ .	X - Absent.
5.	Functional group Test :- Compound + dehy. $AlCl_3$ + $CHCl_3$.	green / yell -one colour.	may be Nephtalin
6.	Special Test of compound :- Compound + $KMnO_4$ (solid) + con. H_2SO_4 + Δ + NaOH solution.	green precipitate obtained.	May be $C_{10}H_8$.

ii

Compound +
 $\text{CHCl}_3 + \text{FeCl}_3$ green colour
produced. C_{10}H_8
confirmed.

8.

Derivate $\rightarrow$ 

Test for compound - 'K'

1. Primary Test $\rightarrow$

Physical state - Solid

Smell - odourless

colour - colourless

Solubility - soluble in
 NaHCO_3 .

Table:-

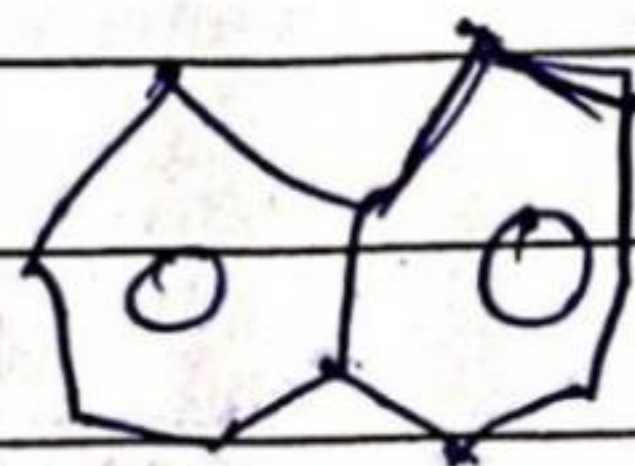
S.No.	Flame Test:	Test	Result.
	To burn Compound on Spetulla	Compound burn with smoke flame.	compound nature is aromatic.

Litmus Test - Comp. + Red/Blue litmus paper.	Turns blue litmus into Red litmus.	may be carboxylic acid.
Elementary Test:-		
4. Nitrogen Test → Lamane sol. + pure FeSO ₄ + FeCl ₃ + dil HCl.	No Rxn	Nitrogen is absent.
5. Sulphur Test:- CH ₃ COOH + Lamane solution + (CH ₃ COO) ₂ Pb.	No Rxn.	Sulphur absent.
6. Halogen Test:- Lamane sol. + dil HNO ₃ + Cool it + mixed AgNO ₃ .	No Rxn.	X - Absent.
5. Functional group Test:- Comp. + ethyl alcohol + Conc. H ₂ SO ₄ + Δ + Cool + H ₂ O	Smell like fruits	may be carboxylic acid.

6.	Melting Point	159°C	
7.	Special test of compound →		
	Comp. + H ₂ O + FeCl ₃	dark violet colour obt.	HOC ₆ H ₄ COOH may be.
→	Compound + CH ₃ -OH + Conc. H ₂ SO ₄ + Δ + cooled + water.	Smell like wintergreen oil.	HOC ₆ H ₄ COOH is confirmed (red colour).

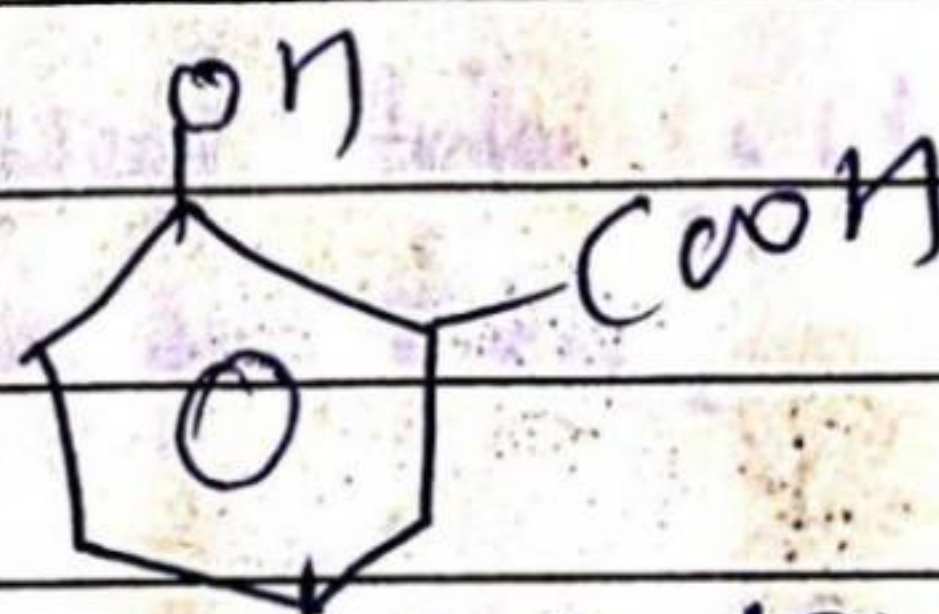
Result: → In given organic mixture the compound A and B is obtained.

Compound A →



Naphthalene

Compound B →



(Saliphatie acid).

Object? →

In given mixture separate organic compound and identify A and B compound and derivate one out of two compound - "A"

Primary test - physical state - Solid

Colour - Colourless

Smell - Smellless

Solubility - NaOH solubial

Test table:-

S.N.	Expt.	Test	Result
2.	Flame test		
	Comp. take in Sp. tube and Heat in fire.	flame with smoke.	Aromatic Compound.
3.	Litmus test		
	Comp + Red/Blue litmus paper.	Blue litmus change into Red.	Compound is Acidic.
4.	Element test		
	(a) Nitrogen test		
	Lamara solt + pure FeSO ₄ + FeCl ₃ soln + dil + HCl	Blue and green colour not obtain	N - Absent

Halogen test

Remana Solⁿ Dil + AgNO₃ + Heat + Cool + AgNO₃ mixed	Whit / Yello precip. is Not obtain.	x^o Absent
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5. Functional group test

(1) test of Alcohol

Alcoholic Solution + FeCl₃	Violet Colour is produced.	OH group present.
--	---------------------------------------	------------------------------

→ Comp + Hytamic acid + Conc H₂SO₄	green Colour produced	B- Nephthaline may be.
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→ Comp + NaNO₃ + A + dil H₂SO₄	green Colour produced	B- Nephthaline may be.
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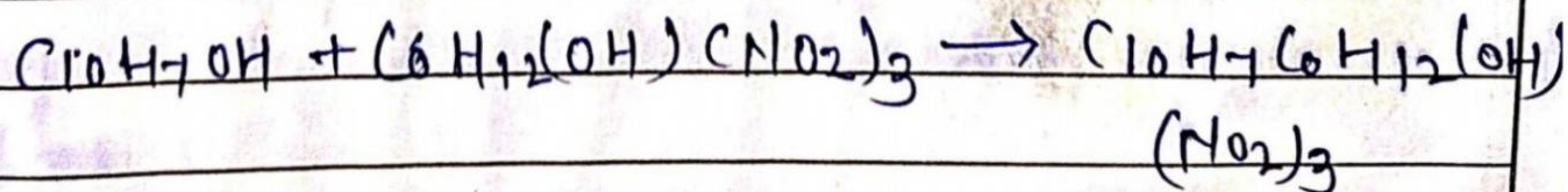
6. m.p	123° C	B- Nep. may be
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7. Special test of Comp.

Comp + H₂O + FeCl₃	milky / Whit	B- Nephthaline
Comp + KOH + CHCl₃	Blue Colour	is confirmed
Comp + I₂ + NaOH + Solⁿ	violet Colour	B- Nephthalon

8.

Derivative



Test Compound — "B"

1. primary test

physical state — Solid

Colour — Colourless

Smell — Alcoholic

Solubility — NaOH Soluble

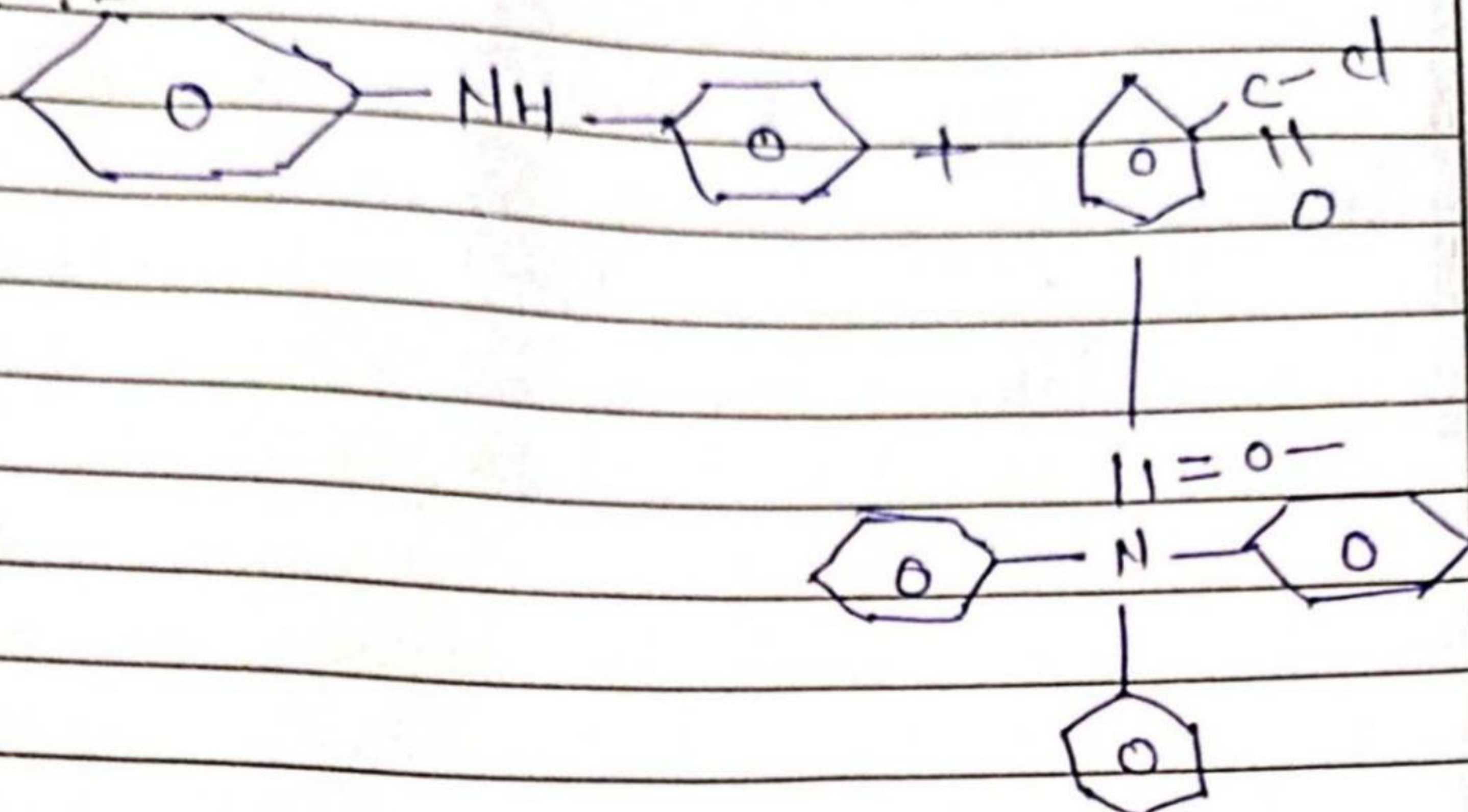
Table

S.No.	EXPT.	Test	Result.
	Comp. take in Spetulla and Heat.	Buten with smook flame	Aromatic Comp.
3.	litmus test		
	Comp + Red + Blue litmus paper	Red litmus Change in Blue.	Comp. is Basic
4.	Elementary test		
(a)	N- test		
	lemansoln + pale green + FeCl ₃ + Dil HCl	Blue Colour obtain	N- present
(b)	Sulphur test		
	Lead acetate test	Black preci. Not obtain	S - Absent.
	CH ₃ COOH + lemansoln		
	CH ₃ COOXpB		
	M.p	536°C	
6.	Spe. test of compound	Dark Blue colour	Di-phenyl Amine
	Comp + CONC. H ₂ SO ₄ + Ag.	Soln + is produced	Confirmed

NaNO₂

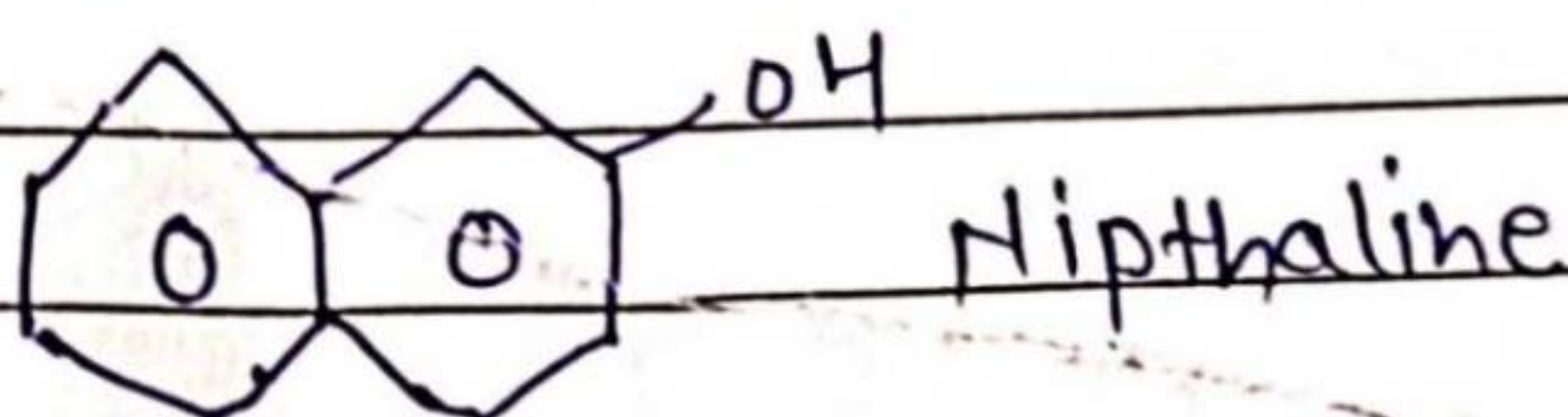
Teacher's Signature.....

Derivate 1-

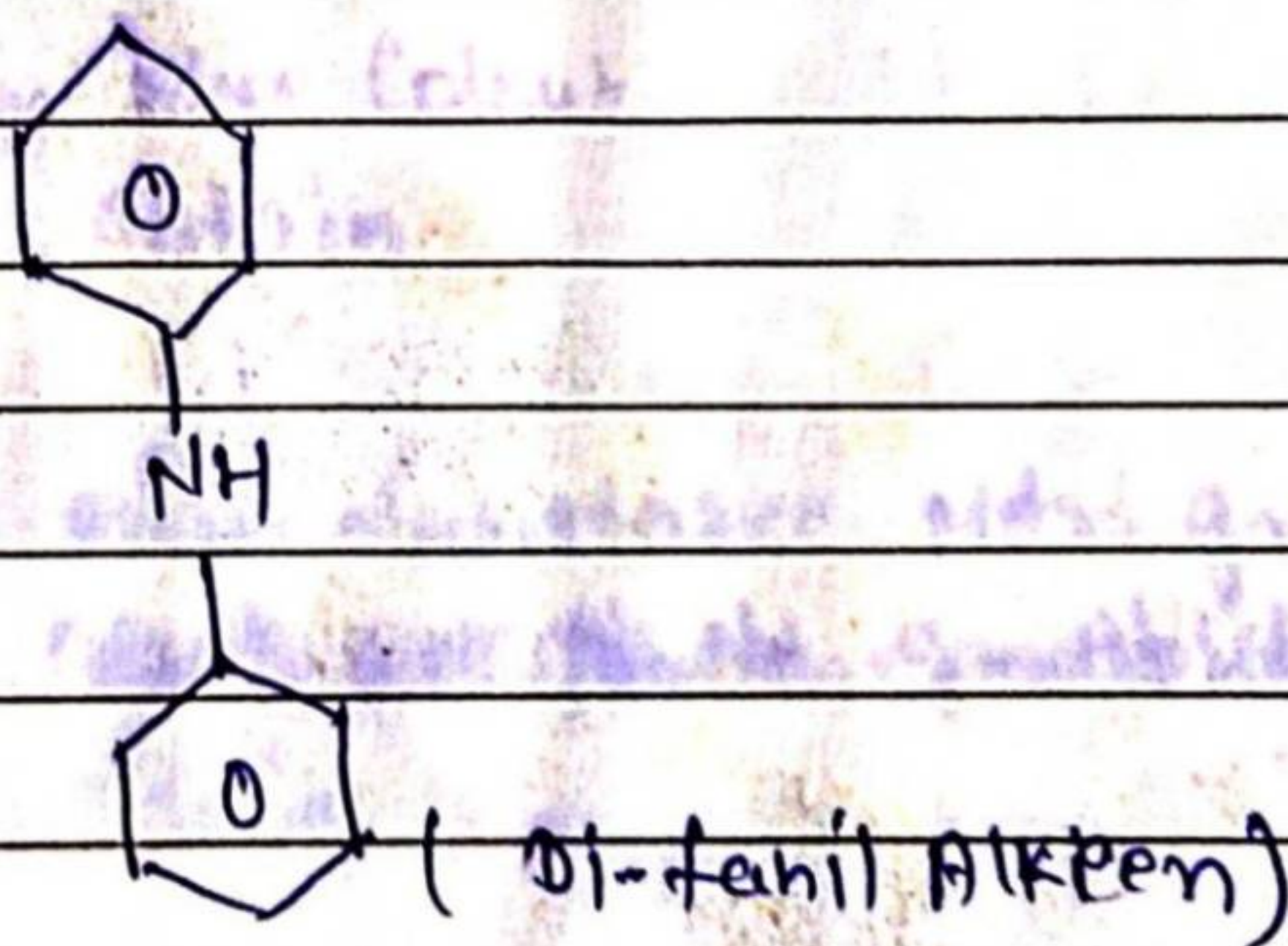


Result :-

Compound A -



Compound B -



Teacher's Signature.....

Object :- In given mixture find organic Compound.

Equipment :-

Test tube, Bikal, Holder, Conical flask etc.

Comp "A" →

Colour - light yellow colour

Smell - Bitter Almond like sm

Nature - Derivate

flametest Burn with smoke so it is aromatic com

Expt. table

S.No.	Expt.	Test	Result
1.	Nitrogen Expt.		
	Lamen Soln + Es peranto	persian blue	N - Absent
	Burn FeSO ₄ + NaOH + HCl	Colour Not formed	
2.	functional test		
	Nitro compound test		
	Two ml Alcohol took.	main substance	Nitro group is
	in compound + some	is black / Brown	present.
	drop of 10% CaCl ₂ +	Colour	
	Heat + Cool + Reagent		
3.	M.p.	114°C	m - Di - Nitro
			Benzen may
			be.

organic Comp. test

→ Comp + NaOH + Heat

Red Brown Colour

m-Di Nitro

- Comp + Dil NaOH + Heat

produced

Benzene Comp

glucose

violet colour

m-Di Nitro Ben

Comp - B

primary ester.

Colour - Colourless

Smell - Smellless

Nature - peroxide

flame test - Burn Not with smoke

So it is Aliphatic

Table Test

S.No	Expt.	Test	Result
1.	Nitrogen group test		
	Ammonia Soln + Espen	persian Blue	N - absent.
	to Burn +	Colour Not	
	FeSO ₄ Soln + NaOH	formed.	
	HCl		
2.	functional test		
(a)	-COOH Group test		
	L.S Soln + Espen Burn	CO ₂ gas Not	-COOH group
	FeSO ₄ Soln + NaOH + HCl	Removed	Absent.
	5% NaOH Soln		
(b)	final group test		
	Comp. Caustic Soln.	Violet Colour	OH Group
	+ FeCl ₃ include	not produced	Absent.

Teacher's Signature.....

Carbonic Group Test

two - four drop Di-Nitro
fertil in Subsententia

Reagent

yellow prec.
is Not producedCarbonile -
Absent.

Carbohydrate test

Comp. water solⁿ + 2ml
+ 0.5gm + lead + acet
ate + Heat + 5ml NH₄
OH solⁿ + 2 min.Pink colour
produced

CarbHydred

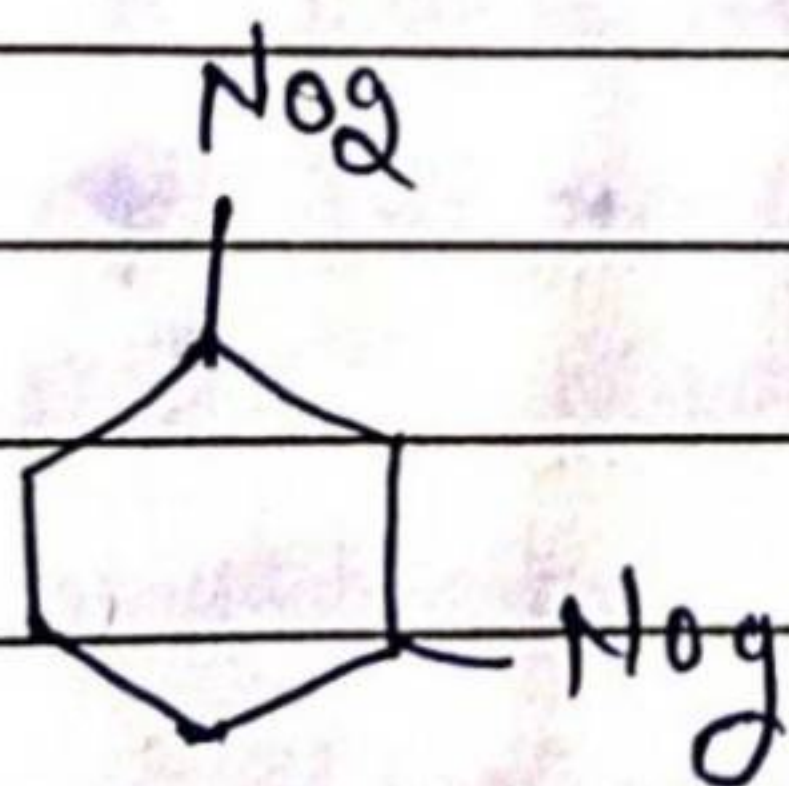
m.p.

25°C

Compound + ferri solⁿ
2 min + Heat25°C. Red colour
producedD-glucose
is presentBarfoid Reagent + 2min
Heatred colour
precip obtain.D-glucose
Conformed.Result :- Given mixture M-DiNitro Comp
and D-glucose Comp. is present.

Comp "A"

Comp "B"



D-glucose

C₆H₁₂O₆

[M-DiNitrobenzene]

Teacher's Signature.....

Object:- In given mixture identified organic compound.

Equipment:-

Test tube, Beker, Holder,
Conical flask etc.

Comp "A"

1. primary test :-

physical state - Solid

Colour - Cream Colour

Smell - Smell less

Nature - Acidic

flame test - Fungus smoke

Burn so it is

aromatic comp.

Table Test

Expt. Test

Test

Result

N-Test

Lemong Solⁿ +

Blue / green

N - Absent

FeSO₄ + NaOH + CHCl₃ +

prec. produced

Conc. H₂SO₄

Not

2. functional Group test

Comp + NaHCO₃ water
Soln

Smell

CO₂ gas removed

COOH group

are detectable

Astear test

Comp + Conc. H₂SO₄ +

fruit like

COOH group

C₂H₅OH + Δ

Smell

Absent

m.p

133°C

Monamilec

Acid present

Acidic 2ml derivat
Soln + 2ml residue
KMnO₄ milating

Brown pre
cipitate
produced

Neopste Acid
are present

- Comp. derivat Soln.
KMnO₄ + Δ + filter
cold

white kristal monamilec
acid

Comp "B"

primary Expt. -

Physical State - Solid

Colour - Colourless

Smell - like smell

Solubility -

Table Test

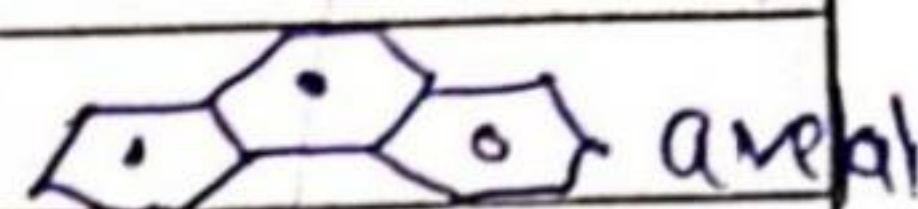
S.No	Expt.	Test	Result
1.	Element observation Lemana Soln + FeSO ₄ + NaOH + FeCl ₃ + Conc. H ₂ SO ₄	Blue/green Colour not prod.	N-Absent.
2	functional test		HydroCarbon
(a)	Comp. + Conc. H ₂ SO ₄	Not Soluble	are present

b. Bayer Test

Comp + 2ml 2H₂O + KMnO₄
(Bayer Test)
are soln mixed.

3. m.p

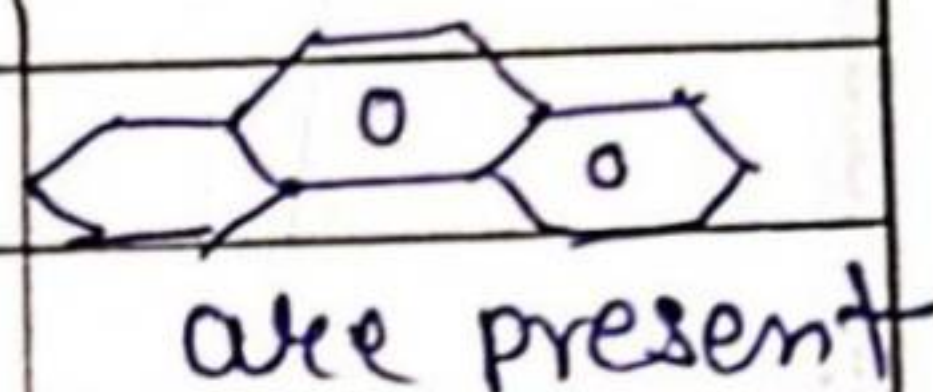
143°C



Special Test

Comp + Benzen are
mixed

Blue colour
are produced



Result:-

In given mixture

Comp "A"

Comp "B"

$C_6H_5-CH=CH-COOH$
(Cinnamic Acid)



Object :- In given mixture identified organic compound.

Equipment :- Test tube, Bika, Holder, Conical flask

Comp I

physical state - Solid

Colour - Colourless

Smell - Smellless

Nature - Acidic

Flame test - Not Burn with smoke. so it is

Aliphatic Comp.

Table Test

Expt.

Test

Result

1. N-Test - L.S. Soln.

fresh FeSO₄

Soln + NaOH + HCl

Persian Blue

Colour Not

produced

N - Absent

2. functional group Test

Carboxylic Group

Test. Comp. water

Soln + 5% NaHSO₃

Soln mixed

CO₂ gas

are produced

- COOH group

present

m.p

101°C

oxalic acid

Special Test

CO + CO₂ gas

oxalic acid

Comp + H₂SO₄ +

are produced

are present

Heat

Teacher's Signature.....

- Comp. 2 ml per. Solⁿ + CaCl₂ Solⁿ white colour precipitate oxalic acid are present

Comp II

physical state - Solid

Colour - Colourless

Smell -

flame Test - Not Burn with smoke

So it Aromatic Comp.

Nature - Acidic.

Table Test

Expt.

Test

Result

1. N-Test

persian Blue

N-absent

L.S Solⁿ + freshed

Colour Not

fesoy Solⁿ + NaOH + HCl

produced.

2. functional group Test

(a) Carboxylic Group

Test. - Comp. water

CO₂ gas also

- COOH group

Solⁿ + 8% NaHCO₃

produced

are absent.

Solⁿ are mixed.

3. phenol group Test

Comp. Acidic Solⁿ

violet colour

phenol group

+ some FeCl₃ Solⁿ

produced.

are present

4. Carbanic Comp. Test

m.p

94°C

Teacher's Signature.....

α -Naphthol comp +
H₂O + FeCl₃

white precip.
obtain

α -Nepthalin
present

Comp + water NaOH
+ Cl₂ + one drop of
powder + A

Blue colour
obtain

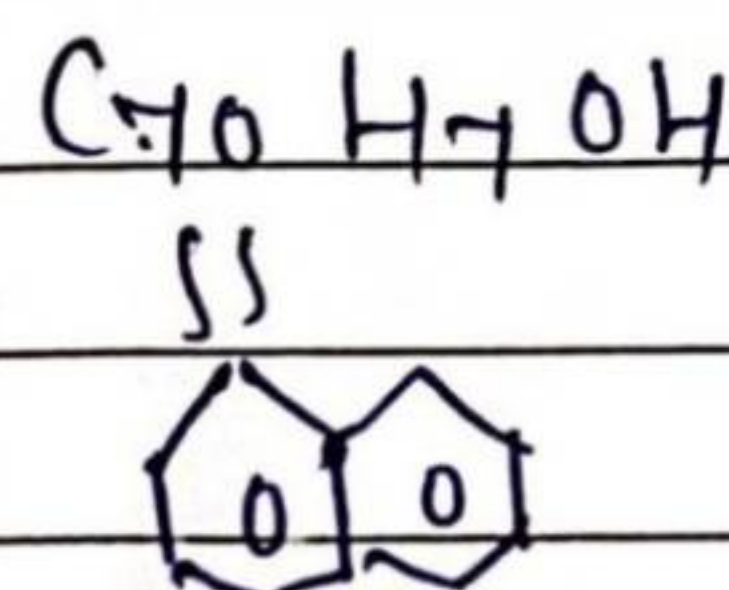
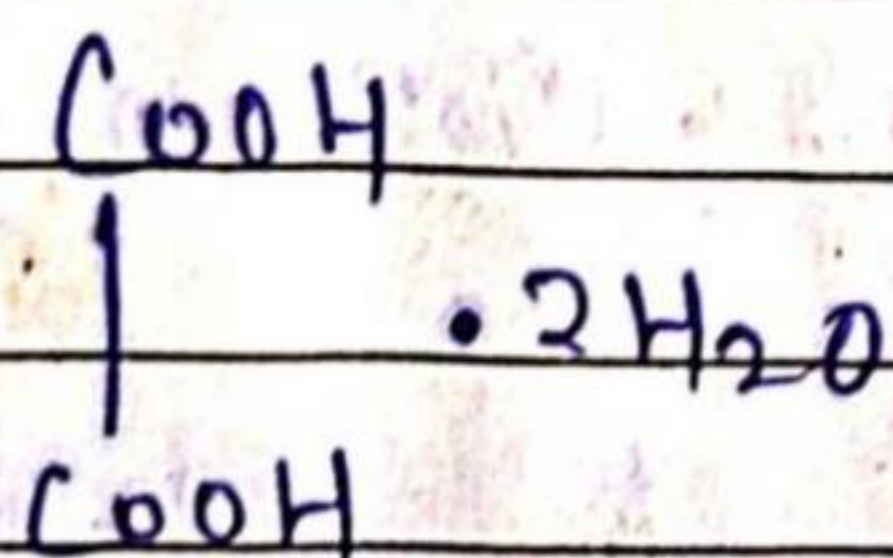
α -Nepthol
present

Result :-

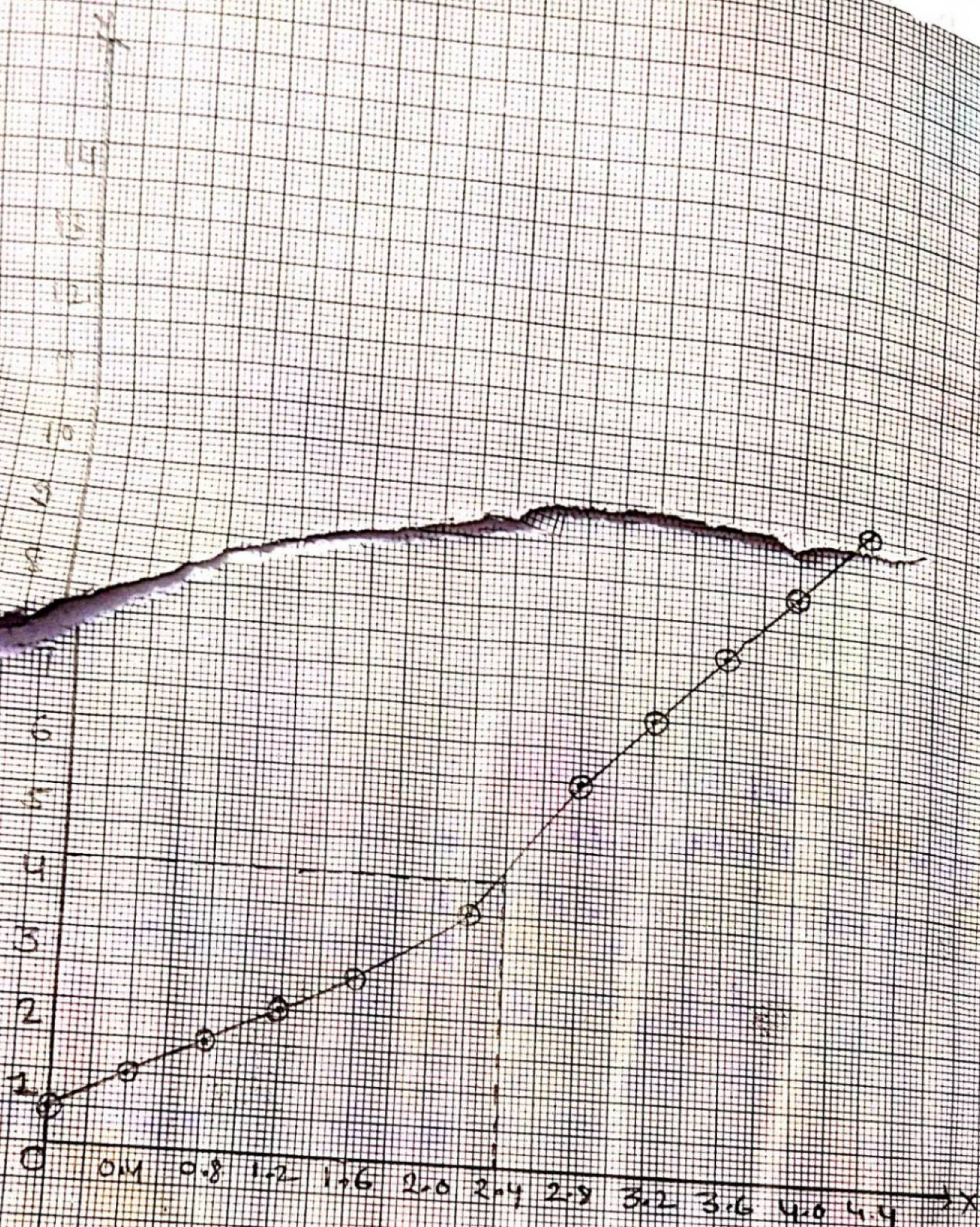
In given mixture oxalic acid and
 α -Nepthaline are present.

Comp - I

Comp - II



(α -Nepthol)



Object:- NaOH masked in HCl and Calculate Concentration.

Equipment:- Measured Conductivity, measured Cell, pipette, Burette, Beaker.

Chemical:- (i) NaOH Solution.
(ii) HCl Solution.

principle:- $N_1 V_1 = N_2 V_2$ $N_1 = \text{Normality of Acid}$
 $V_1 = \text{Volume of Acid sol}^n$
 $N_2 = \text{Normality of Basic sol}^n$
 $V_2 = \text{Volume of Basic sol}^n$

$N_1 V_1 = 0.1 N \times \text{Volume of Bas at mazer point}$

$0.1 N_1 = 0.1 N \times \text{Volume of Bas at mazer point}$
and Concentration.

$= N_1 \times \text{measured weight}$

Test:-

① measurement of HCl = 36.5 gm

② Volume of Acid solⁿ = 10 ml

Calculation:-

$$N_1 V_1 = N_2 V_2 \quad N_1 = ?$$

$$V_1 = 10 \text{ mL}$$

$$V_2 = 7 \text{ mL}$$

$$N_2 = 0.1 \text{ N}$$

$$N_1 \times 10 = 0.1 \text{ N} \times \text{Sol}^n \text{ of Base at meq weight}$$

$$N_1 = \frac{0.1 \text{ N} \times \text{Sol}^n \text{ of Base at meq weight}}{10}$$

$$N_1 = \frac{1 \times 7}{100}$$

$$N_1 = 0.07 \text{ N}$$

HCl meq weight of 11 Acid

$$\text{Concentration} = N_1 \times \text{meq weight}$$

$$= 0.07 \times 36.5$$

$$= 2.555 \text{ gm/liter}$$

Expt. Table		
S.No	NaOH Volume of Sol ⁿ	Conductivity of Sol ⁿ
1	0.0	26.60
2	1	24.00
3	2	20.00
4	3	17.210
5	4	14.210
6	5	11.210
7	6	8.20
8	7	5.40
9	8	6.00
10	9	7.10
11	10	7.80
12	11	8.40
13	12	8.80
14	13	9.40
15	14	10.00
16	15	10.00
17	16	10.00
18	17	11.60
19	18	12.20
20	19	12.80
21	20	13.40
22	21	13.80

Result:- gm given acid concentration is
2.56 gm/liter.

Teacher's Signature.....

Object:- In given Aciel solⁿ Salt identify the solⁿ by Conductivity measurement method.

Equipement:-

measured Conductivity, measured solid

In given solⁿ, the measured conductivity can be given $IV = K \times V$ — (1)

$$dV = \frac{K \times 100}{C} \text{ — (2)}$$

The aciedic solⁿ. Have the mount of salt solⁿ is low, so it is fully in-soluble & in soluble salt

$$dV = 100 \text{ — (3)}$$

Kolhouse principal

$$d_{100}^{+} + d_{100}^{-} \text{ — (4)}$$

$$C = \frac{K \times 100}{d_{100}^{+} + d_{100}^{-}}$$

While the in soluble salt solubility is less soluble so

$$I_{sol^n} = K_{sol^n} - K_{H_2O} \text{ — (5)}$$

So Solubility in less soluble salt.

$$C = \frac{(K_{sol^n} - K_{H_2O}) \times 100 \text{ gm/liter}}{d_{100}^{+} + d_{100}^{-}}$$

Calculation:-

$$K = K_{sol} - K_{H_2O}$$

$$K = 1.200 - 0.954$$

$$K = 0.246 \Omega^{-1} m^{-1}$$

But room on Conductivity

$$K = 0.00246 \Omega^{-1} m^{-1}$$

So! $S = \frac{0.00246 \times 1000 \times 116.70}{143.4 \times 200}$

$$S = \frac{0.00246 \times 116.70}{143.4 \times 200}$$

$$S = 0.0019 m / \Omega \cdot cm$$

$$Q_{sol} + Q_{H_2O} = 0$$

$$Q_{sol} + Q_{H_2O} = 0$$

$$Q_{sol} + Q_{H_2O} = 0$$

$$Q_{sol} + Q_{H_2O} = 0$$

$$Q_{sol} + Q_{H_2O} = 0$$

Test Table :-

Temperature = 20°C

Cell measured = 1 cm

$$\text{Conductivity of water} = \frac{0.93 \times 0.947 \times 0.976}{3}$$

$$= 0.954$$

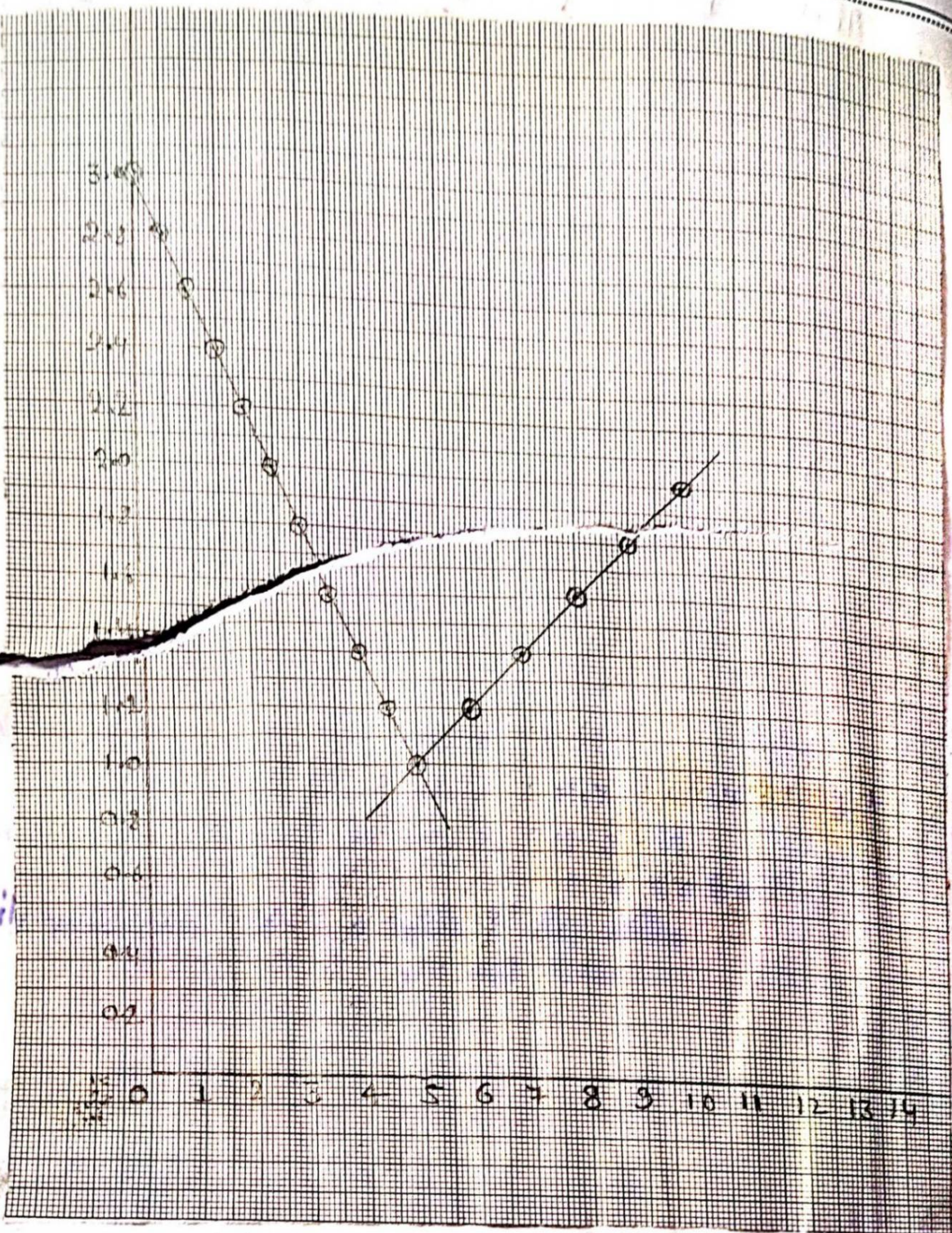
$$\text{Conductivity of specific water} = 0.954 \times 1$$

$$= 0.954$$

S.No	Basol Sol ⁿ Test	Basol Specific Conductivity	medium $\mu\text{S cm}^{-1}$
1.	1.194	$1 \times 1.194 \times 1.194$	
2.	1.200	$1 \times 1.200 \times 1.200$	1.200
3.	1.206	$1 \times 1.206 \times 1.206$	

Result :-

On 20°C Tem. The less solubility of salt Basol = 0.001 gm/lt.



Object:-

In given Conductivity measured weak acid (CH_3COOH) Calculate Concentration of NaOH (Base)

useful Equipment:- measured Conductivity measure cell pipette, micro tube, Beaker

Chemical:- NaOH , ① CH_3COOH

Principle:-

$$M_1 V_1 = N_2 V_2$$

M_1 = Normality of acid solⁿ.

N_2 = Normality of Base solⁿ.

V_1 = Volume of acidic solⁿ

V_2 = Volume of Base solⁿ.

$$N_1 V_1 = 0.1 N \times \text{Volume of Base on measure point}$$

$$N = \frac{0.1 N \times \text{Volume of Base on measure point}}{V}$$

$$N_1 = \text{Concentration} = N \times \text{measure weight}$$

Test:-

① CH_3COOH measure weight of

② Volume of acid solⁿ. = 10 ml

Teacher's Signature.....

Calculation :-

$$N_1 V_1 = N_2 V_2$$

So

$$V_1 = 10 \text{ mL}$$

$$V_2 = 2.4 \text{ mL}$$

$$N_2 = 0.1 \text{ N}$$

$$\text{So } N_1 \times 10 = 0.1 \text{ N} \times \text{Volume of Base at measure point}$$

$$N = \frac{0.1 \text{ N} \times \text{Volume of Base at measure point}}{100}$$

$$N_1 = \frac{2.4}{100} = 0.024$$

$$\text{CH}_3 \text{COOH Relative measure weight} = 60.06 \text{ g}$$

$$\text{Concentration} = N_1 \times \text{measure weight}$$

$$= 0.024 \times 60.06$$

$$= 1.441 \text{ gm/liter}$$

Table Test		
S.N	Volume of mixed Basic Sol ⁿ (ml)	Conductivity of Sol ⁿ
1.	0.0	0.42
2	0.4	0.82
3	0.8	1.24
4	1.2	1.68
5	1.6	2.12
6	2.0	2.48
7	2.4	4.01
8	2.8	5.50
9	3.2	6.51
10	4.0	7.42
11	4.4	8.62
12	4.8	9.42
13	4.8	10.91

Result: -

In given Solⁿ Concentration is
1.44 gm/liter

Object:-

In a water solⁿ By the method of Himant measured substance by atomic wgt

Equipment:- Thermometer, Bika.

Chemical:- Ice, salt pure of Susent.

principle:- Any unvapourisation the solub^l substance solubline wgt which show in ΔT_f

$$\Delta T_f = \frac{1000 \times K_f \times W}{m \times W} \quad \text{OR} \quad \frac{1000 \times K_f \times W}{\Delta T_f \times W}$$

T_f = Cold measurement

W = weight of solⁿ

W = weight of soluble

K_f = Cold measured

m = atomic weight of solⁿ.

Test:-

(i) Volume of water solⁿ

(ii) Density on Room Temp. of water
= 1 gm/lit.

(iii) given weight of water (V x d)
15 x 1 = 15 gm

(iv) Cooling point of water

Calculation:- Cooling point of water soln.

$$T_0 = \frac{T_1 + T_2 + T_3}{3}$$

$$T_0 = \frac{(-6) + (-6) + (-6)}{3} = -6^\circ\text{C}$$

Q. Cooling Study of soln

$$T = \frac{(-4) + (-4) + (-4)}{3} = -4^\circ\text{C}$$

3. Cooling points

$$m = \frac{K_f \times 1000 \times W}{\Delta T \times W}$$

$$m = \frac{1.86 \times 1 \times 1000}{15 \times 2} = \frac{1860}{30}$$

$$m = 62 \text{ gm.} \quad (1)$$

$$\text{Cooling point of water} \quad (2)$$

Testing Table:-

S.No.	weight of sol ⁿ	Tem. of sol ⁿ .	medium Tem of sol ⁿ .	Tem of sol ⁿ .	freezing point	atomic weight
				10°C	$T_f(T_0 - 1)$	weight (m)
1	1	-4				
2	1	-4	-4	-6	-4 - (-6)	62 gm
3	1	-4			= 2	

Result :-

On given Subsequent of atomic weight is 62 gm.

Object:- By Conductivity method given HCl Solⁿ. Calculate Conduct Concentration.

Equipment:- measure conductivity, conductivity Cell, pipette, microburet, Biker etc.

Chemical:- (i) NH_4OH Solⁿ HCl
(ii) HCl Solⁿ.

Principle:- In HCl Solⁿ mixed NH_4OH solⁿ the last point conductivity is decreased. on after this NH_4OH have no change eg.

$$N_1 V_1 = N_2 V_2$$

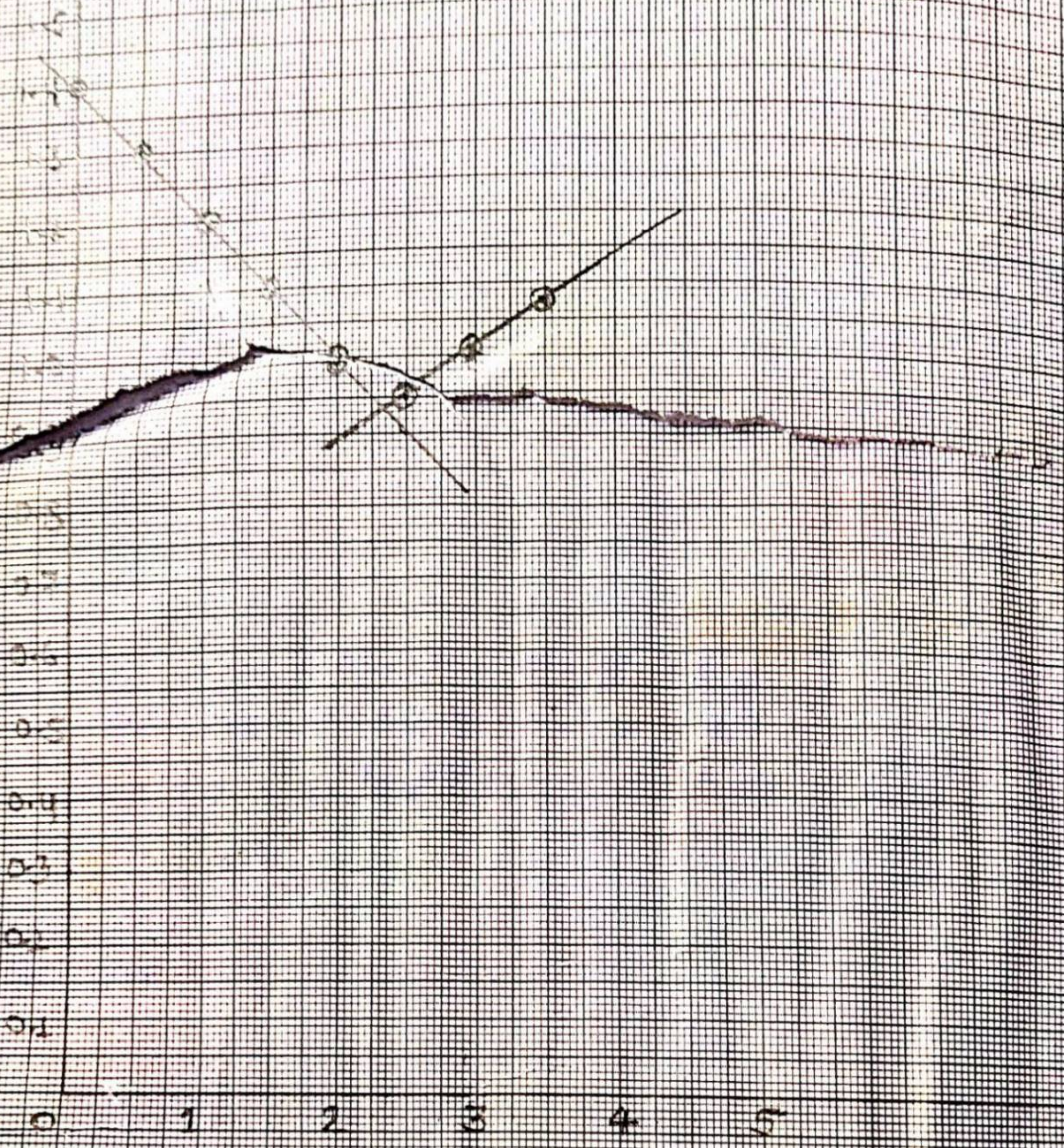
Where N_1 = normality of acid Solⁿ
 V_1 = volume of acid Solⁿ.
 N_2 = normality of basic Solⁿ.
 V_2 = volume of basic Solⁿ.

So $N_1 V_1 = \frac{0.1 N \times \text{volume of basic at m.e.p.}}{N_1}$

Concentration = $n \times \text{measure weight}$

Test. $\rightarrow$ Above HCl Solⁿ the const. is 40.0 ml

X-AXIS → 1 Unit
Y-AXIS → 0.1 Unit



4.9m
1.6m
1.0

Table Test

S.No	NaOH mixd volume (ml)	Conductivity
1	0.0	1.48
2	0.5	1.30
3	1.0	1.20
4	1.5	1.12
5	2.0	1.04
6	2.5	0.98
7	3.0	0.97
8	3.5	0.986
9	4.0	0.986
10	4.5	1.986
11	5.0	1.00
12	5.5	1.00

Result:-

In given unknown HCl Solⁿ.
 Conc. is 0.2824 gm/-lit.

0.50

0.45

0.40

0.35

0.30

0.25

0.20

0.15

0.10

0.05

0.00

0.05

0.10

0.15

0.20

0.25

0.30

0.35

0.40

0.45

0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5

$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ (5%)

Object:- By the method of Kellary to Calculate Construction of unknown known soln.

Equipment :- flask, Bika, Buret, test Buret.

Soln. :- potassium permagnate 0.001N soln.

pricipal:- The pink colour of potassium permagnate by the water percent of Mn^{+2} ion. So with the Help of colour be Calculate conc. of Mn^{+2} in soln. In this different conc. of magng ions are extend all soln. d max. in or density) (o measured or the graf of this us tell the conc. of soln.

Test:- Temp. = $25^{\circ}C$

Calculation:-

$$(1) N_1 = 0.001 \quad V_1 = 1\text{ml} \quad V_2 = 10\text{ml} \quad N_2 = ?$$

$$N_2 = N_1 V_1 = N_2 V_2$$

$$N_2 = \frac{N_1 V_1}{V_2} = \frac{0.001 \times 1}{10} = 1 \times 10^{-4} N$$

$$N_2 = 0.0001, \quad V_1 = 2\text{ml}, \quad V_2 = 10\text{ml} \quad N_2 = ?$$

$$N_2 = \frac{0.001 \times 2}{10} = 2 \times 10^{-4} N$$

$$3) \quad N_2 = \frac{0.001 \times 3}{10} = 3 \times 10^{-4} N$$

$$4) \quad N_2 = \frac{0.001 \times 4}{10} = 4 \times 10^{-4} N$$

$$5) \quad N_2 = \frac{0.001 \times 5}{10} = 5 \times 10^{-4} N$$

$$6) \quad N_2 = \frac{0.001 \times 6}{10} = 6 \times 10^{-4} N$$

$$7) \quad N_2 = \frac{0.001 \times 7}{10} = 7 \times 10^{-4} N$$

$$8) \quad \frac{0.001 \times 8}{10} = 8 \times 10^{-4} N$$

$$9) \quad N_2 = \frac{0.001 \times 9}{10} = 9 \times 10^{-4} N$$

$$10) \quad N_2 = \frac{0.001 \times 10}{10} = 10 \times 10^{-4} N$$

$KMnO_4$

$= 158$

weight ≈ 31.6

Molarity = Normality $\times$ measured w

$$= 3 \times 31.6 \times 10^{-4}$$

$$= 94.8 \times 10^{-4} \text{m/lit.}$$

S.No.	Conc. of soln	absorption
1	1×10^{-4}	1.19
2	2×10^{-4}	1.09
3	3×10^{-4}	1.05
4	4×10^{-4}	0.96
5	5×10^{-4}	0.73
6	6×10^{-4}	0.84
7	7×10^{-4}	0.76
8	8×10^{-4}	0.61
9	9×10^{-4}	0.92
10	10×10^{-4}	0.55
11	11×10^{-4}	

Result:-

In given unknown KMnO_4 solution the conc. of is 94.8 mg/lit.



$K_2Cr_2O_7$ Volumetric point

PAGE NO.

Object :- By the method of Kellary calculate the conc. of $K_2Cr_2O_7$ soln.

Equality :- meter, flask, Biker, Burette
Test tube.

Solution :- 0.1N soln. of $K_2Cr_2O_7$

principle :-

The orange colour of $K_2Cr_2O_7$ because of di-hydrated water of Cr_2O_7 group. So with the help of colour we calculate conc. of soln. $Cr_2O_7^{2-}$ in this different conc. of Di Chromate from the soln of is confirmed d-maxim. (0.00 measured) A or B after this we draw a line calculate conc. of unknown soln.

Teacher's Signature.....

Calculate:-

(i) $M_1 = 0.1 \text{ M}$ $V_1 = 1 \text{ ml}$ $V_2 = 10 \text{ ml}$ $M_2 = ?$

$$M_2 = \frac{M_1 V_1}{V_2} = \frac{0.1 \times 1}{10} = 1 \times 10^{-2} \text{ M}$$

2) $M_2 = \frac{0.1 \times 2}{10} = 2 \times 10^{-2} \text{ M}$

3) $M_2 = \frac{0.1 \times 3}{10} = 3 \times 10^{-2} \text{ M}$

4) $M_2 = \frac{0.1 \times 4}{10} = 4 \times 10^{-2} \text{ M}$

5) $M_2 = \frac{0.1 \times 5}{10} = 5 \times 10^{-2} \text{ M}$

6) $M_2 = \frac{0.1 \times 6}{10} = 6 \times 10^{-2} \text{ M}$

7) $M_2 = \frac{0.1 \times 7}{10} = 7 \times 10^{-2} \text{ M}$

8) $M_2 = \frac{0.1 \times 8}{10} = 8 \times 10^{-2} \text{ M}$

9) $M_2 = \frac{0.1 \times 9}{10} = 9 \times 10^{-2} \text{ M}$

10) $M_2 = \frac{0.1 \times 10}{10} = 10 \times 10^{-2} \text{ M}$

weight of $\text{K}_2\text{Cr}_2\text{O}_7 = 294$

measured weight = $\frac{294}{6} = 49$

molarity = measured weight $\times$ normality

$$= 49 \times 5 \times 10^{-2}$$

$$= 2.45 \text{ m/l}$$

S.No.

0.1N Conc. of $K_2Cr_2O_7$ Soln.

absorption (A)

1.	1×10^{-1}	0.25
2.	1×10^{-2}	0.28
3.	1×10^{-3}	0.31
4.	1×10^{-4}	0.38
5.	1×10^{-5}	0.39
6.	1×10^{-6}	0.42
7.	1×10^{-7}	0.43
8.	1×10^{-8}	0.44
9.	1×10^{-9}	0.47
10.	1×10^{-10}	0.48
11.	1×10^{-11} Unknown	

Result :-

The Conc. of unknown soln $K_2Cr_2O_7$ is 2.45 ml.

Samant
12/04/2021

Teacher's Signature.....