

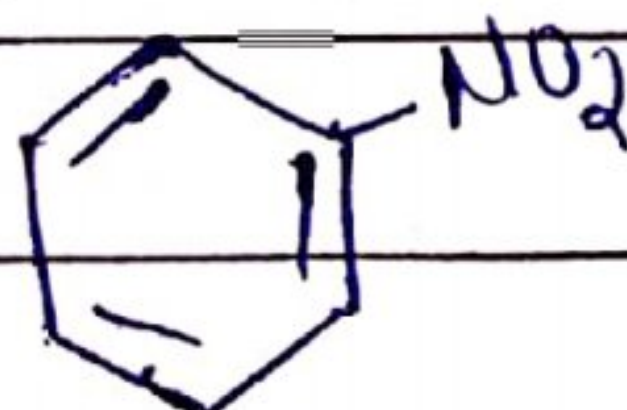
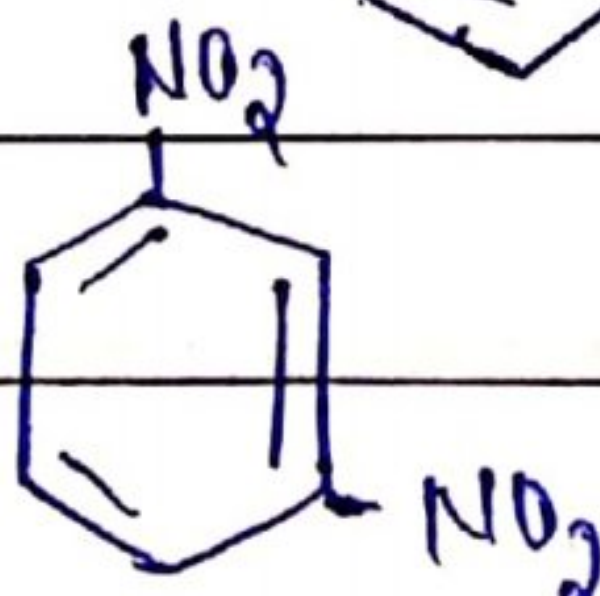
Object - H_2N NH_2 Organic Compound if
functional group पहचान करना ।

Initial test $\rightarrow$

Physical state - liquid
Smell - Specific
Colour - light yellow
Solubility - Soluble in water
Aromaticity - Aromatic
litmas test - Basic

Observation test $\rightarrow$

S.No.	Experiment	Observation	Inference
(A)	Element test $\rightarrow$		
a)	Nitrogen test - 1S + NaOH + FeSO_4 or Solution + FeCl_3 + 1ml Con. H_2SO_4	Blue colour Sol ⁿ $\oplus$ nt	Nitrogen $\oplus$ nt
b)	Sulfur test $\rightarrow$ 1S. + 2-3 drop of Nitropruss Side	Violet colour $\ominus$ nt	Sulfur $\ominus$ nt
(B)	functional group test $\rightarrow$		
(a)	Mulliken of Barkur's test - Compound + 10:1 Sol ⁿ CaCl_2 + Zn dust + Fehling reagent + filter	रक्त द्रवण बना १।	- NO_2 $\oplus$ nt
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Expt No. _____			
(b)	द्रव्य-चयन परिक्षण - द्वितीयक टिन धातु + Con. HCl + NaNO_2 Sol ⁿ + Basic Solution of β -Naphthol	Red-Orange Colour का अवलोकन पाया ।	$-\text{NO}_2$ $\oplus$ nt
(c)	Compound test -		
(a)	Boiling point -	208°C	Nitrobenzene $\oplus$ एकल $\oplus$ 1
(b)	Comp. + Glacial Acetic acid + Zn dust + Δ + water + NaOH Solution + 3 ml Sodium hypochlorite solution	Violet Colour $\oplus$ nt	Nitrobenzene $\oplus$ nt
(c)	Con. HNO_3 + Con. H_2SO_4 mixture की $90^\circ - 100^\circ\text{C}$ पर गरम करने पर	Yellow Colour	Sodium nitro Benzene $\oplus$ nt
(d)	Derivative test - Comp. + Con. HNO_3 + Con. H_2SO_4 + mixture की $90^\circ - 100^\circ\text{C}$ पर Heat करने पर	Yellow	Sodium di- nitro benzene
Result $\rightarrow$ दिए गए Organic Compound if functional grp. $-\text{NO}_2$ & Organic Comp. Nitrobenzene $\oplus$ 1			
Compound structure $\rightarrow$			
Derivative structure $\rightarrow$			
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Object - दिने गए Organic Comp. में functional grp. & Comp. की पहचान करना ।

Initial test -

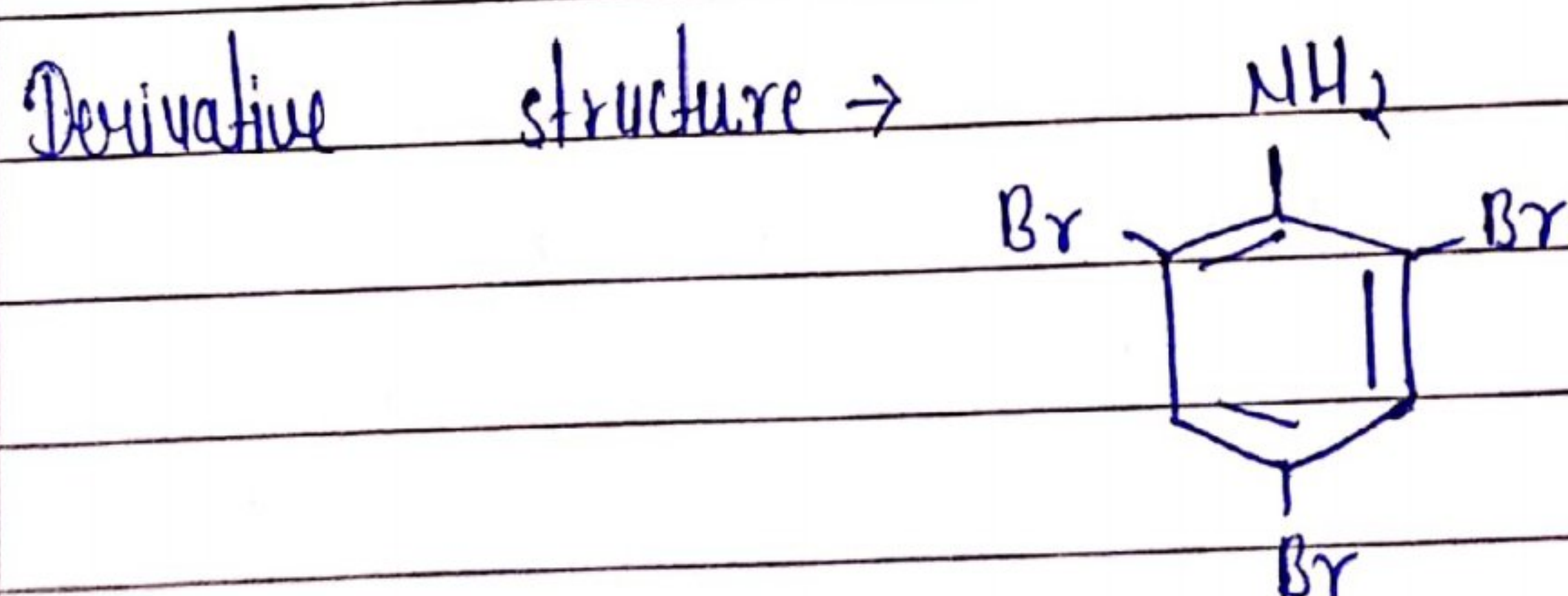
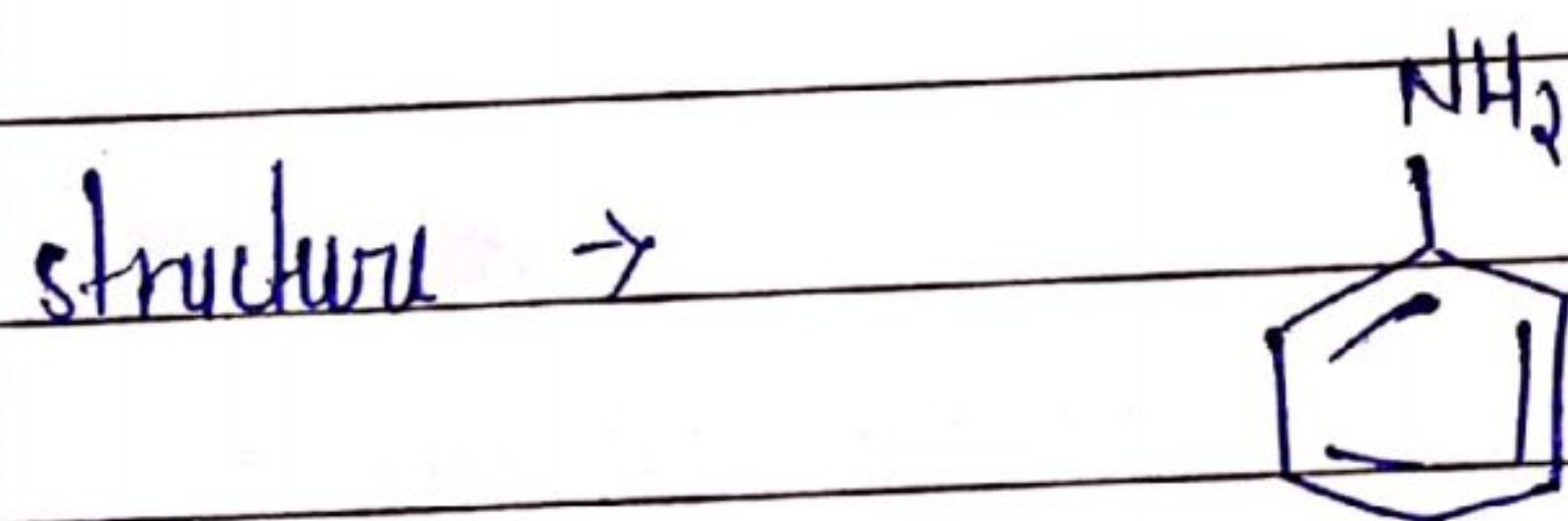
Physical state - liquid
 Colour - dark yellow
 Smell - Specific
 Solubility - less soluble
 Aromaticity - Aromatic
 litmus test - Basic

Observation table →

S.No.	Experiment	Observation	Inference
(A)	Element test →		
(a)	Nitrogen test → l.s. + NaOH + गरम बना FeSO ₄ की Solution + FeCl ₃ + 1 ml Con. H ₂ SO ₄	Blue colour Solution +	Nitrogen +
(b)	Sulfur test - l.s. + 2-3 drop of Sodium Nitro Prusside	Violet colour +	Sulfur +
(c)	Halogen test - l.s. + Con. HNO ₃ + AgNO ₃ (गरम) + Δ + Cool	Yellow colour + ppt +	Halogen +
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(B)	functional grp. test -		
(a)	अम्ल परीक्षण -		
	Comp. (99%) + 1ml Con. HCl + Cool + 4ml of 3.5% Sol ⁿ of NaNO ₂ + 2ml of Basic Sol ⁿ of β-Naphthol	Red PPT प्राप्त	-NH ₂ grp. ⊕nt
(C)	Compound test -		
(a)	Boiling point -	182° C	Aniline ए ⁹ प्राप्त है।
(b)	Comp. + K ₂ Cr ₂ O ₇ + Con. H ₂ SO ₄	Blue colour ⊕nt	Aniline ⊕nt
(D)	Derivative test -		
	Comp. + Bromene test	light yellow colour को PPT प्राप्त होता है।	2,4,6-tribromo Aniline ⊕nt है।

Result → दिए गए Organic Compound में functional grp.
-NH₂ है।
Aniline ⊕nt है।



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Object - दिए गए Organic Comp. में functional grp. की पहचान करना।
Comp. की पहचान करना।

Initial test -

Physical state - Solid
Colour - Colourless
Solubility - Soluble in water
Smell - Garba
Aromaticity - Aliphatic
Litmus test - Acidic

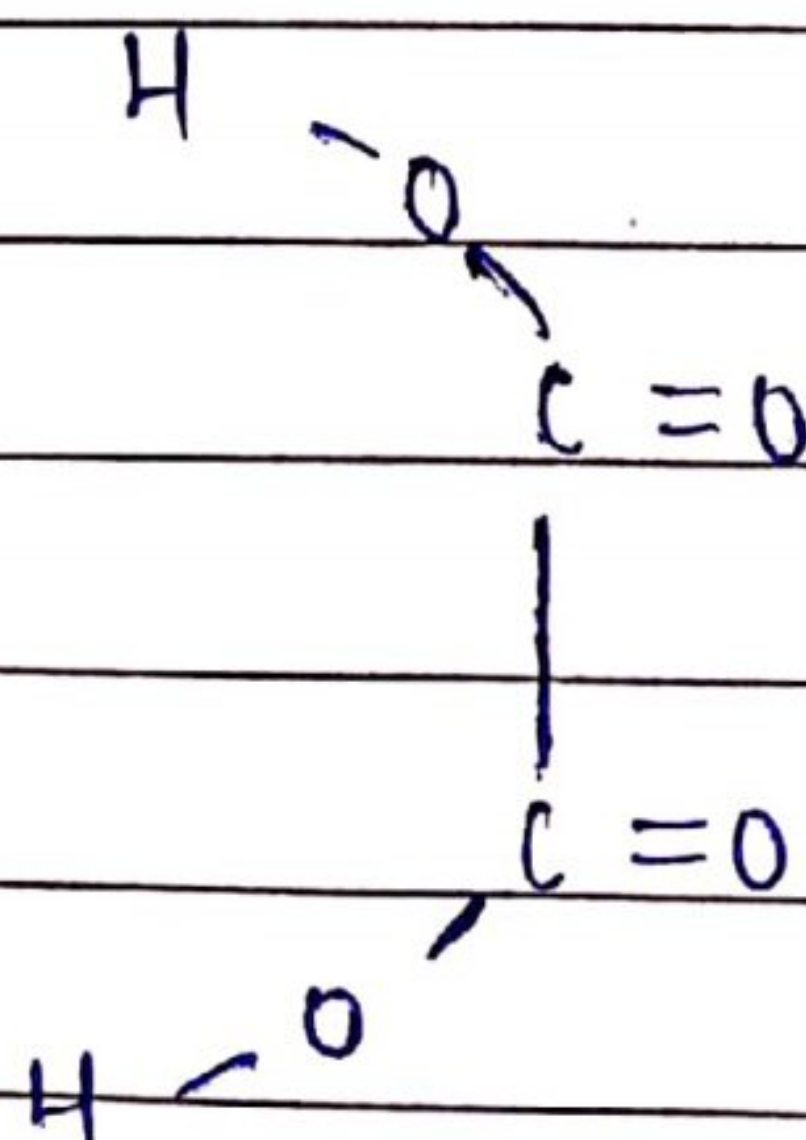
Observation →

S.No.	Experiment	Observation	Inference
(A)	Element test -		
(a)	Nitrogen test -		
	L.S. + NaOH + FeSO ₄ Solution	Blue Colour	-NO ₂ Ent
	+ FeCl ₃ + 1ml. Con. H ₂ SO ₄	Ent	
(b)	Sulfur test -		
	L.S. + 2-3 drop Sodium Nitro	Violet Colour	Sulfur
	Prusside	Ent	Ent
(c)	Halogen test -		
	L.S. + Con. HNO ₃ + AgNO ₃ (fresh)	Yellow Colour PPT	Halogen
	+ Δ + Cool	Ent	Ent
(D)	functional grp. test -		
(a)	पदार्थ के जलीय विलयन में नीला लिटमस 2-3 drop डालने पर / लिटमस पर 2-3 drop sol ⁿ डालने पर	नीला लिटमस लाल हो जाता है।	-COOH की पहचान है।
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(b)	Acid test - Comp. + Con. H_2SO_4 + Ethyl alcohol + A + Cool water	फलो नीली गंध आती है।	-COOH +nt
(c)	Compound test -		
(a)	Melting point	101°	Onatic acid है महत् है।
(b)	Acid + water + H_2SO_4 + A + 2-3 drop $KMnO_4$ Solution		
(e)	Derivative test - पिघलाते M.P. 245 P-215/115 M.P. 268		

Result - दिए गए Organic Comp. में functional grp.
and comp. Onatic acid है।

Compound structure →



Object - दिष्ट एवं Organic Comp. में functional grp.
and Comp. में परीक्षण कराया ।

Initial test -

Physical test - liquid
Colour - Colourless
Smell - bitter almond
Solubility - Slightly Soluble in water
Aromaticity - Aromatic
Litmus test - Acidic

Observation -

S.No.	Experiment	Observation	Inference
(A)	Element test -		
(a)	Nitrogen test - I.S. + NaOH + FeSO_4 (fresh) + FeCl_3 + 2ml con. + H_2SO_4	Blue Colour Ent	Nitrogen Ent
(b)	Sulfur test - I.S. + 2-3 drop of Sodium nitroprusside	Violet Colour Ent	Sulfur Ent
(c)	Halogen test - I.S. + Con. HNO_3 + Δ + Cool + AgNO_3 (fresh)	Yellow Colour PPT Ent	Halogen Ent
(d)	Functional grp. test -		
(a)	Fehling reagent द्वारा परीक्षण - Comp. + 2ml Fehling reagent (Ammonia Silver nitrate Sol ⁿ) + Δ	रजत दर्पण का निर्माण होता है।	-CHO Ent

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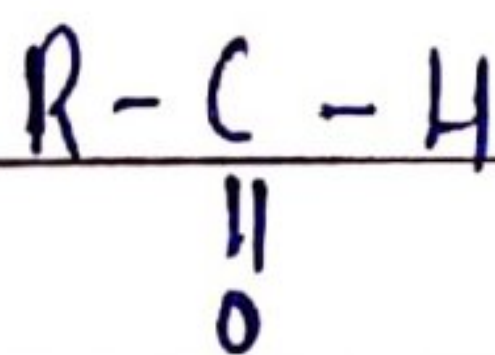
(b)	गिरि अभिकर्मक द्वारा परिक्षण - Comp. + 2ml गिरि reagent + 2-3 drop min weight	Red, Pink Colour ⊕nt	- (H ₂ O) ⊕nt
(c)	Compound test -		
(a)	Boiling test -	179°C	Benzaldehyde एत एत एत
(b)	Comp. + 5 drop acetone + 5ml C ₂ H ₅ OH + 2ml Li NaOH + Δ + Cool + 20ml water	Yellow Colour ⊕nt	Benzaldehyde ⊕nt
(d)	Derivative test - 2,4 - Di Nitrophenyl + Hydrogen M.P. + 121° एत कवितन + MP 153°		

Result - गिरि गिरि Carbonic Comp. एत functional grp.
Aldehyde and Comp. benzaldehyde एत

structure -



Derivative -

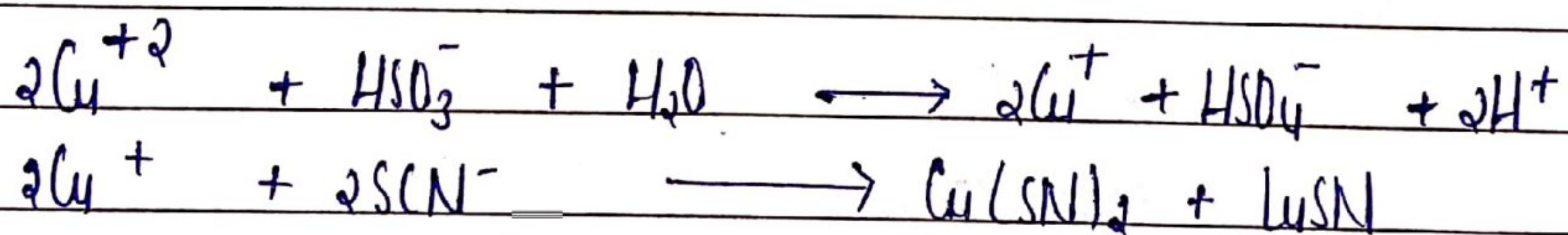


Object - Copper का व्युत्पन्न थायोसायनेट के रूप में आकलन करना ।

Theory -

कॉपर का CuO तथा व्युत्पन्न थायोसायनेट दोनों के रूप में आकलन किया जा सकता है but thiocynate के रूप में आकलन कि अच्छी विधि होती है because कॉपर को विलयन में Cu^{+2} थायोसायनेट के थायोसायनेट अविलेय होने से जवनी कॉपर थायोसायनेट अविलेय होता है ।

→ CuSO_4 में acidic solution में यदि कोई अपचायक उपस्थित होता है तो वह ammonium thiocynate solution मिलाने पर व्युत्पन्न थायोसायनेट के स्वतः अवक्षेप के रूप में अवक्षेपित हो जाता है ।



→ आवश्यक विलयन तथा अभिकर्मक ammonium thiocynate का 10% विलयन thiocynate HCl acid H_2SO_4 का विलयन बनाने के लिए 20.55 gm CuSO_4 की लस में घोलका विलयन का आयतन 1 lit. का सकते हैं । जिसमें थोड़ा - सा H_2SO_4 मिला देते हैं ।

Calculation $\Rightarrow$

i) सिलरित कुसादिक का भा $\rightarrow w_1 \text{ gm} = 70 \text{ gm}$

ii) सिलरित कुसादिक + CuSCN अवक्षेप का भा =

$$w_2 \text{ gm} = 75 \text{ gm}$$

iii) अवक्षेप का भा = $w_2 - w_1 = 75 - 70 = 5 \text{ gm}$

$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	Cu	CuSCN
249.6 gm	63.57	121.57
5 gm of CuSCN	$\frac{63.57}{121.57} \times 5$	2.6145 gm (Cu)
5 gm of CuSCN	$\frac{249.69}{121.57} \times 5$	10.26 (CuSO ₄)

Method →

अवक्षेपण विधि → एक बीकर में CuSO_4 का 25 ml विलयन लेकर उसमें 10 ml जल मिला देते हैं।

→ अब उसमें 1 ml व 25 ml राजा बनाया गया H_2SO_4 व इसे उबालने तक गर्म करते हैं। अब उसे धीरे - 2 हिलते हुए 10% अवक्षेपण ammonia thiocyanate का solution डालते हैं, जिसमें स्वतः अवक्षेपण बन जाता है।

→ जिसे उबालने पर वह स्कंदित होकर नीचे बैठ जाता है उसे अब में $\frac{1}{2}$ hours तक गर्म करने के बाद 2-3 hours तक स्थायी अवस्था में रखते हैं।

फिल्टर करना → पहले से बुली हुई संतलित सदिका को लेकर अवक्षेप वाले solution को लेकर फिल्टर कि क्रिया करते हैं।

→ जब पूरा liquid दूर हो जाता है तो संतलित सदिका को निर्वात पंप द्वारा सुकने के लिए $110 - 120^\circ\text{C}$ विद्युत आवेश में रख देते हैं।

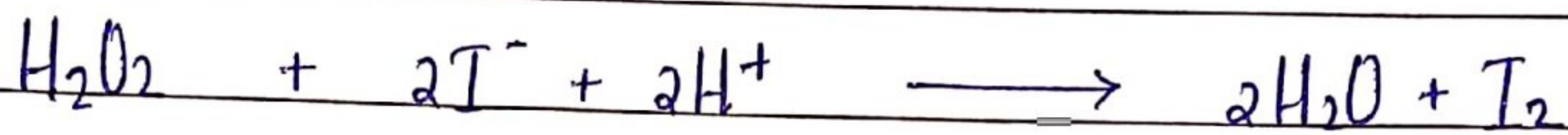
Result → दिए गए solution में CuSO_4 का भार 5 gm प्राप्त हुआ।

→ Object ⇒

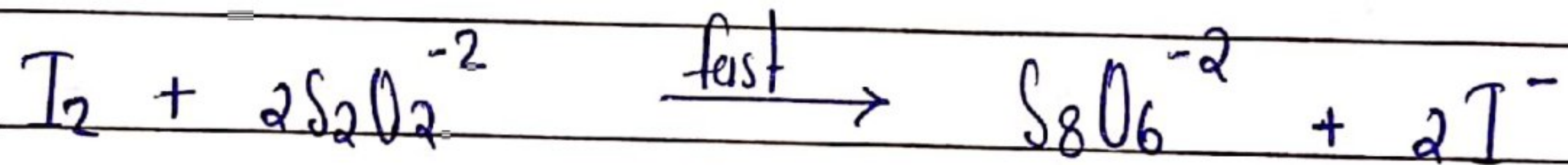
To study the rate of reaction of iodine ions with hydrogen peroxide at room temp^r. using different concentration of iodide ions.

→ Theory ⇒

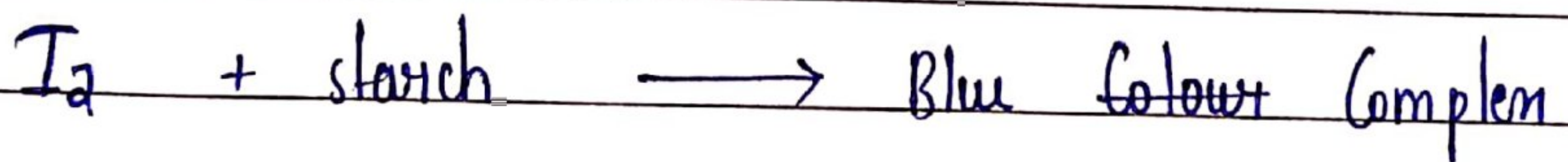
Hydrogen peroxide oxidizes iodine ions to iodine in acidic medium.



By adding a known volume of sodium thio-sulphate and starch solution, iodine is liberated and is reduced to iodine ions.



when thio sulphate ions are completely consumed liberated iodine reacts with starch solution gives blue colour.



The time before the appearance of blue colour give and idea about rate of reaction.

→ Material required →

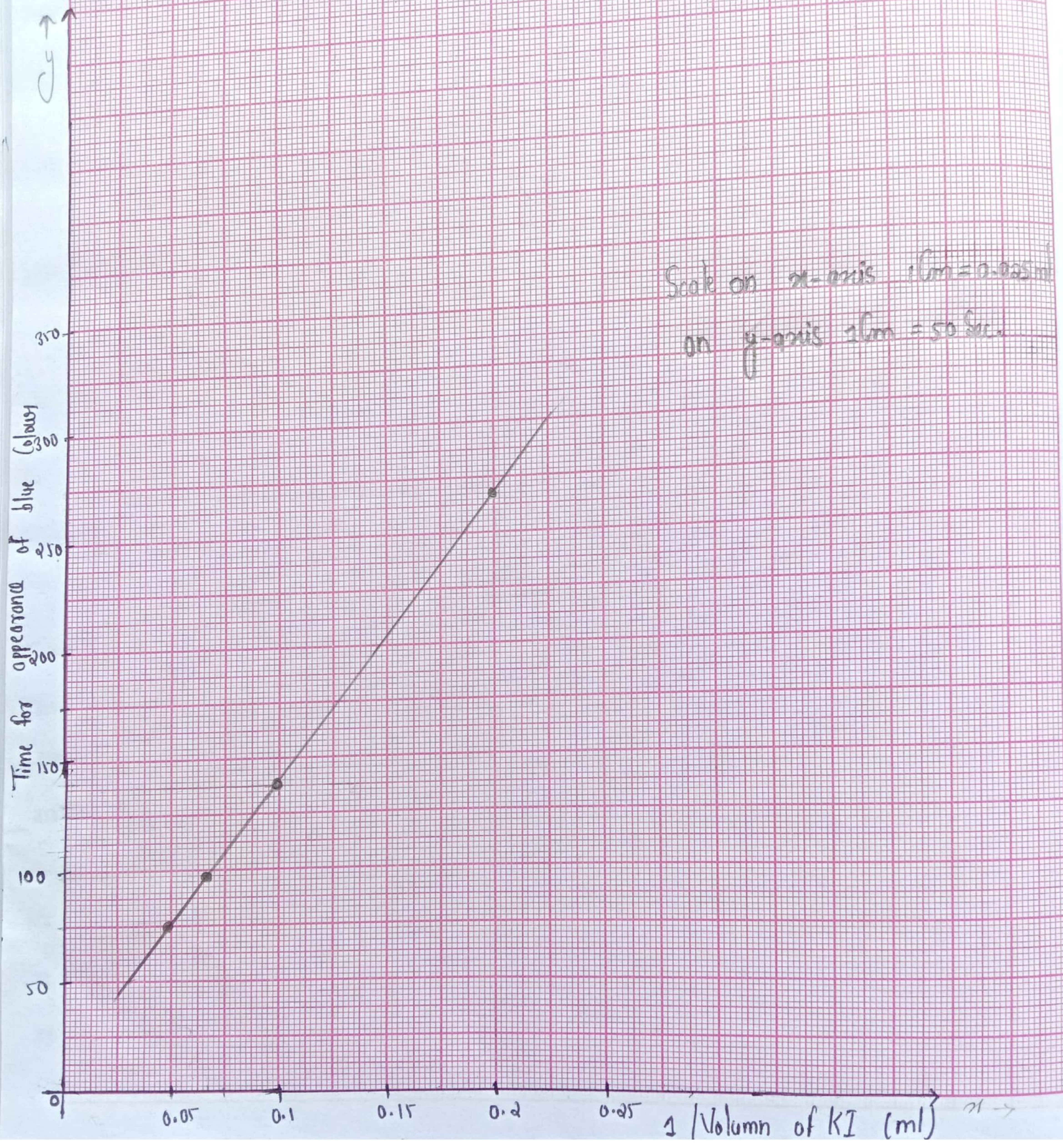
- 0.1 M potassium iodide
- 0.05 M Sodium thiosulphate
- distilled water
- 2.5 M Sulphonic acid
- starch solution
- 3% H_2O_2
- Conical flasks
- Measuring Cylinder
- stop watch
- Glass rod.

→ Procedure →

1. Take four 250 ml Conical flask and label them as A, B, C and D.
2. Add 5 ml, 10 ml, 15 ml and 20 ml of 0.1 M potassium iodide solution to the flask A, B, C and D respectively.
3. Using another measuring cylinder, add 10 ml of 2.5 M Sulphonic acid to flask A, B, C and D.
4. Now using measuring cylinder add 85 ml, 80 ml, 75 ml and 70 ml of distilled water to the flask A, B, C and D respectively.

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to make the volume of Solution 10 ml in each flask

5. Add 5 ml of starch Solution to flask A, B, C and D.

6. Add 10 ml of 0.05 M Sodium thiosulphate Solution to the flask A, B, C and D.

7. Now measure 5 ml of 30% H_2O_2 Solution and add into flask A and start stop watch.

8. stir the mixture using glass rod and watch for blue colour the appears stop the stop watch, when blue colour appears note down the time.

9. Repeat experiment by adding 5 ml of 3% H_2O_2 Solution to flasks B, C and D.

→ Observation table ⇒

Flask	0.1 M KI Solution (ml)	1 M Volume KI (ml)	2.5 M H_2SO_4 (ml)	water (ml)	starch Solu ⁿ (ml)	0.05 M $Na_2S_2O_3$ (ml)	3% H_2O_2 Solution (ml)	Time for appearance blue Colour
A	5	0.2	10	85	5	10	5	265
B	10	0.1	10	80	5	10	5	138
C	15	0.067	10	75	5	10	5	96
D	20	0.05	10	70	5	10	5	74

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→ Result ⇒

The rate of reaction increase with increase in concentration of iodide ions.

→ Precautions ⇒

1. Always use fresh prepared solution of Sodium thiosulphate.

2. Concentration of KI solution should be higher than the concentration of $\text{Na}_2\text{S}_2\text{O}_3$ solution.

3. Use freshly prepared starch solution.

→ Object ⇒

To study the effect of acid strength on the hydrolysis of an ester.

→ Theory ⇒

Ester hydrolysis in acidic medium proceeds via nucleophilic attack of water catalyzed by H^+ ions.

→ Stronger acids provide more H^+ ions ~~in~~ increasing the rate of hydrolysis.

Comparing hydrolysis rates using different acids helps determine how acid strength influences the reaction rate.

→ Requirements ⇒

→ Ethyl acetate

→ Acids of different strength (HCl , H_2SO_4 ; CH_3COOH)

→ Water bath

→ Burette

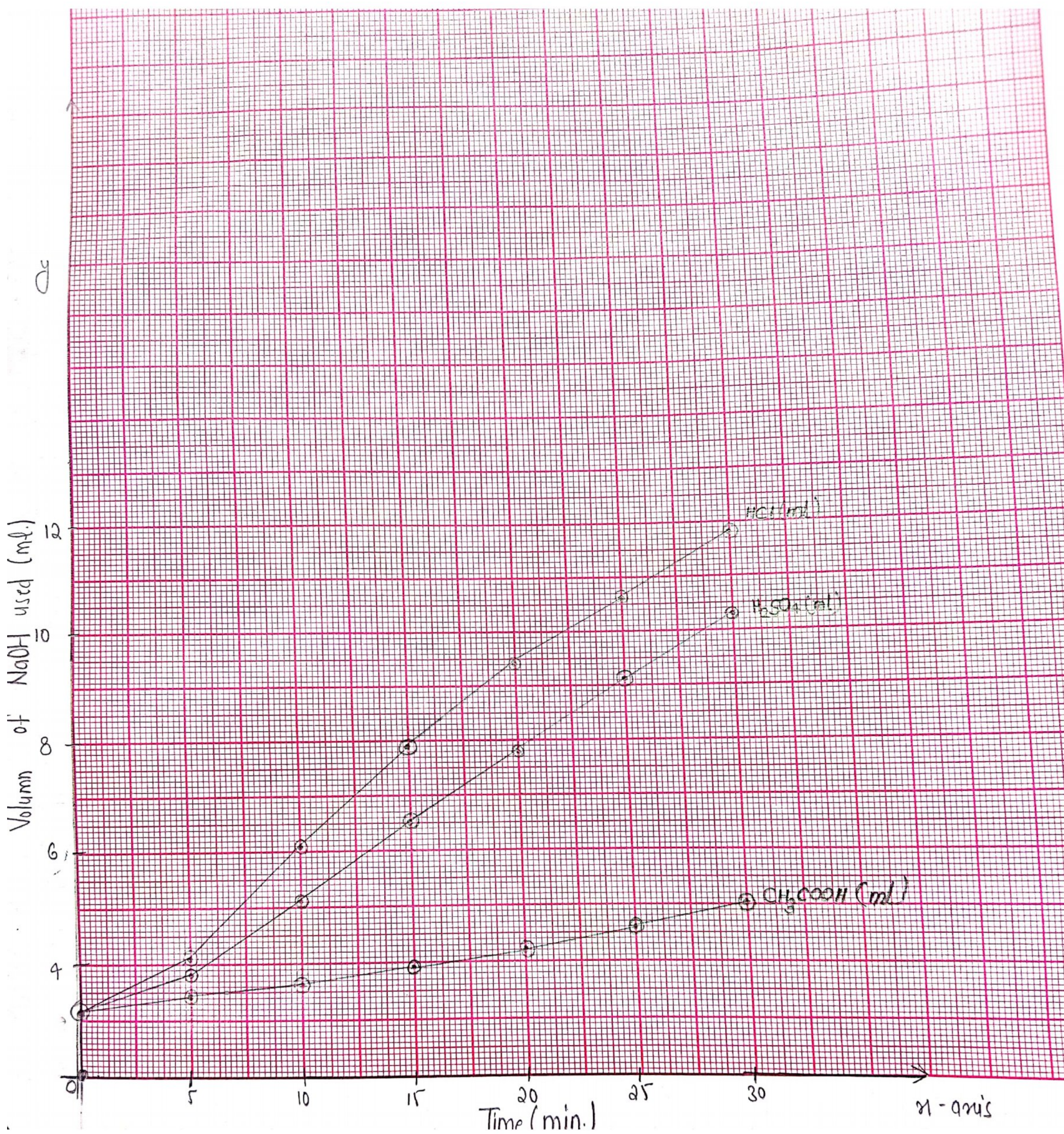
→ standard $NaOH$ solution

→ Phenolphthalein indicator

→ stop watch

→ Pipette

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→ ~~Produce~~

→ Procedure ⇒

1. Prepare equal molar solutions of HCl , H_2SO_4 , and CH_3COOH .

2. Mix 5 ml of ethyl acetate with 50 ml of acid solution in a conical flask

3. Place in a water bath at constant temperature (at 60°C)

4. At fixed intervals (every 5 min.), withdraw 5 ml of the reaction.

5. Cool the sample in cold water and titrate against standard NaOH using phenolphthalein.

6. Repeat with different acids.

7. Record the volume of NaOH used at each time point.

→ Observation table ⇒

Time (min)	HCl (ml)	H_2SO_4 (ml)	CH_3COOH (ml)
0	2.5	2.5	2.5
5	4.3	3.7	2.9
10	6.1	5.1	3.3
15	7.9	6.5	3.8

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20	9.4	7.8	4.2
25	10.6	9.1	4.6
30	11.8	10.3	5.0

→ Result ⇒

Hydrolysis of ester is faster in the presence of a strong acid compared to a weak acid showing that acid strength significantly affects the hydrolysis rate.

Acid strength order ⇒ $\text{H}_2\text{SO}_4 > \text{HCl} > \text{CH}_3\text{COOH}$