

Aim

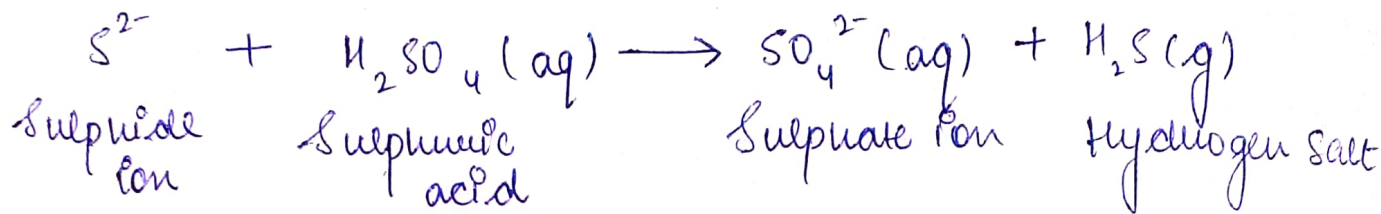
To detect sulphide ion in the given salt (S^{2-})

<u>Experiment</u>	<u>Observation</u>	<u>Inference</u>
<u>Preliminary test</u> Salt + dil. H_2SO_4	Rotten egg like smell	S^{2-} may be present
<u>Confirmatory test</u> i) Salt sol ⁿ + Acetic Acid in excess + lead acetate [$(CH_3COO)_2Pb$]	Black ppt (Pbs)	S^{2-} is confirmed
ii) Salt sol ⁿ + $AgNO_3$ sol ⁿ	Black ppt (Ag_2S)	S^{2-} is confirmed

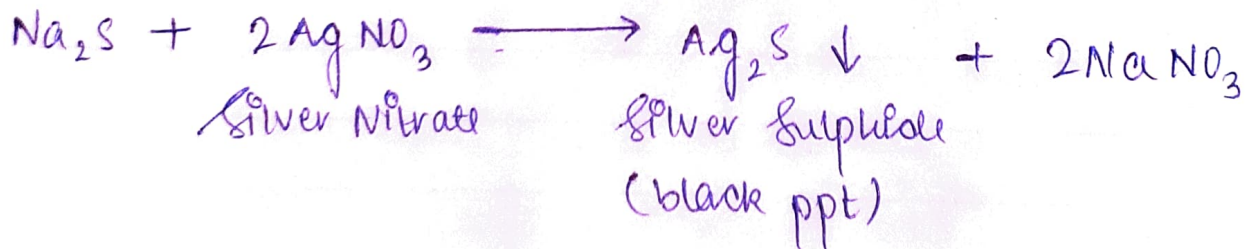
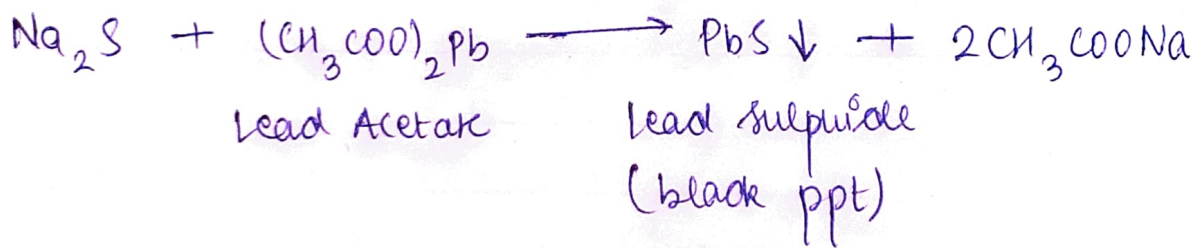
Result

The given salt contains sulphide ion (S^{2-})

Preliminary Test



Confirmatory Test



SULPHITE ION

Aim

To detect sulphite ion (SO_3^{2-}) in the given salt

Experiment	Observation	Inference
Preliminary Test salt + dil. H_2SO_4	Burning hair like or sulphur like smell	SO_3^{2-} may be present.
Confirmatory Test (i) Salt sol ⁿ + $\text{K}_2\text{Cr}_2\text{O}_7$ + H_2O + dil. H_2SO_4	Orange colour changes to green	SO_3^{2-} present confirmed
(ii) Salt soln. + FeCl_3 sol ⁿ	Reddish brown ppt	SO_3^{2-} is confirmed.

Result

The given salt contains sulphite ion (SO_3^{2-})

NITRATE ION

Aim

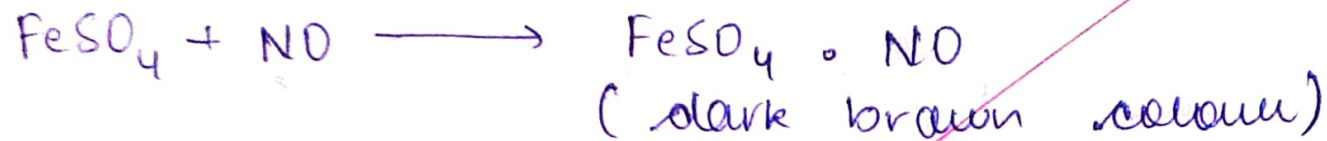
To detect nitrate ion (NO_2^-) in the given salt

Experiment	Observation	Inference
<u>Preliminary Test</u> salt + dil H_2SO_4	Reddish brown gas evolved	NO_2^- may be present
<u>Confirmatory Test</u> i) FeSO_4 Test: To a portion of aq. sol ⁿ of salt add few drops acetic acid & freshly prepared FeSO_4 sol ⁿ .	Sol ⁿ turns down brown or black	NO_2^- is confirmed
ii) KMnO_4 Test: To the w.e. of salt, add few drops of acidified KMnO_4 sol ⁿ .	Pink colour of KMnO_4 sol ⁿ is discharged	NO_2^- confirmed.

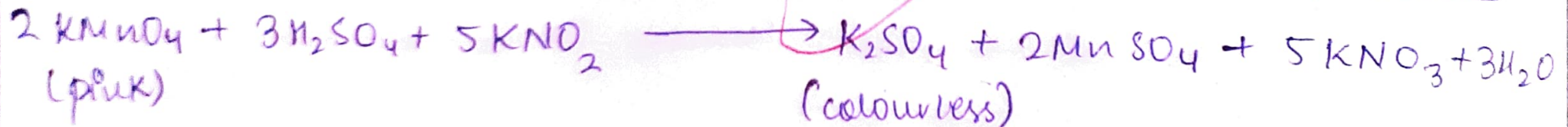
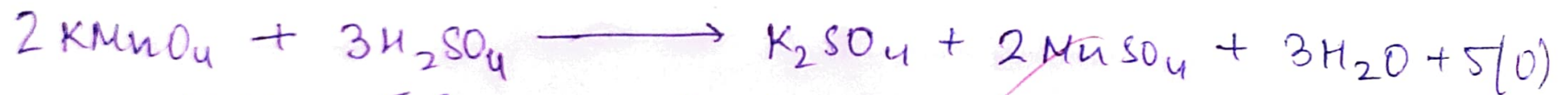
Result

The given salt contains (NO_2^-) ion

Ferrous Sulphate (FeSO_4) Test :



Potassium Permanganate (KMnO_4) Test :



CHLORIDE ION

Aim

To detect chloride ion in the given salt

Experiment

Observation

Inference

Preliminary Test
salt + conc. H_2SO_4

White fumes appear which become dense when NH_4OH drop being over the mouth of test tube.

Cl^- may be present.

Confirmatory Test

(i) $AgNO_3$ test :
aq. solⁿ of salt + aq. HNO_3 + $AgNO_3$ solⁿ

creamy white ppt. soluble in NH_4OH solⁿ

Cl^- confirmed

(ii) Chromyl Chloride Test :
Small amount of solid salt with equal amount of powdered $K_2Cr_2O_7$ & heat the mixture with H_2SO_4 .

Red vapours of chromyl chloride (CrO_2Cl_2) evolved

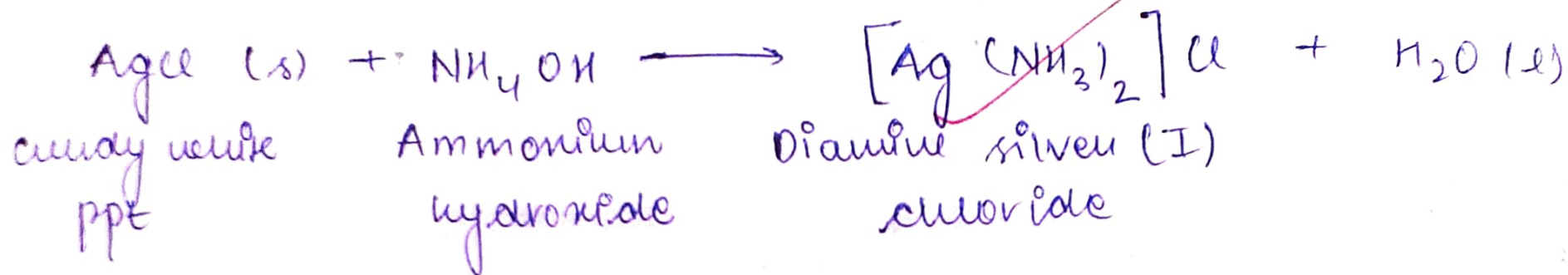
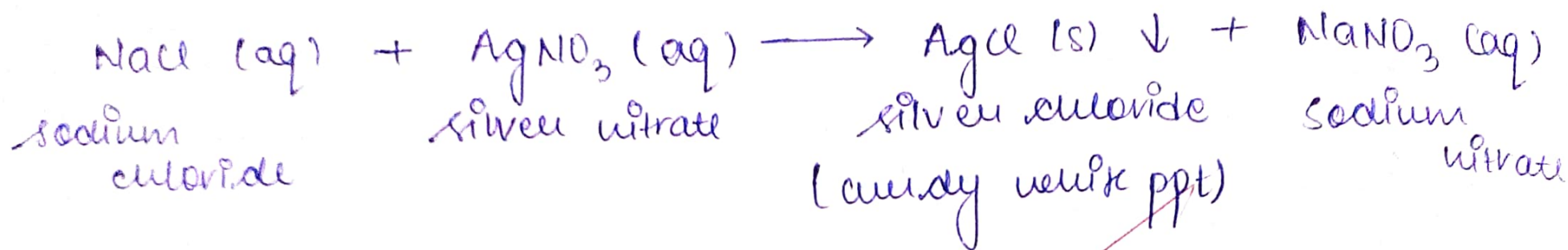
Cl^- confirmed

Pass the red vapours through $NaOH$ solⁿ

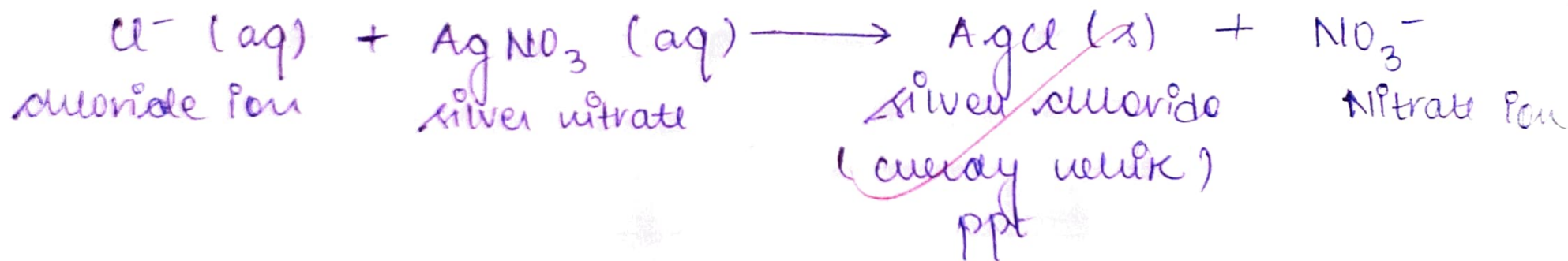
solⁿ turns yellow

Cl^- confirmed

Silver Nitrate Test



OR



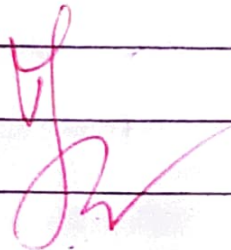
Acidify the yellow solⁿ
with acetic acid &
then add lead acetate
solⁿ.

Yellow ppt soluble
in NaOH

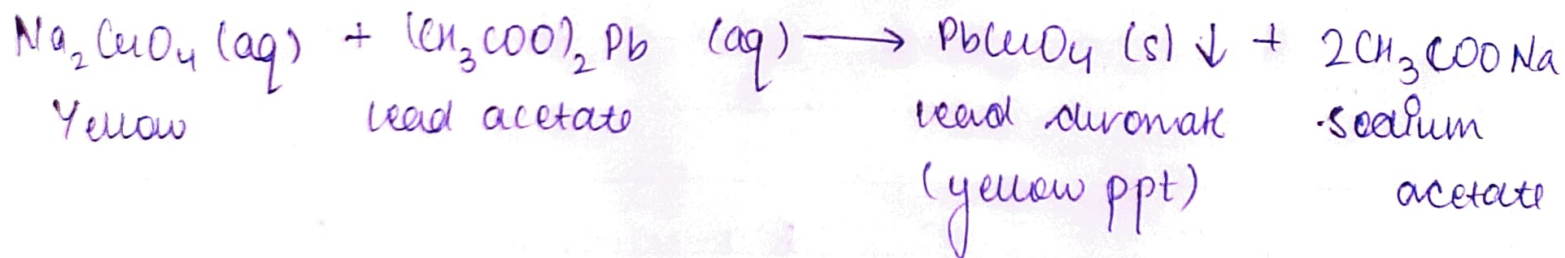
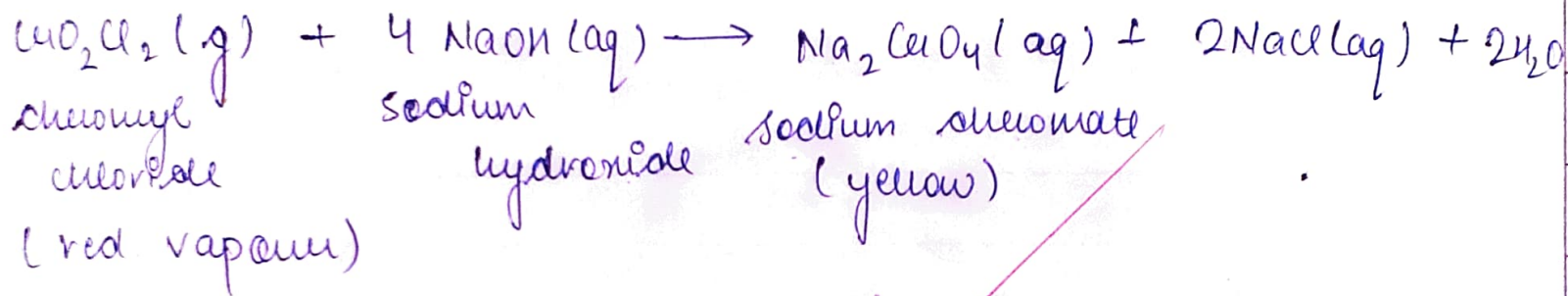
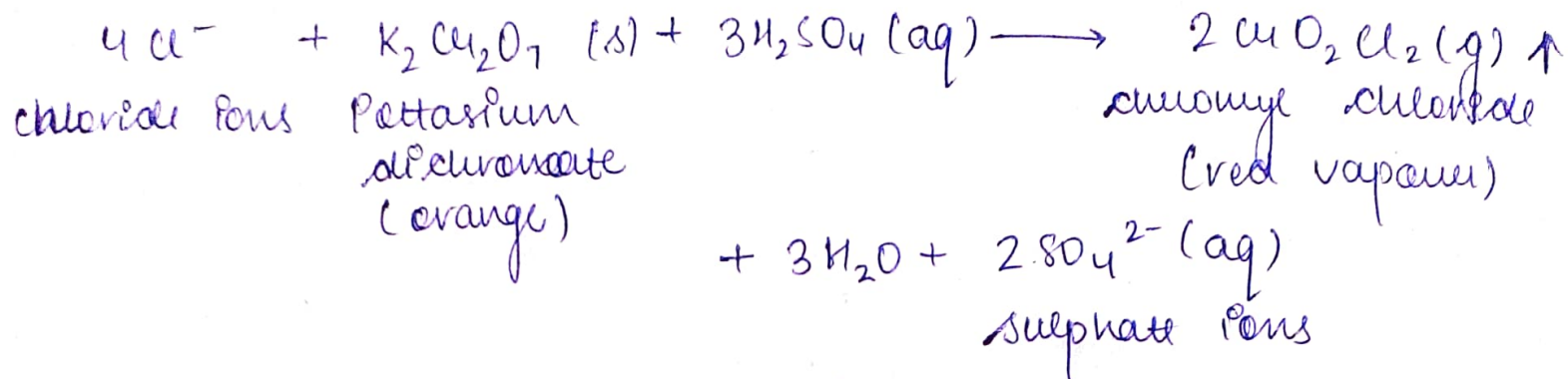
Cl⁻ confirmed

Result

The given salt contains Cl⁻ ion



chromyl chloride Test



Aim

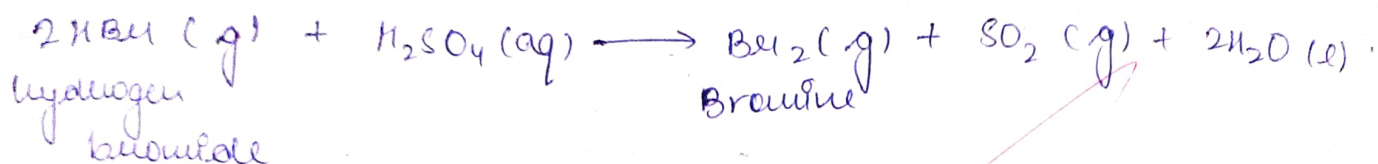
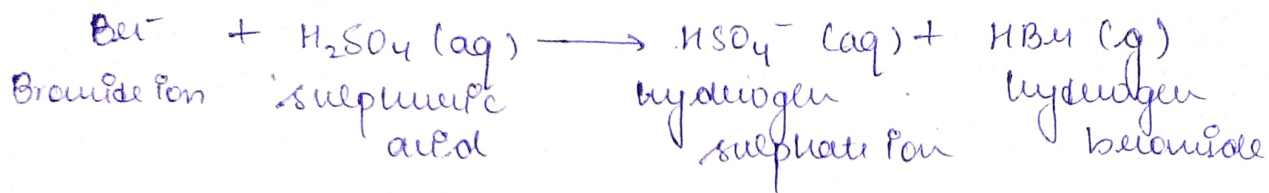
To detect Bromide (Br^-) ion in given salt

<u>Experiment</u>	<u>Observation</u>	<u>Inference</u>
<u>Preliminary Test</u> salt + conc. H_2SO_4	Brown fumes appear	Br^- ion may be present.
<u>Confirmatory Test</u> salt sol ⁿ + AgNO_3 sol ⁿ	Pale yellow ppt formed which is insoluble in NH_4OH	Br^- ion confirmed.

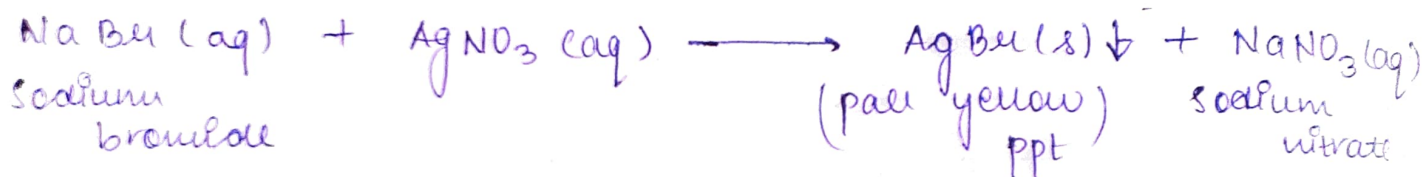
Result

The given salt contains (Br^-) ion

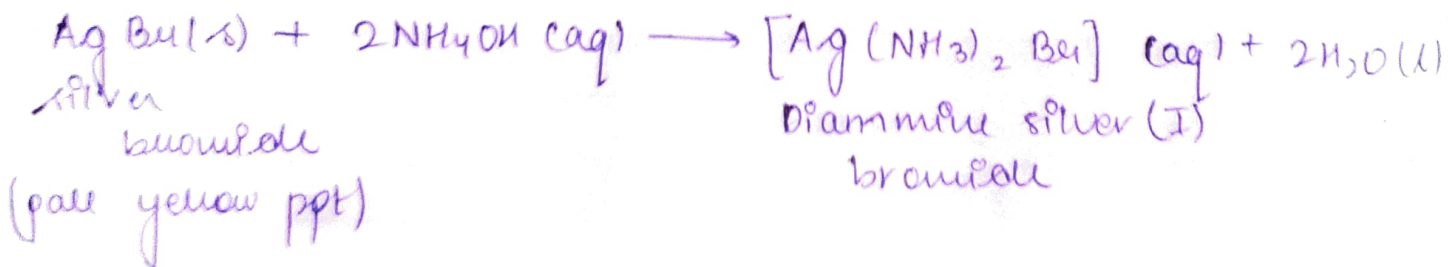
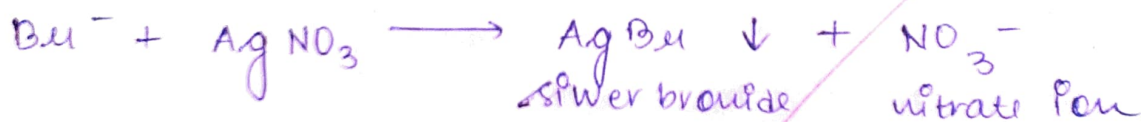
Preliminary Test



Confirmatory Test



OR



Aim

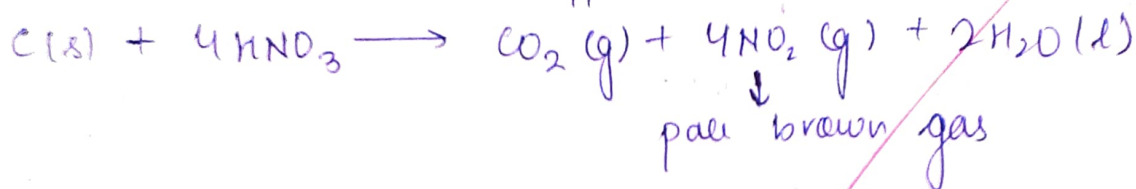
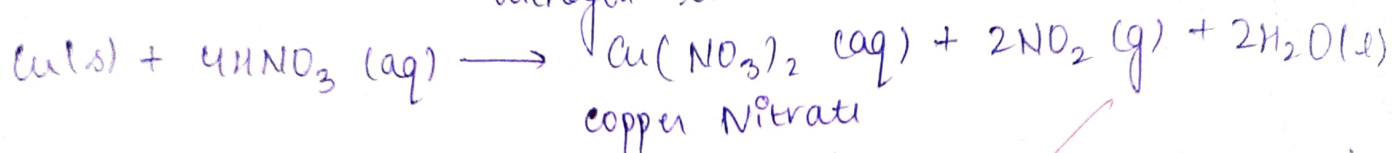
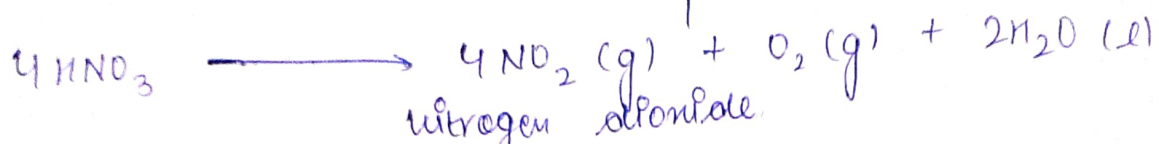
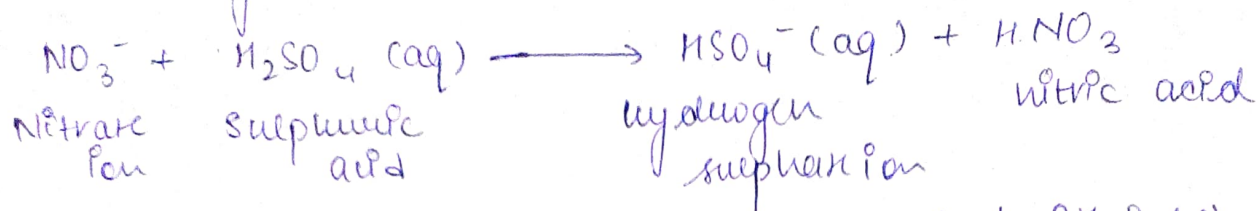
To analyse the nitrate (NO_3^-) ion in the given salt

Experiment	Observation	Inference
Preliminary Test salt + conc. H_2SO_4 + heat + piece of paper.	Brown fumes appear	(NO_3^-) ion may be present.
Confirmatory Test Brown Ring Test : Salt sol ⁿ + FeSO_4 sol ⁿ + conc. H_2SO_4 drop wise along side of test tube	Brown ring formed	(NO_3^-) confirmed

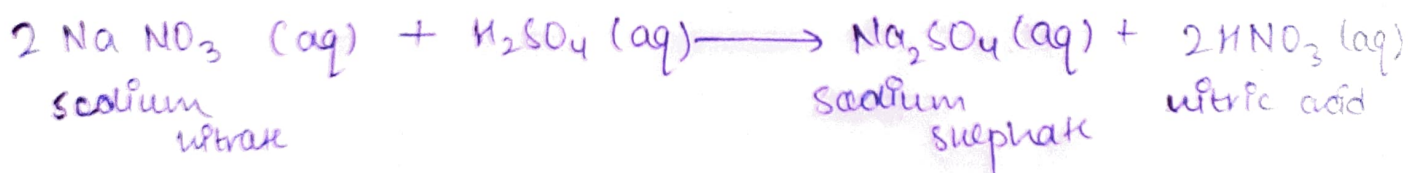
Result

The given salt contains (NO_3^-) ion.

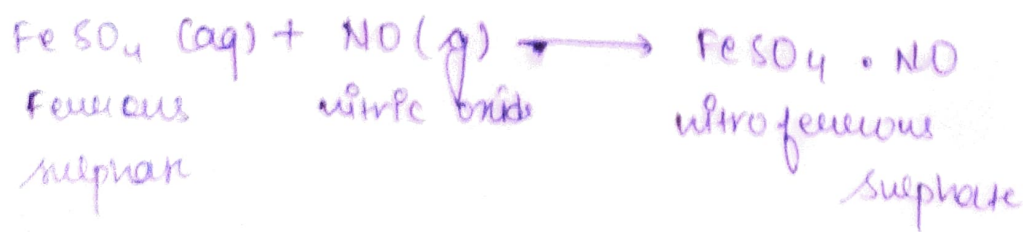
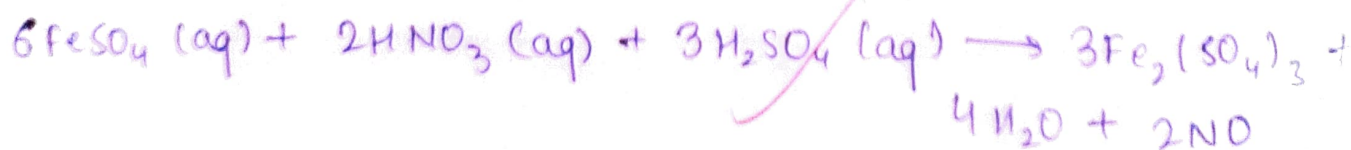
Preliminary Test



Confirmatory Test (Brown Ring Test)



OR



Aim:

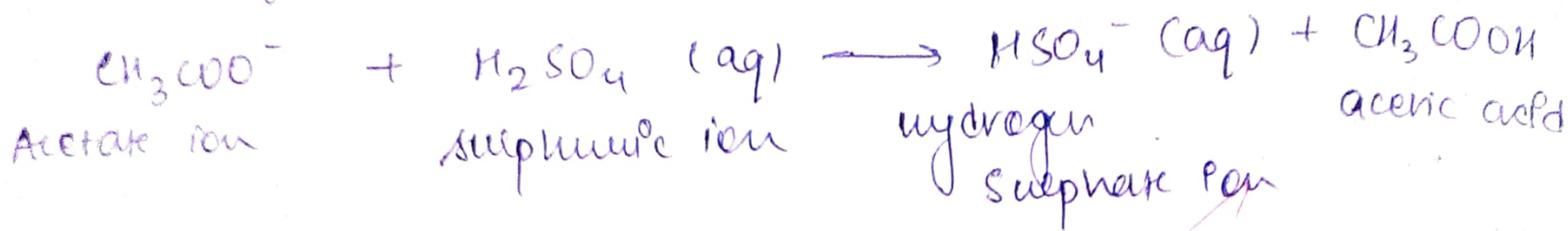
To analyse acetate ion (CH_3COO^-) in given salt

Experiment	Observation	Inference
<u>Preliminary Test</u> salt + conc. H_2SO_4	Gas comes out having vinegar smell.	$(\text{CH}_3\text{COO}^-)$ may be present.
<u>Confirmatory Test</u> FeCl_3 test: salt sol ⁿ + FeCl_3 sol ⁿ	Deep red colour produced.	$(\text{CH}_3\text{COO}^-)$ is confirmed.

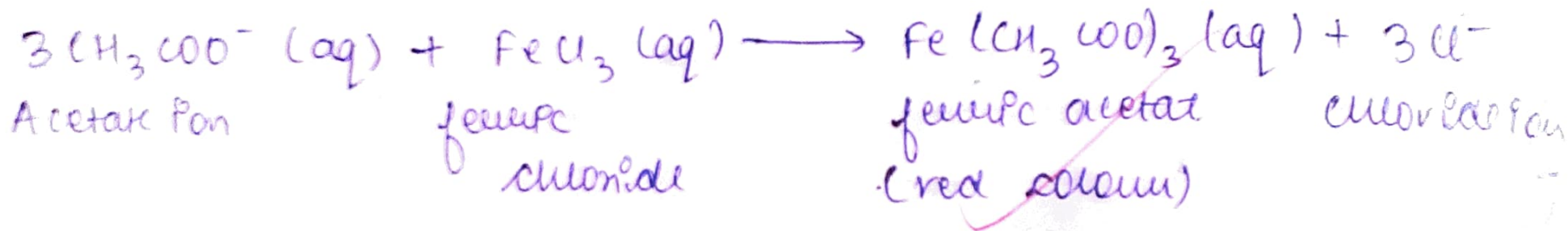
Result

The given salt contains $(\text{CH}_3\text{COO}^-)$ ion.

Preliminary Test



Confirmatory Test



Aim

To analyse the sulphate (SO_4^{2-}) ion in the given salt

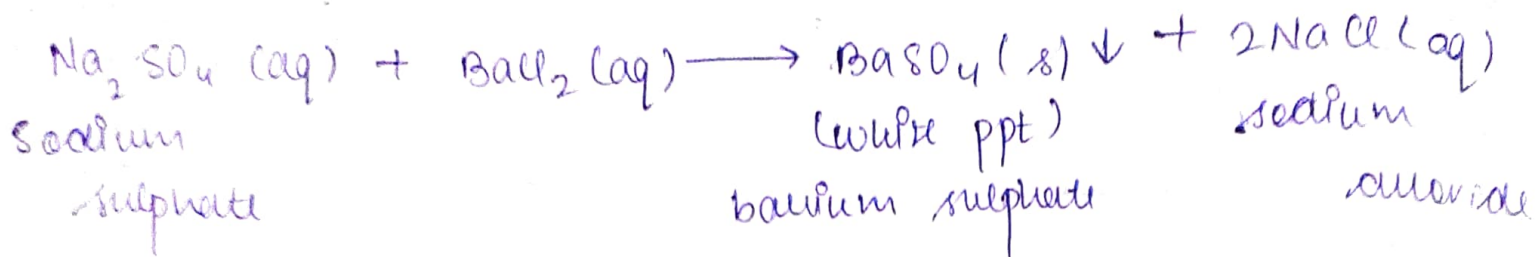
<u>Experiment</u>	<u>Observation</u>	<u>Inference</u>
<u>Preliminary Test</u> salt sol ⁿ + BaCl ₂ sol ⁿ	white ppt	SO_4^{2-} ion is confirmed
• salt sol ⁿ + Acetic acid + Lead Acetate sol ⁿ	white ppt	SO_4^{2-} confirmed

Result

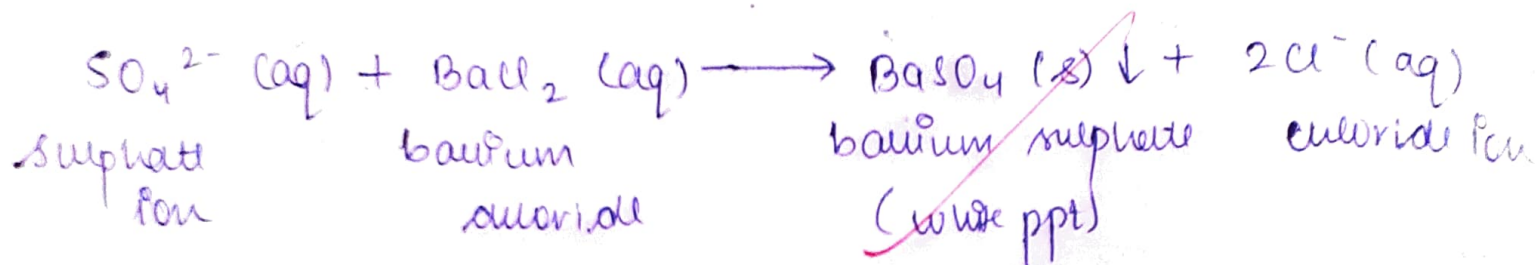
The given salt contains SO_4^{2-} ion.

W/h

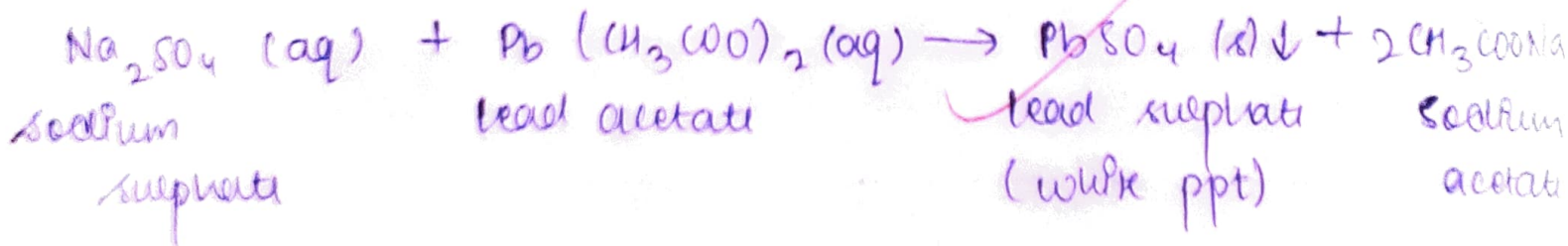
Barium Chloride Test



OR



Lead Acetate Test



Aim

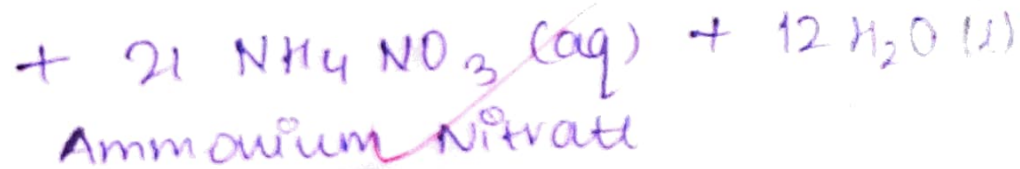
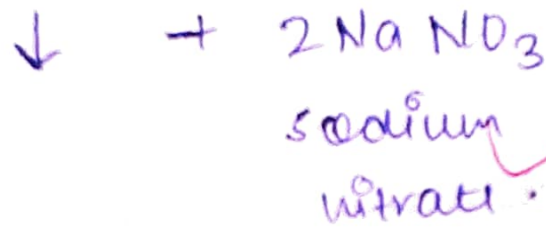
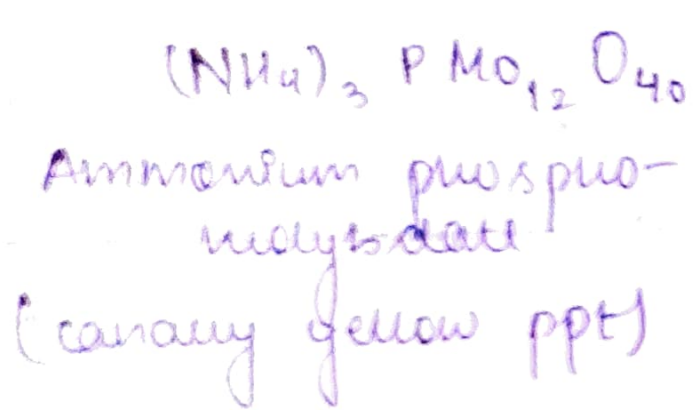
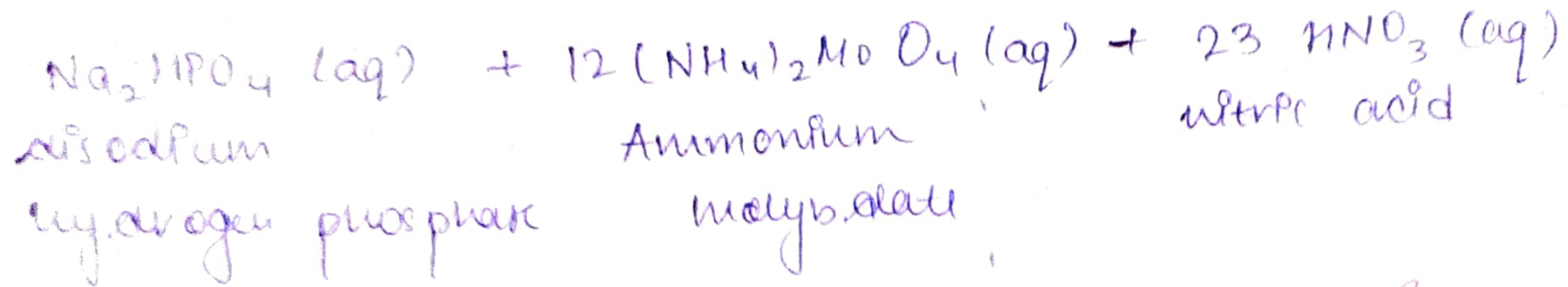
To analyse the phosphate ion (PO_4^{3-}) in the given solution.

Experiment	Observation	Inference
Salt sol ⁿ + conc. HNO_3 + boil + Ammonium molybdate sol ⁿ + heat + conc. HNO_3	Yellow ppt	PO_4^{3-} confirmed

Result

The given salt contains (PO_4^{3-}) ion.

Ammonium molybdate Test



CARBONATE ION

Aim

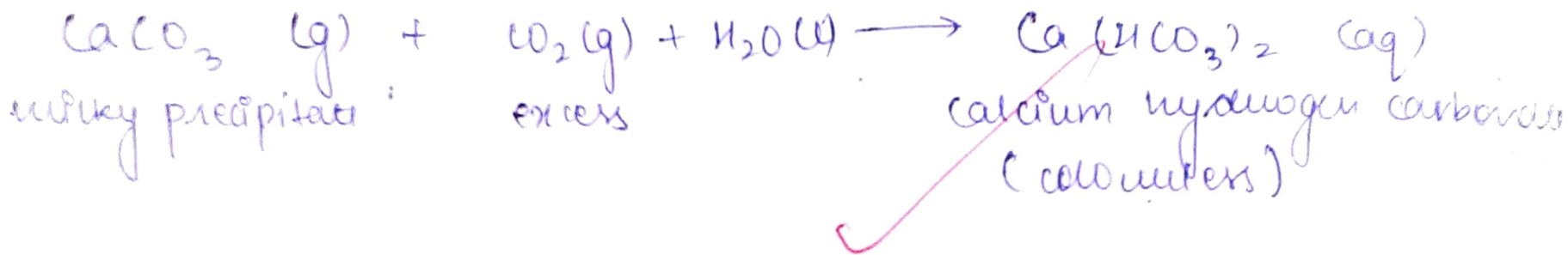
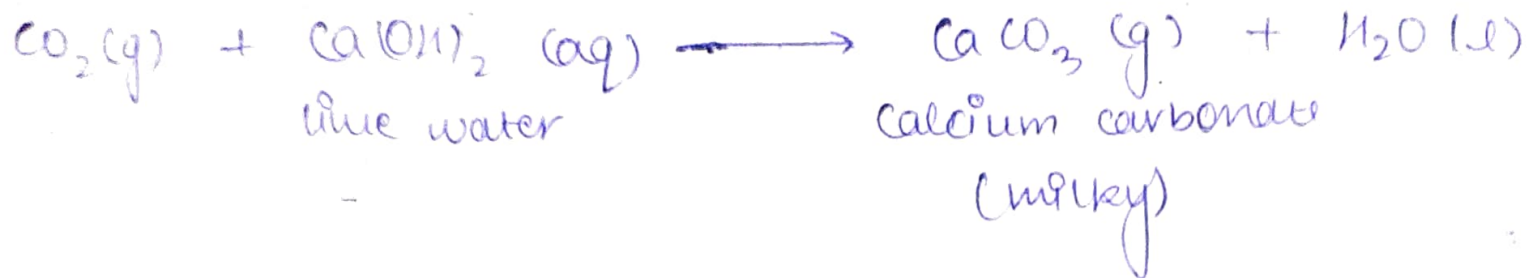
To detect the carbonate ion (CO_3^{2-}) in the given salt

Experiment	Observation	Inference
<u>Preliminary Test</u> salt + dil. H_2CO_3	Bulky effervescence appears	CO_3^{2-} may be present
<u>Confirmatory Test</u> Take 10 ml water in one test tube of water & salt + dil. H_2CO_3 in other.	lime water turns milky	CO_3^{2-} is confirmed
(ii) salt sol ⁿ + MgSO_4 sol ⁿ	white ppt is formed	CO_3^{2-} confirmed

Result

The given salt contains carbonate ion (CO_3^{2-})

Preliminary Test



Confirmatory Test

