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	SYSTEMATIC ANALYSIS OF SIMPLE SALT- I			
S NO	Experiment	Observation	Inference	
	A	nalysis of anions		
1	<b>Colour:</b> Note the colour of the salt	Colourless	Absence of copper sulphate, iron salt	
2.	<b>Action of heat:</b> A small amount of a salt is heated in a test tube	A reddish brown gas with a fishy odour evolves	Presence of a nitrate salt	
3.	Flame test: Small amount of salt + A drop of Conc. HCI ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic Colour flame Observed.	Absence of a copper, barium, calcium	
4.	Action of dil. HCI: Small amount of salt + 1mL of dil. HCI . Gently heat it	A reddish brown gas with the fishy odour turning a moist ferrous sulphate paper brownevolves	Presence of nitrate	
5	Action of Conc.H2SO4: Small amount of a salt in a dry test tube + Conc. H2SO4 and gently heat it	Reddish brown gas turning acidified ferrous sulphate paper green evolves.	Presence of nitrate	
6	Action of MnO2 and Conc. H2SO4: Small amount of salt in a dry test tube + pinch of MnO2 + Conc.H2SO4 and gently heat it	No Characteristic Change is Observed.	Absence of chloride, bromide	
7.	Action of Conc. H2SO4 and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. H2SO4. Gently heat it	A reddish brown gas with fishy odour turning a moist ferrous sulphate paper brown evolves	Presence of nitrate.	
8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt	
9	<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. H2SO4.Gently heat it.	No Red Orange is Observed.	Absence of chloride.	

# Analysis with Sodium carbonate extract

Preparation of Sodium carbonate extract

Take 1g of the given salt + 3g of solid sodium carbonate + 20g of distilled water. Boil the solution for few mins, filter. The filtrate is called sodium carbonate extract.

10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. HNO3 + 1ml of AgNO3, and shake it	No Characteristic ppt is Observed.	Absence of chloride, bromide, sulphide
11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	No white ppt is formed	Absence of sulphate
12	<b>Test with lead acetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1ml of lead acetate	No white ppt is formed	Absence of sulphate
13	<b>Brown ring test:</b> 1ml o f the sodium carbonate extract + dil. $H_2SO_4$ + freshly prepared ferrous sulphate solution then add Conc. $H_2SO_4$ along the sides of the test tube.	A brown ring is formed	Presence of nitrate confirmed.
14	Ammonium molybdate test: 1 ml of the extract + dil $HNO_3$ + about 1 ml each of ammonium molybdate and Conc. $HNO_3$	No canary yellow ppt is formed.	Absence of phosphate
15	<b>Test with sodium nitrobruside:</b> 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops of sodium nitrobruside.	No purple or violet colouration appears	Absence of sulphide.
To a s	ration of salt solution: mall amount of salt in a test tube add 2 on is called "original solution".	to 3ml of water, shake it and g	gently heat it. This
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1mL of dil HCI, and shake it	A White ppt is formed.	Presence of 1st group metal ions (Pb <sup>2+</sup> )
Analy	isis of the 1st group ppt:		<u> </u>
	To the ppt add about 1ml of water and boil it	The ppt dissolves	Presence of Lead

1	<b>Test for Lead:</b> To one portion of the hot solution add about 1ml of K <sub>2</sub> CrO <sub>4</sub>	A yellow ppt is obtained	Presence of Lead
2	To an another portion of the hot solution add about 1ml of KI. To the yellow ppt add about 1ml of water, boil and cool.	A yellow ppt is obtained.The yellow ppt dissolves on boiling , and on cooling golden spangles appear	Presence of lead is confirmed.
The ca	t: nion Present : NITRATE ation Present : LEAD siven simple salt : LEAD NITRATE		

	SYSTEMATIC ANALYSIS OF SIMPLE SALT-II				
S NO	Experiment	Observation	Inference		
	Anal	ysis of anions			
1	<b>Colour:</b> Note the colour of the salt	Blue	May be copper sulphate		
2.	Action of heat: A small amount of a salt is heated in a test tube	Blue Changes into White due to dehydration	May be copper sulphate		
3.	Flame test: Small amount of salt + A drop of Conc. HCI ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	Bluish green flame.	Presence of a Copper salt		
4.	<b>Action of dil. HCI:</b> Small amount of salt + 1mL of dil. HCI . Gently heat it	No Charactristic gas evolves	Absence of Carbonate,Nitrate, Sulphide		
5	Action of Conc.H <sub>2</sub> SO <sub>4</sub> : Small amount of a salt in a dry test tube + Conc. H <sub>2</sub> SO <sub>4</sub> and gently heat it	No Charactristic gas evolves	Absence of Chloride, Bromide, Nitrate		
6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	No Characteristic Gas is evolved.	Absence of chloride, bromide		
7.	Action of Conc. H <sub>2</sub> SO <sub>4</sub> and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. H <sub>2</sub> SO <sub>4</sub> . Gently heat it	No reddish brown gas evolves	Absence of nitrate.		

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8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt
9	<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. $H_2SO_4$ .Gently heat it.	No Red Orange Vapour is Observed.	Absence of chloride.
P <b>repa</b> Fake <i>1</i>	sis with Sodium carbonate extract ration of Sodium carbonate extract 1g of the given salt + 3g of solid sodium v mins, filter.The filtrate is called sodiun	•	ater. Boil the solution
10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. HNO <sub>3</sub> + 1ml of AgNO <sub>3</sub> , and shake it	No Characteristic ppt is Observed.	Absence of chloride, bromide, sulphide
11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of barium chloride solution and shake	A white ppt insoluble in dil $H_2SO_4$ is formed	Prsence of sulphate is Confirmed.
12 <sub>\\\</sub>	Test with leadacetate: 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	A whit ppt soluble in excess of ammonium acetate is formed	Presence of sulphate
13	<b>Brown ring test:</b> 1ml of the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	No brown ring is formed	Absence of Nitrate
14	Ammonium molybdate test: 1 ml of the extract + dil HNO <sub>3</sub> + about 1mL each of ammonium molybdate and Conc. HNO <sub>3</sub>	No canary yellow ppt is formed.	Absence of Phosphate
15	<b>Test with sodium nitro bruside:</b> 1ml of the sodium carbonate extract + 1ml of dil. aommonia. + few drops of sodium nitro bruside.	No purple or violet colouration appears	Absence of sulphide.

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1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it	No ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
3	<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	A Black ppt is formed	Presence of 2nd group metal ions (Cu <sup>2+</sup> )
Analy	sis of the 2nd group ppt:	I	
1	<b>Test for copper:</b> i). To one portion of the solution add ammonium hydroxide	No ppt is obtained, but the solution is blue	Presence of Copper
2	ii) To the blue coloured solution add about 1ml each of acetic acid and potassium ferro cyanide	A red brown ppt is obtained	Presence of Copper Confirmed
The	e Anion Present : SULPHATE e cation Present : COPPER e Given simple salt : COPPER SULF SYSTEMATIC ANA	PHATE ALYSIS OF SIMPLE SALT-III	<u>n.Ne</u> í
S NO	Experiment	Observation	Inference
		ysis of anions	1
1	Colour: Note the colour of the salt	Green	
2.			May be Copper Carbonate
	Action of heat: A small amount of a salt is heated in a test tube	A colourless, odourless gas turning lime water milky evolves	
3.	A small amount of a salt is heated in	turning lime water milky	Carbonate
3.	A small amount of a salt is heated in a test tube <b>Flame test:</b> Small amount of salt + A drop of Conc. HCl ,form a paste. Take the paste at the charred end of the splinter and introduce it near the	turning lime water milky evolves	Carbonate Presence of carbonate Presence of a copper salt Presence of carbonate

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6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	No Characteristic Gas is evolved.	Absence of chloride, bromide
7.	Action of Conc. $H_2SO_4$ and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	No reddish brown gas evolves	Absence of nitrate.
8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt
9	<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. $H_2SO_4$ .Gently heat it.	No Red Orange Vapour is Observed.	Absence of chloride.
<b>Prepa</b> Take	sis with Sodium carbonate extract ration of Sodium carbonate extract 1g of the given salt + 3g of solid sodium v mins, filter.The filtrate is called sodium Test for halides: 1 ml of sodium carbonate extract +dil, HNO <sub>3</sub> + 1ml of AgNO <sub>3</sub> , and	n carbonate extract. No Characteristic ppt is	Absence of chloride,
11	shake it <b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of barium chloride solution and shake	Observed. No white ppt is obtained	bromide, sulphide Absence of sulphate
12	<b>Test with leadacetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	No white ppt is obtained	Absence of sulphate
13	<b>Brown ring test:</b> 1ml of the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	No brown ring is formed	Absence of nitrate
14	<b>Ammonium molybdate test:</b> 1 ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub>	No canary yellow ppt is formed.	Absence of phosphate

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15	<b>Test with sodium nitro bruside:</b> 1ml of the sodium carbonate extract + 1ml of dil. aommonia. + few drops of sodium nitro bruside.	No purple or violet colouration appears	Absence of sulphide.
To a s	ration of salt solution: mall amount of salt in a test tube add 2 on is called "original solution".	to 3ml of dil. HCl, shake it and	l gently heat it. This
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it	No ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
3	<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	A Black ppt is formed	Presence of 2nd group metal ions (Cu <sup>2+</sup> )
Analy	sis of the 2nd group ppt:		
1	Test for copper: i). To one portion of the solution add ammonium hydroxide	No ppt is obtained, but the solution is blue	Presence of Copper
2	Vii) To the blue coloured solution add about 1ml each of acetic acid and potassium ferro cyanide	A red brown ppt is obtained	Presence of Copper Confirmed
The ca	nion Present : CARBONATE ation Present : COPPER viven simple salt : COPPER CARBON	IATE	
	SYSTEMATIC ANA	LYSIS OF SIMPLE SALT- IV	
S NO	Experiment	Observation	Inference
	Anal	ysis of anions	
1	Colour: Note the colour of the salt	Brown	May be an iron salt
2.	<b>Action of heat:</b> A small amount of a salt is heated in a test tube	No Characteristic Change Occurs	Absence of Zinc, Ammonium, Nitrate

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3.	Flame test: Small amount of salt + A drop of Conc. HCl ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic flame Colour is Observed.	Absence of Copper, Barium, Calcium
4.	Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	No Charactristic gas evolves	Absence of Carbonate,Nitrate, Sulphide
5	Action of Conc. $H_2SO_4$ : Small amount of a salt in a dry test tube + Conc. $H_2SO_4$ and gently heat it	A colourless gas evolves. It gives a dense white fumes when a glass rod dipped in liquid ammonia is brought close to its mouth	Prsence of Chloride
6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	A greenish yellow gas turning starch iodide paper blue evolves	Prsence of Chloride
7.	Action of Conc. $H_2SO_4$ and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	No reddish brown gas evolves	Absence of nitrate.
8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt
9	<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. H2SO4.Gently heat it. Pass the vapours into dilute sodium hydroxide solution. If a yellow solution is obtained, add dil. Acetic acid and lead acetate	A yellow ppt is obtained	Presence of chloride.
Prepa Take	sis with Sodium carbonate extract aration of Sodium carbonate extract 1g of the given salt + 3g of solid sodium winns, filter.The filtrate is called sodium	•	ater. Boil the solution
10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. $HNO_3$ + 1ml of $AgNO_3$ , and shake it	A curdy white ppt insoluble in dil. Ammonia is formed	Presence of chloride

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11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	No white ppt is obtained	Absence of sulphate
12	<b>Test with leadacetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	No white ppt is obtained	Absence of sulphate
13	<b>Brown ring test:</b> 1mL of the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	No brown ring is formed	Absence of nitrate
14	Ammonium molybdate test: 1 ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc.HNO <sub>3</sub>	No canary yellow ppt is formed.	Absence of phosphate
15	<b>Test with sodium nitrobruside:</b> 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops of sodium nitro bruside.	No purple or violet colouration appears	Absence of sulphide.
To a s	aration of salt solution: small amount of salt in a test tube add 2 on is called "original solution".	to 3ml of water, shake it and g	gently heat it. This
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
3	<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )
4	<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of $NH_4CI$ , $NH_4OH$ and shake it well	A brown ppt is formed	presence of 3rd group metal ions (Fe <sup>3+</sup> )
Analy	vsis of the 3rd group ppt:	1	
1	To the ppt add a pinch of sodium peroxide and boil it	A red or brown ppt is obtained	Presence of Iron

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2	i.) To one portion of the red ppt add about 1mL of dil HCl and boil it and then add about 1ml of potassium ferocyanide	A blue ppt is obtained	Presence of Iron is Confirmed
3	ii.) To an another portion of the ppt add about 1mL of dil. HNO <sub>3</sub> boil it and then add about 1ml of KCNS	A blood red colouration is seen	Presence of Iron is Confirmed
The ca	:: nion Present : CHLORIDE ation Present : FERRIC iven simple salt : FERRIC CHLORID	E	

S NO	Experiment	Observation	Inference
3 110	•		Interence
	Anal	ysis of anions	
1	<b>Colour:</b> Note the colour of the salt	Colourless	Absence of copper, Iron salts
2. 7	Action of heat: A small amount of a salt is heated in a test tube	No Characteristic Change Occurs	Absence of Zinc, Ammonium, Nitrate
3.	Flame test: Small amount of salt + A drop of Conc. HCI ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic flame Colour is Observed.	Absence of Copper, Barium, Calcium
4.	Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	No Charactristic gas evolves	Absence of Carbonate,Nitrate, Sulphide
5	Action of Conc.H <sub>2</sub> SO <sub>4</sub> : Small amount of a salt in a dry test tube + Conc. H <sub>2</sub> SO <sub>4</sub> and gently heat it	No Charactristic gas evolves	Absence of Chloride, Bromide, Nitrate
6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	No Characteristic Gas is evolved.	Absence of chloride, bromide

8.       and gently heat it.       Observed.       salt         9       Chromyl chloride test: Small amount of salt in + a pinch of potassium dichromate and three drops Conc. H <sub>2</sub> SQ <sub>4</sub> .Gently heat it.       No Red Orange Vapour is Observed.       Absence of chloride.         Analysis with Sodium carbonate extract Preparation of Sodium carbonate extract Take 1g of the given salt + 3g of solid sodium carbonate + 20g of distilled water. Boil the solution for few mins, filter. The filtrate is called sodium carbonate extract.       No Characteristic ppt is Obtained.       Absence of chloride.         10.       Test for halides: 1 ml of sodium carbonate extract on em l of the sodium carbonate extract.       No Characteristic ppt is Obtained.       Absence of chloride, bromide, sulphide         11       Test with barium chloride: One ml of the sodium carbonate extract, 10.       No Characteristic ppt is Obtained.       Presence of sulphate Confirmed.         12       Test with leadacetate: 11       Iml of dia cetic acid + 1ml of bariumchloride solution and shake       A whit ppt soluble in excess of ammonium acetate is formed       Presence of sulphate Confirmed.         12       Ho fit be sodium carbonate extract, + dill H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.       No brown ring is formed       Absence of nitrate         14       The extract + dil HNO <sub>3</sub> + about 14       No canary yellow ppt is formed.       Absence of phosphate formed.         14       The exolum nitrobruside: 1 ml of th		www.Padasalai.Net	www.	TrbTnpsc.com
8.       amont of a sait + dil NaOH solution and gently heat it.       No Characteristic gas is Observed.       Absence of ammoni sait         9.       Chromyl chloride test: Small amount of salt in + a pinch of potassium dichromate and three drops Conc. H <sub>2</sub> SO <sub>4</sub> .Gently heat it.       No Red Orange Vapour is Observed.       Absence of chloride.         9.       potassium dichromate and three drops Conc. H <sub>2</sub> SO <sub>4</sub> .Gently heat it.       No Red Orange Vapour is Observed.       Absence of chloride.         Analysis with Sodium carbonate extract Take 1g of the given salt + 3g of solid sodium carbonate extract.         10.       Test for halides: 1 ml of sodium carbonate extract 10. +dil. HNO <sub>3</sub> + 1ml of AgNO <sub>3</sub> , and shake it       No Characteristic ppt is Obtained.       Absence of chloride, bromide, sulphide         11       Test with barium chloride: One ml of the sodium carbonate extract, + 1ml of the sodium nitrobruside: 1ml of the sodium carbonate extract, + 1ml of dil .aomonia. + few drops       No purple or violet	7.	<b>turning:</b> small amount of salt in a dry test tube + few copper turnings +	_	Absence of nitrate.
9       Small amount of salt in + a pinch of potassium dichromate and three drops Conc. H <sub>2</sub> SO <sub>4</sub> . Gently heat it.       No Red Orange Vapour is Observed.       Absence of chloride.         4       Analysis with Sodium carbonate extract       Preparation of Sodium carbonate extract       Analysis with Sodium carbonate extract       Analysis with Sodium carbonate extract         7       Take 1g of the given salt + 3g of solid sodium carbonate + 20g of distilled water. Boil the solution for few mins, filter. The filtrate is called sodium carbonate extract.       No Characteristic ppt is Obtained.       Absence of chloride, bromide, sulphide         10.       Test for halides:       In of sodium carbonate extract       No Characteristic ppt is Obtained.       Absence of chloride, bromide, sulphide         11       Test with barium chloride:       One ml of the sodium carbonate extract, the bariumchloride solution and shake       A white ppt insoluble in dill       Presence of sulphate         12       Test with leadacetate:       A whit ppt soluble in excess of armonium acetate is formed       Presence of sulphate         12       Thil of the sodium carbonate extract, the ill.H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.       No brown ring is formed       Absence of nitrate         13       Ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.       No canary yellow ppt is formed.       Absence of phosphate formed.         14       Ind of the sodium carbonate extract in the ach of ammonium molybdate tes	8.	amont of a salt + dil.NaOH solution	3	Absence of ammonium salt
Preparation of Sodium carbonate extract         Take 1g of the given salt + 3g of solid sodium carbonate + 20g of distilled water. Boil the solution for few mins, filter. The filtrate is called sodium carbonate extract.       Test for halides:         10.       Test for halides:       I ml of sodium carbonate extract         10.       Test with barium chloride:       No Characteristic ppt is Obtained.         11       Test with barium chloride:       No Characteristic ppt is Obtained.         11       Test with barium chloride:       A white ppt insoluble in dil         11       Presence of sulphate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake       A white ppt insoluble in excess of armonium acetate is formed         12       Test with leadacetate:       A whit ppt soluble in excess of armonium acetate is formed       Presence of sulphate         13       Ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.       No brown ring is formed       Absence of nitrate         14       Iml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub> No canary yellow ppt is formed.       Absence of phosphate         14       Test with sodium nitrobruside: 1ml of the sodium carbonate extract + 1ml of dil aommonium molybdate extract + 1ml of dil aommonium molybdate extract + 1ml of dil aommonium molybdate       No canary yellow ppt is formed.       Absence of phosphate	9	Small amount of salt in + a pinch of potassium dichromate and three	<b>.</b> .	Absence of chloride.
1 ml of sodium carbonate extract +dil. HNO3 + 1ml of AgNO3, and shake it       No Characteristic ppt is Obtained.       Absence of chloride, bromide, sulphide         10. <b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake       A white ppt insoluble in dil H <sub>2</sub> SO <sub>4</sub> is formed       Presence of sulphate Confirmed.         11 <b>Test with leadacetate:</b> 11       A white ppt insoluble in excess of armonium acetate is formed       Presence of sulphate Confirmed.         12 <b>Test with leadacetate:</b> 11       A white ppt soluble in excess of armonium acetate is formed       Presence of sulphate         12 <b>Test with leadacetate:</b> 11       A white ppt soluble in excess of armonium acetate is formed       Presence of sulphate         12 <b>Test with leadacetate:</b> 11       A white ppt soluble in excess of armonium acetate is formed       Presence of sulphate         13 <b>Forwn ring test:</b> 11       A white ppt soluble in excess of armonium acetate is formed       Presence of nitrate         13 <b>Brown ring test:</b> 11       No brown ring is formed       Absence of nitrate         14       Ammonium molybdate test: 11       No canary yellow ppt is formed.       Absence of phosphate         14       Test with sodium nitrobruside: 11       No purple or violet       Absence of sulphide <td><b>Prepa</b> Take</td> <td>ration of Sodium carbonate extract 1g of the given salt + 3g of solid sodiun</td> <td>0</td> <td>ater. Boil the solution</td>	<b>Prepa</b> Take	ration of Sodium carbonate extract 1g of the given salt + 3g of solid sodiun	0	ater. Boil the solution
11       One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake       A while ppt insoluble in dil       Prsence of sulphate Confirmed.         11       Test with leadacetate:       1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of dil acetic acid and heat it + 1 ml of Lead Acetate       A whit ppt soluble in excess of ammonium acetate is formed       Presence of sulphate         12       Brown ring test:       A whit ppt soluble in excess of ammonium acetate is formed       Presence of sulphate         13       ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.       No brown ring is formed       Absence of nitrate         14       1ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate test: 1ml of the sodium carbonate extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub> No canary yellow ppt is formed.       Absence of phosphate         14       Test with sodium nitrobruside: 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops       No purple or violet       Absence of sulphate	10.	1 ml of sodium carbonate extract +dil. $HNO_3$ + 1ml of AgNO <sub>3</sub> , and		Absence of chloride, bromide, sulphide
12       1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of dil acetic acid and heat it + 1 ml of Lead Acetate       A whit ppt soluble in excess of ammonium acetate is formed       Presence of sulphate         12 <b>Brown ring test:</b> 1ml o f the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared       Fresence of nitrate       Absence of nitrate         13       ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.       No brown ring is formed       Absence of nitrate         14       1ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub> No canary yellow ppt is formed.       Absence of phospha         15 <b>Test with sodium nitrobruside:</b> 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops       No purple or violet       Absence of sulphide	11	One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of		Prsence of sulphate is
1ml o f the sodium carbonate extract       + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared       Absence of nitrate         13       ferrous sulphate solution then add       No brown ring is formed       Absence of nitrate         13       ferrous sulphate solution then add       Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.       No brown ring is formed       Absence of nitrate         14       Ammonium molybdate test:       1 ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub> No canary yellow ppt is formed.       Absence of phospha         15       Test with sodium nitrobruside:       1 ml of the sodium carbonate extract + 1 ml of dil .aommonia. + few drops       No purple or violet       Absence of sulphide	12	1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1	of ammonium acetate is	Presence of sulphate
1       ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub> No canary yellow ppt is formed.       Absence of phospha         15       Test with sodium nitrobruside: 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops       No purple or violet       Absence of sulphide	13	1ml o f the sodium carbonate extract + dil. $H_2SO_4$ + freshly prepared ferrous sulphate solution then add Conc. $H_2SO_4$ along the sides of the	No brown ring is formed	Absence of nitrate
1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops No purple or violet Absence of sulphide	14	1 ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate		Absence of phosphate
	15	1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops	No purple or violet	Absence of sulphide.

#### Preparation of salt solution:

To a small amount of salt in a test tube add 2 to 3ml of water, shake it and gently heat it. This solution is called "original solution".

solution is called original solution.				
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium	
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )	
3	<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )	
4	<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of NH <sub>4</sub> Cl and NH <sub>4</sub> OH and shake it well	A gelatinous white ppt is formed	Presence of 3rd group metal ion (Al <sup>3+</sup> )	
Analy	sis of the 3rd group ppt:			
1	<b>Test for Aluminium:</b> To the ppt add a pinch of sodium peroxide and boil it	A colourless solution is obtained	Presence of Aluminium	
2	To the colourless solution add dil.HCl and shake it	A gelatinous white ppt is obtained	Presence of Aluminium is Confirmed	
Result:         The Anion Present       : SULPHATE         The cation Present       : ALUMINIUM         The Given simple salt       : ALUMINIUM SULPHATE				

#### SYSTEMATIC ANALYSIS OF SIMPLE SALT- VI

S NO	Experiment	Observation	Inference
	Anal	ysis of anions	
1	Colour: Note the colour of the salt	Colourless	Absence of copper, Iron salts
2.	Action of heat: A small amount of a salt is heated in a test tube	A reddish brown gas with a fishy odour evolves	Presence of a nitrate salt
3.	Flame test: Small amount of salt + A drop of Conc. HCI ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic flame Colour is Observed.	Absence of Copper, Barium, Calcium

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4.	Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	A reddish brown gas with the fishy odour turning a moist ferrous sulphate paper brown evolves	Presence of nitrate
5	Action of Conc. $H_2SO_4$ : Small amount of a salt in a dry test tube + Conc. $H_2SO_4$ and gently heat it	Reddish brown gas turning acidified ferrous sulphate paper green evolves.	Presence of nitrate
6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	No Characteristic Gas is evolved.	Absence of chloride, bromide
7.	Action of Conc. $H_2SO_4$ and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	A reddish brown gas with fishy odour turning a moist ferrous sulphate paper brown evolves	Presence of nitrate
8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt
9	Chromyl chloride test: Small amount of salt in + a pinch of potassium dichromate and three drops Conc. $H_2SO_4$ .Gently heat it.	No Red Orange Vapour is Observed.	Absence of chloride.
P <b>repa</b> Fake	/sis with Sodium carbonate extract aration of Sodium carbonate extract 1g of the given salt + 3g of solid sodium w mins, filter. The filtrate is called sodium <b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. HNO <sub>3</sub> + 1ml of AgNO <sub>3</sub> , and shake it	0	ater. Boil the solution Absence of chloride, bromide, sulphide
11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	No white ppt is obtained	Absence of sulphate
12	Test with leadacetate: 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1ml of Lead Acetate	No white ppt is obtained	Absence of sulphate

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13	<b>Brown ring test:</b> 1ml of the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	A brown ring is formed	Presence of nitrate confirmed
14	Ammonium molybdate test: 1 ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub>	No canary yellow ppt is formed.	Absence of Phosphate
15	<b>Test with sodium nitrobruside:</b> 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops of sodium nitro bruside.	No purple or violet colouration appears	Absence of sulphide.
To a s	ration of salt solution: mall amount of salt in a test tube add 2 on is called "original solution".	to 3ml of water, shake it and g	gently heat it. This
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
3	<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )
4	<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of $NH_4CI$ and $NH_4OH$ and shake it well	A gelatinous white ppt is formed	Presence of 3rd group metal ion (Al <sup>3+</sup> )
Analy	sis of the 3rd group ppt:	I	1
1	<b>Test for Aluminium:</b> To the ppt add a pinch of sodium peroxide and boil it	A colourless solution is obtained	Presence of Aluminium
2	To the colourless solution add dil.HCl and shake it	A gelatinous white ppt is obtained	Presence of Aluminium is Confirmed
The The	sult: e Anion Present : NITRATE e cation Present : ALUMINIUM e Given simple salt : ALUMINIUM NIT	IRATE	

# SYSTEMATIC ANALYSIS OF SIMPLE SALT- VII

Anal Colour: Note the colour of the salt Action of heat: A small amount of a salt is heated in	<b>ysis of anions</b> Colourless	Absence of copper, Iron salts
Note the colour of the salt Action of heat:	Colourless	
a test tube	Salt is Yellow when hot, White when cold	May be a zinc salt
Flame test: Small amount of salt + A drop of Conc. HCl ,form a paste. Take the baste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic flame Colour is Observed.	Absence of Copper, Barium, Calcium
Action of dil. HCI: Small amount of salt + 1ml of dil. HCI Gently heat it	No Charactristic gas evolves	Absence of Carbonate,Nitrate, Sulphide
Action of Conc. $H_2SO_4$ : Small amount of a salt in a dry test tube + Conc. $H_2SO_4$ and gently heat it	No Charactristic gas evolves	Absence of Chloride, Bromide, Nitrate
Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	No Characteristic Gas is evolved.	Absence of chloride, bromide
Action of Conc. $H_2SO_4$ and copper surning: small amount of salt in a dry est tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	No reddish brown gas evolves	Absence of nitrate.
Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt
<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. $H_2SO_4$ .Gently heat it.	No Red Orange Vapour is Observed.	Absence of chloride.
	aste at the charred end of the plinter and introduce it near the ausen flame <b>Action of dil. HCI:</b> mall amount of salt + 1ml of dil. HCI Gently heat it <b>Action of Conc.H<sub>2</sub>SO<sub>4</sub>:</b> Small amount of a salt in a dry test tube + Conc. H <sub>2</sub> SO <sub>4</sub> and gently heat it <b>Action of MnO<sub>2</sub> and Conc. H<sub>2</sub>SO<sub>4</sub>:</b> Small amount of salt in a dry test tube + pinch of MnO <sub>2</sub> + Conc.H <sub>2</sub> SO <sub>4</sub> and gently heat it <b>Action of Conc. H<sub>2</sub>SO<sub>4</sub> and copper</b> <b>urning:</b> small amount of salt in a dry tube + few copper turnings + Conc. H <sub>2</sub> SO <sub>4</sub> . Gently heat it <b>Action of dil. NaOH solution:</b> Small mont of a salt + dil.NaOH solution nd gently heat it. <b>Chromyl chloride test:</b> mall amount of salt in + a pinch of otassium dichromate and three	aste at the charred end of the plinter and introduce it near the Bunsen flameInternational detended in the Colour is Observed.Action of dil. HCI: Gently heat itNo Charactristic gas evolvesAction of Conc.H2SO4: Small amount of a salt in a dry test tube + Conc. H2SO4 and gently heat itNo Charactristic gas evolvesAction of MnO2 and Conc. H2SO4: Small amount of salt in a dry test tube + pinch of MnO2 + Conc.H2SO4 and gently heat itNo Characteristic Gas is evolved.Action of Conc. H2SO4 and gently heat itNo Characteristic Gas is evolved.Action of Conc. H2SO4 and gently heat itNo Characteristic Gas is evolved.Action of Conc. H2SO4 and copper urning: small amount of salt in a dry est tube + few copper turnings + conc. H2SO4. Gently heat itNo reddish brown gas evolvesAction of dil. NaOH solution: nd gently heat it.No Characteristic gas is observed.Action of dil. NaOH solution: nd gently heat it.No Characteristic gas is observed.No reddish brown gas evolvesNo Characteristic gas is observed.

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10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. $HNO_3$ + 1ml of $AgNO_3$ , and shake it	No Characteristic ppt is Obtained.	Absence of chloride, bromide, sulphide
11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	A white ppt insoluble in dil $H_2SO_4$ is formed	Prsence of sulphate is Confirmed.
12	<b>Test with leadacetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	A whit ppt soluble in excess of ammonium acetate is formed	Presence of sulphate
13	<b>Brown ring test:</b> 1ml o f the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	No brown ring is formed	Absence of Nitrate
14	Ammonium molybdate test: 1 ml of the extract + dil $HNO_3$ + about 1ml each of ammonium molybdate and Conc. $HNO_3$	No canary yellow ppt is formed.	Absence of Phosphate
15	Test with sodium nitrobruside: 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops of sodium nitro bruside.	No purple or violet colouration appears	Absence of sulphide.
To a s	Internation of salt solution: Small amount of salt in a test tube add 2 In is called "original solution".	to 3ml of water, shake it and g	gently heat it. This
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1mL of dil HCl, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
3	<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )
4	<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of $NH_4CI$ and $NH_4OH$ and shake it well	No ppt is obtained	Absence of 3rd group metal ions (Al <sup>3+</sup> / Fe <sup>3+</sup> )
	http://www.trbtnpsc.com/2018/06/1atest-plus-one-11	h-study-materials-tamil-medium-englist	n-medium-new-svilabus-based htm

www.Padasalai.Net		www	.TrbTnpsc.com		
	<b>GROUP IV</b> To the above solution pass $(H_2S)$ gas	A dirty white ppt is obtained	Presence of 4 th group metal ion (Zn <sup>2+</sup> )		
Analy	sis of the 4th group ppt:				
1	Test for Zinc: To the ppt add dil HCl and boil it	The ppt dissolves	Presence of Zinc		
2	To the 1 ml of Original solution add dil.NaOH in drops to excess	White Ppt Soluble in excess NaOH is Obtained	Presence of Zinc is Confirmed		
3	To the 1 ml of Original solution add 2 ml $K_4$ [Fe(CN) <sub>6</sub> ] solution	White Ppt Soluble in excess NaOH, insoluble in dilute acids, is Obtained	Presence of Zinc is Confirmed		
The The	Result:         The Anion Present       : SULPHATE         The cation Present       : ZINC         The Given simple salt       : ZINC SULPHATE				

# SYSTEMATIC ANALYSIS OF SIMPLE SALT- VIII

S NO	Experiment	Observation	Inference
	Anal	ysis of anions	
1	Colour: Note the colour of the salt	Colourless	Absence of copper, Iron salts
2.	Action of heat: VV o L C A small amount of a salt is heated in a test tube	Salt is Yellow when hot, White when cold	May be a zinc salt
3.	Flame test: Small amount of salt + A drop of Conc. HCI ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic flame Colour is Observed.	Absence of Copper, Barium, Calcium
4.	Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	egg smell turning a paper dipped in lead acetate shining black evolves	Presence of sulphide is Confirmed
5	Action of Conc.H <sub>2</sub> SO <sub>4</sub> : Small amount of a salt in a dry test tube + Conc. H <sub>2</sub> SO <sub>4</sub> and gently heat it	No Charactristic gas evolves	Absence of Chloride, Bromide, Nitrate
6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	No Characteristic Gas is evolved.	Absence of chloride, bromide

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7.	Action of Conc. H <sub>2</sub> SO <sub>4</sub> and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. H <sub>2</sub> SO <sub>4</sub> . Gently heat it	No reddish brown gas evolves	Absence of nitrate.
8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt
9	<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. $H_2SO_4$ .Gently heat it.	No Red Orange Vapour is Observed.	Absence of chloride.
<b>Prepa</b> Take	sis with Sodium carbonate extract ration of Sodium carbonate extract 1g of the given salt + 3g of solid sodium v mins, filter.The filtrate is called sodium	-	ater. Boil the solution
10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. HNO <sub>3</sub> + 1ml of AgNO <sub>3</sub> , and shake it	A black ppt is formed	Presence of sulphide
11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	No white ppt is obtained	Absence of sulphate
12	<b>Test with lead acetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	No white ppt is obtained	Absence of sulphate
13	<b>Brown ring test:</b> 1ml o f the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	No brown ring is formed	Absence of nitrate
14	Ammonium molybdate test: 1 ml of the extract + dil $HNO_3$ + about 1ml each of ammonium molybdate and Conc. $HNO_3$	No canary yellow ppt is formed.	Absence of phosphate
15	<b>Test with sodium nitrobruside:</b> 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops of sodium nitro bruside.	A purple or violet colouration appears	Prsence of sulphide.

#### Preparation of salt solution:

To a small amount of salt in a test tube, add 3ml of dil.HCl + dil.HNO<sub>3</sub>, shake it and gently heat it. This solution is called "original solution".

0		
<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium
<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )
<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of $NH_4CI$ and $NH_4OH$ and shake it well	No ppt is obtained	Absence of 3rd group metal ions (Al <sup>3+</sup> / Fe <sup>3+</sup> )
<b>GROUP IV</b> To the above solution pass ( $H_2S$ ) gas	A dirty white ppt is obtained	Presence of 4 th group metal ion (Zn <sup>2+</sup> )
	<ul> <li>1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.</li> <li>GROUP I</li> <li>Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it</li> <li>GROUP II</li> <li>To the above solution pass H<sub>2</sub>S gas.</li> <li>GROUP III To about 1ml of the salt solution add about 1ml each of NH<sub>4</sub>Cl and NH<sub>4</sub>OH and shake it well</li> <li>GROUP IV To the above solution</li> </ul>	1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.No chocolate brown ppt is obtained.GROUP I Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCI, and shake itNo White ppt is formed.GROUP II To the above solution pass H2S gas.No Black ppt is formedGROUP III To the about 1ml of the salt solution add about 1ml each of NH4CI and NH4OH and shake it wellNo ppt is obtainedGROUP IV To the above solution pass (H2S) gasNo ppt is obtained

# Analysis of the 4th group ppt:

1	Test for Zinc:	The ppt dissolves	Presence of Zinc
2	To the 1 ml of Original solution add dil.NaOH in drops to excess	White Ppt Soluble in excess NaOH is Obtained	Presence of Zinc is Confirmed
3	To the 1 ml of Original solution add 2 ml $K_4$ [Fe(CN) <sub>6</sub> ] solution	White Ppt Soluble in excess NaOH, insoluble in dilute acids, is Obtained	Presence of Zinc is Confirmed
The The	<b>sult:</b> e Anion Present : SULPHIDE e cation Present : ZINC e Given simple salt : ZINC SULPHIDI	Ξ	

#### SYSTEMATIC ANALYSIS OF SIMPLE SALT- IX

S NO	Experiment	Observation	Inference		
	Analysis of anions				
1	Colour: Note the colour of the salt	Colourless	Absence of copper, Iron salts		
2.	Action of heat: A small amount of a salt is heated in a test tube	A colourless, odourless gas turning lime water milky evolves	Presence of carbonate		

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3.	Flame test: Small amount of salt + A drop of Conc. HCl ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	Brick red Colour is Observed.	Presence of a calcium salt
4.	Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	A colourless, odourless gas evolves as a brisk Effervescence and turns lime water milky	Presence of carbonate is Confirmed
5	Action of Conc. $H_2SO_4$ : Small amount of a salt in a dry test tube + Conc. $H_2SO_4$ and gently heat it	No Charactristic gas evolves	Absence of Chloride, Bromide, Nitrate
6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	No Characteristic Gas is evolved.	Absence of chloride, bromide
7.	Action of Conc. $H_2SO_4$ and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	No reddish brown gas evolves	Absence of nitrate.
8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt
9	<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. $H_2SO_4$ .Gently heat it.	No Red Orange Vapour is Observed.	Absence of chloride.
<b>Prepa</b> Take	Analysis with Sodium carbonate extract Preparation of Sodium carbonate extract Take 1g of the given salt + 3g of solid sodium carbonate + 20g of distilled water. Boil the solution for few mins, filter.The filtrate is called sodium carbonate extract.		
10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. HNO <sub>3</sub> + 1ml of AgNO <sub>3</sub> , and shake it	No Characteristic ppt is Obtained.	Absence of chloride, bromide, sulphide
11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	No white ppt is obtained	Absence of sulphate

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12	<b>Test with leadacetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	No white ppt is obtained	Absence of sulphate
13	<b>Brown ring test:</b> 1ml of the sodium carbonate extract + dil. $H_2SO_4$ + freshly prepared ferrous sulphate solution then add Conc. $H_2SO_4$ along the sides of the test tube.	No brown ring is formed	Absence of nitrate
14	Ammonium molybdate test: 1 ml of the extract + dil $HNO_3$ + about 1ml each of ammonium molybdate and Conc. $HNO_3$	No canary yellow ppt is formed.	Absence of phosphate
15	<b>Test with sodium nitrobruside:</b> 1ml of the sodium carbonate extract + 1ml of dil .aommonia + few drops of sodium nitro bruside.	No purple or violet colouration appears	Absence of sulphide.
To a s	aration of salt solution: small amount of salt in a test tube add 2 on is called "original solution".	to 3ml of dil.HCl, shake it and	gently heat it. This
			1
1	GROUP 0 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium
	1ml of the original salt solution add about 1ml each of Nessler's reagent		Absence of ammonium Absence of 1st group metal ions (Pb <sup>2+</sup> )
1	1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH. GROUP I Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl,	obtained. (L) (L] (C	Absence of 1st group
2	1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH. GROUP I Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it GROUP II	obtained.	Absence of 1st group metal ions (Pb <sup>2+</sup> ) Absence of 2nd group
2	<ul> <li>1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.</li> <li>GROUP I Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCI, and shake it</li> <li>GROUP II To the above solution pass H<sub>2</sub>S gas.</li> <li>GROUP III To about 1ml of the salt solution add about 1ml each of</li> </ul>	obtained.	Absence of 1st group metal ions (Pb <sup>2+</sup> ) Absence of 2nd group metal ions (Cu <sup>2+</sup> ) Absence of 3rd group
1 2 3 4	1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH. <b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it <b>GROUP II</b> To the above solution pass $H_2S$ gas. <b>GROUP III</b> To the above solution pass $H_2S$ gas. <b>GROUP III</b> To the about 1ml of the salt solution add about 1ml each of $NH_4Cl, NH_4OH$ and shake it well <b>GROUP IV</b> To the above solution	obtained.	Absence of 1st group metal ions (Pb <sup>2+</sup> ) Absence of 2nd group metal ions (Cu <sup>2+</sup> ) Absence of 3rd group metal ions (Al <sup>3+</sup> / Fe <sup>3+</sup> ) Absence of 4 th group

Analysis of the 5th group ppt:				
1	To the ppt add about 1ml of dil. acetic acid and gently heat it.	The ppt dissolves.	Presence of (Ba2+/ Ca2+)	
2	<b>Test for Calcium</b> To the solution add about 1ml of ammonium sulphate	A white ppt is obtained. Filter.To the residue add a drop of Conc. HCI. Take the residue and introduce near the Bunsen flame.A crimson red colour is seen	Presence of Calcium is Confirmed	
		If no ppt is obtained, to the solution add about 1ml of potassium ferrocyanide and shake it. A pale yellow ppt appears.	Presence of Calcium is Confirmed	
The The	Result:         The Anion Present       : CARBONATE         The cation Present       : CALCIUM         The Given simple salt       : CALCIUM CARBONATE			

#### SYSTEMATIC ANALYSIS OF SIMPLE SALT- X

SNO	Experiment	Observation	Inference
	Anal	ysis of anions	
1	<b>Colour:</b> Note the colour of the salt	Colourless	Absence of copper, Iron salts
2.	Action of heat: A small amount of a salt is heated in a test tube	No Characteristic Change Occurs	Absence of Zinc, Ammonium, Nitrate
3.	Flame test: Small amount of salt + A drop of Conc. HCl ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	Apple green Colour is Observed.	Presence of Barium salt
4.	Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	No Charactristic gas evolves	Absence of Carbonate,Nitrate, Sulphide
5	Action of Conc.H <sub>2</sub> SO <sub>4</sub> : Small amount of a salt in a dry test tube + Conc. H <sub>2</sub> SO <sub>4</sub> and gently heat it	A colourless gas evolves. It gives a dense white fumes when a glass rod dipped in liquid ammonia is brought close to its mouth	Prsence of Chloride

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6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	A greenish yellow gas turning starch iodide paper blue evolves	Prsence of Chloride
7.	Action of Conc. $H_2SO_4$ and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	No reddish brown gas evolves	Absence of Nitrate.
8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt
9	<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. H2SO4.Gently heat it. Pass the vapours into dilute sodium hydroxide solution. If a yellow solution is obtained, add dil. Acetic acid and lead acetate	A yellow ppt is obtained	Presence of chloride.
<b>Prepa</b> Take	sis with Sodium carbonate extract ration of Sodium carbonate extract 1g of the given salt + 3g of solid sodium v mins, filter. The filtrate is called sodium		rater. Boil the solution
10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. $HNO_3$ + 1ml of $AgNO_3$ , and shake it	A curdy white ppt insoluble in dil. Ammonia is formed	Presence of chloride
11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	No white ppt is obtained	Absence of sulphate
12	<b>Test with leadacetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	No white ppt is obtained	Absence of sulphate
13	<b>Brown ring test:</b> 1ml of the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	No brown ring is formed	Absence of Nitrate

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14	<b>Ammonium molybdate test:</b> 1 ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub>	No canary yellow ppt is formed.	Absence of Phosphate
15	Test with sodium nitrobruside: 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops of sodium nitro bruside.		Absence of sulphide.
To a s	ration of salt solution: mall amount of salt in a test tube add 2 on is called "original solution".	to 3ml of water, shake it and g	gently heat it. This
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1mL each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1mL of dil HCl, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
3	<b>GROUP II</b> To the above solution pass $H_2S$ gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )
4	<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of $NH_4CI$ , $NH_4OH$ and shake it well	No ppt is obtained	Absence of 3rd group metal ions (Al <sup>3+</sup> / Fe <sup>3+</sup> )
5	<b>GROUP IV</b> To the above solution pass (H <sub>2</sub> S) gas	No dirty white ppt is obtained	Absence of 4 th group metal ion (Zn <sup>2+</sup> )
6	<b>GROUP V</b> To the salt solution add 1ml each of $NH_4CI$ , $NH_4OH$ and $(NH_4)_2CO_3$ and shake it well.	A white ppt is obtained	Presence of 5th group metal ions (Ba <sup>2+</sup> / Ca <sup>2+</sup> )
Analy	sis of the 5th group ppt:		
1	To the ppt add about 1ml of dil. acetic acid and gently heat it.	The ppt dissolves.	Presence of (Ba <sup>2+</sup> / Ca <sup>2+</sup> )

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2	Test for Barium. To the solution add about 1ml of potassium chromate	A yellow ppt is obtained. Filter To the residue add a drop of Conc. HCI. Take a portion of the paste and introduce near the Bunsen flame. A transient green is imparted to the flame	Presence of Barium is Confirmed
The The	sult: e Anion Present : CHLORIDE e cation Present : BARIUM e Given simple salt : BARIUM CHLOI	RIDE	

## SYSTEMATIC ANALYSIS OF SIMPLE SALT- XI

S NO	Experiment	Observation	Inference		
	Analysis of anions				
1	<b>Colour:</b> Note the colour of the salt	Colourless	Absence of copper, Iron salts		
2.	Action of heat: A small amount of a salt is heated in a test tube	No Characteristic Change Occurs	Absence of Zinc, Ammonium, Nitrate		
3.	Flame test: Small amount of salt + A drop of Conc. HCI form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic flame Colour is Observed.	Absence of Copper, Barium, Calcium		
4.	Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	No Charactristic gas evolves	Absence of Carbonate,Nitrate, Sulphide		
5	Action of Conc.H <sub>2</sub> SO <sub>4</sub> : Small amount of a salt in a dry test tube + Conc. H <sub>2</sub> SO <sub>4</sub> and gently heat it	No Charactristic gas evolves	Absence of Chloride, Bromide, Nitrate		
6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	No Characteristic Gas is evolved.	Absence of chloride, bromide		
7.	Action of Conc. $H_2SO_4$ and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	No reddish brown gas evolves	Absence of nitrate.		
8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt		

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9	<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. $H_2SO_4$ .Gently heat it.	No Red Orange Vapour is Observed.	Absence of chloride.	
<b>Prepa</b> Take	sis with Sodium carbonate extract ration of Sodium carbonate extract 1g of the given salt + 3g of solid sodium v mins, filter.The filtrate is called sodium	÷	ater. Boil the solution	
10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. $HNO_3$ + 1ml of $AgNO_3$ , and shake it	No Characteristic ppt is Obtained.	Absence of chloride, bromide, sulphide	
11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	A white ppt insoluble in dil $H_2SO_4$ is formed	Prsence of sulphate is Confirmed.	
12	<b>Test with leadacetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	A whit ppt soluble in excess of ammonium acetate is formed	Presence of sulphate	
13	<b>Brown ring test:</b> 1ml of the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. $H_2SO_4$ along the sides of the test tube.	No brown ring is formed	Absence of nitrate	
14	<b>Ammonium molybdate test:</b> 1 ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub>	No canary yellow ppt is formed.	Absence of phosphate	
15	<b>Test with sodium nitrobruside:</b> 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops of sodium nitro bruside.	No purple or violet colouration appears	Absence of sulphide.	
To a s	Preparation of salt solution: To a small amount of salt in a test tube add 2 to 3ml of water, shake it and gently heat it. This solution is called "original solution".			
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium	

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2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1mL of dil HCI, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
3	<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )
4	<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of $NH_4CI$ and $NH_4OH$ and shake it well	No ppt is obtained	Absence of 3rd group metal ions (Al <sup>3+</sup> / Fe <sup>3+</sup> )
5	<b>GROUP IV</b> To the above solution pass $(H_2S)$ gas	No dirty white ppt is obtained	Absence of 4 th group metal ion (Zn <sup>2+</sup> )
6	<b>GROUP V</b> To the salt solution add 1ml each of $NH_4Cl$ , $NH_4OH$ and $(NH_4)_2CO_3$ and shake it well.	No white ppt is obtained	Absence of 5th group metal ions (Ba <sup>2+</sup> / Ca <sup>2+</sup> )
7	<b>GROUP VI</b> To the original salt solution add 1ml each of $NH_4CI$ , $NH_4OH$ and $NH_4H_2PO_4$ , and scratch the sides of the test tube.	A white ppt is obtained.	Presence of 6th group metal ion (Mg <sup>2+</sup> )
Analy	sis of the 6th group ppt:		
	<b>Test for Magnesium</b> : i)To about 1ml of the original salt solution add dil. NaOH in drops with shaking.	White Ppt insoluble in excess NaOH is Obtained	Presence of Magnesium is Confirmed
3	ii)To about 1ml of the original salt solution add about 1ml of Magneson reagent.	A blue ppt is formed.	Presence of Magnesium is Confirmed
Result:         The Anion Present       : SULPHATE         The cation Present       : MAGNESIUM         The Given simple salt       : MAGNESIUM SULPHATE			

## SYSTEMATIC ANALYSIS OF SIMPLE SALT- XII

S NO	Experiment	Observation	Inference		
	Analysis of anions				
1	<b>Colour:</b> Note the colour of the salt	Colourless	Absence of copper, Iron salts		
2.	Action of heat: A small amount of a salt is heated in a test tube	No Characteristic Change Occurs	Absence of Zinc, Ammonium, Nitrate		

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3.	Flame test: Small amount of salt + A drop of Conc. HCl ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic flame Colour is Observed.	Absence of Copper, Barium, Calcium
4.	Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	No Charactristic gas evolves	Absence of Carbonate,Nitrate, Sulphide
5	Action of Conc.H <sub>2</sub> SO <sub>4</sub> : Small amount of a salt in a dry test tube + Conc. H <sub>2</sub> SO <sub>4</sub> and gently heat it	No Charactristic gas evolves	Absence of Chloride, Bromide, Nitrate
6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	No Characteristic Gas is evolved.	Absence of chloride, bromide
7.	Action of Conc. $H_2SO_4$ and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	No reddish brown gas evolves	Absence of nitrate.
8.	Action of dil. NaOH solution: Small amont of a salt + dil NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt
9	<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. $H_2SO_4$ .Gently heat it.	No Red Orange Vapour is Observed.	Absence of chloride.
<b>Prepa</b> Take	rsis with Sodium carbonate extract aration of Sodium carbonate extract 1g of the given salt + 3g of solid sodiun w mins, filter.The filtrate is called sodiur	•	ater. Boil the solution
10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. HNO <sub>3</sub> + 1ml of AgNO <sub>3</sub> , and shake it	No Characteristic ppt is Obtained.	Absence of chloride, bromide, sulphide
11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	No white ppt is obtained	Absence of sulphate

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12	<b>Test with leadacetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	No white ppt is obtained	Absence of sulphate
13	<b>Brown ring test:</b> 1ml of the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	No brown ring is formed	Absence of nitrate
14	Ammonium molybdate test: 1 ml of the extract + dil $HNO_3$ + about 1ml each of ammonium molybdate and Conc. $HNO_3$	Canary yellow ppt is formed.	Presence of Phosphate is Confirmed
15	<b>Test with sodium nitrobruside:</b> 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops of sodium nitro bruside.	No purple or violet colouration appears	Absence of sulphide.
To a s	aration of salt solution: small amount of salt in a test tube add 2 on is called "original solution".	2 to 3ml of water, shake it and g	gently heat it. This
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1mL each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
3	<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )
4	<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of $NH_4CI$ and $NH_4OH$ and shake it well	No ppt is obtained	Absence of 3rd group metal ions (Al <sup>3+</sup> / Fe <sup>3+</sup> )
5	<b>GROUP IV</b> To the above solution pass $(H_2S)$ gas	No dirty white ppt is obtained	Absence of 4 th group metal ion (Zn <sup>2+</sup> )
6	<b>GROUP V</b> To the salt solution add 1ml each of $NH_4CI$ , $NH_4OH$ and $(NH_4)_2CO_3$ and shake it well.	No white ppt is obtained	Absence of 5th group metal ions (Ba <sup>2+</sup> / Ca <sup>2+</sup> )
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7	<b>GROUP VI</b> To the original salt solution add 1ml each of $NH_4CI$ , $NH_4OH$ and $NH_4H_2PO_4$ , and scratch the sides of the test tube.	A white ppt is obtained.	Presence of 6th group metal ion Mg <sup>2+</sup>
Analy	sis of the 6th group ppt:		
2	<b>Test for Magnesium</b> : i)To about 1ml of the original salt solution add dil. NaOH in drops with shaking.	White Ppt insoluble in excess NaOH is Obtained	Presence of Magnesium is Confirmed
3	ii)To about 1ml of the original salt solution add about 1ml of Magneson reagent.	A blue ppt is formed.	Presence of Magnesium is Confirmed
The The	Result:         The Anion Present       : PHOSPHATE         The cation Present       : MAGNESIUM         The Given simple salt       : MAGNESIUM PHOSPHATE		

# SYSTEMATIC ANALYSIS OF SIMPLE SALT- XIII

S NO	Experiment	Observation	Inference
	Anal	ysis of anions	
1	Colour: Note the colour of the salt	Colourless	Absence of copper, Iron salts
2.	Action of heat: A small amount of a salt is heated in a test tube	A colourless, odourless gas turning lime water milky evolves	Presence of carbonate
3.	Flame test: Small amount of salt + A drop of Conc. HCI ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic flame Colour is Observed.	Absence of Copper, Barium, Calcium
4.	Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	A colourless, odourless gas evolves as a brisk Effervescence and turns lime water milky	Presence of carbonate is Confirmed
5	Action of Conc.H <sub>2</sub> SO <sub>4</sub> : Small amount of a salt in a dry test tube + Conc. H <sub>2</sub> SO <sub>4</sub> and gently heat it	No Charactristic gas evolves	Absence of Chloride, Bromide, Nitrate
6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	No Characteristic Gas is evolved.	Absence of chloride, bromide

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7.	Action of Conc. $H_2SO_4$ and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	No reddish brown gas evolves	Absence of nitrate.
8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	No Characteristic gas is Observed.	Absence of ammonium salt
9	<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. $H_2SO_4$ .Gently heat it.	No Red Orange Vapour is Observed.	Absence of chloride.
<b>Prepa</b> Take	Analysis with Sodium carbonate extract Preparation of Sodium carbonate extract Take 1g of the given salt + 3g of solid sodium carbonate + 20g of distilled water. Boil the solution for few mins, filter. The filtrate is called sodium carbonate extract.		
10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. HNO <sub>3</sub> + 1ml of AgNO <sub>3</sub> , and shake it	No Characteristic ppt is Obtained.	Absence of chloride, bromide, sulphide
11	Test with barium chloride: One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	No white ppt is obtained	Absence of sulphate
12	<b>Test with leadacetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	No white ppt is obtained	Absence of sulphate
13	<b>Brown ring test:</b> 1ml of the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	No brown ring is formed	Absence of Nitrate
14	Ammonium molybdate test: 1 ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub>	No canary yellow ppt is formed.	Absence of Phosphate
15	<b>Test with sodium nitrobruside:</b> 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops of sodium nitro bruside.	No purple or violet colouration appears	Absence of sulphide.

#### Preparation of salt solution:

To a small amount of salt in a test tube add 2 to 3ml of dil.HCl, shake it and gently heat it. This solution is called "original solution".

solutio	n is called "original solution".			
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	No chocolate brown ppt is obtained.	Absence of ammonium	
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )	
3	<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )	
4	<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of NH <sub>4</sub> Cl and NH <sub>4</sub> OH and shake it well	No ppt is obtained	Absence of 3rd group metal ions (Al <sup>3+</sup> / Fe <sup>3+</sup> )	
5	<b>GROUP IV</b> To the above solution pass (H <sub>2</sub> S) gas	No dirty white ppt is obtained	Absence of 4 th group metal ion (Zn <sup>2+</sup> )	
6	<b>GROUP V</b> To the salt solution add 1ml each of $NH_4Cl$ , $NH_4OH$ and $(NH_4)_2CO_3$ and shake it well.	No white ppt is obtained	Absence of 5th group metal ions (Ba <sup>2+</sup> / Ca <sup>2+</sup> )	
7	<b>GROUP VI</b> To the original salt solution add 1ml each of $NH_4CI$ , $NH_4OH$ and $NH_4H_2PO_4$ , and scratch the sides of the test tube.	A white ppt is obtained.	Presence of 6th group metal ion Mg <sup>2+</sup>	
Analys	sis of the 6th group ppt:			
2	<b>Test for Magnesium</b> : i)To about 1ml of the original salt solution add dil. NaOH in drops with shaking.	White Ppt insoluble in excess NaOH is Obtained	Presence of Magnesium is Confirmed	
3	ii)To about 1ml of the original salt solution add about 1ml of Magneson reagent.	A blue ppt is formed.	Presence of Magnesium is Confirmed	
The The	Result:         The Anion Present       : CARBONATE         The cation Present       : MAGNESIUM         The Given simple salt       : MAGNESIUM CARBONATE			

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#### SYSTEMATIC ANALYSIS OF SIMPLE SALT- XIV

S NO	Experiment	Observation	Inference
	Anal	ysis of anions	
1	<b>Colour:</b> Note the colour of the salt	Colourless	Absence of copper, Iron salts
2.	Action of heat: A small amount of a salt is heated in a test tube	A colourless gas with the pungent small turning red litmus paper into blue evolves. It gives a dense white fumes when a glass rod dipped in Conc. HCl is brought close to its mouth	Presence of an ammonium salt
3.	Flame test: Small amount of salt + A drop of Conc. HCI ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic flame Colour is Observed.	Absence of Copper, Barium, Calcium
4.	Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	No Charactristic gas evolves	Absence of Carbonate,Nitrate, Sulphide
5	Action of Conc. $H_2SO_4$ : Small amount of a salt in a dry test tube + Conc. $H_2SO_4$ and gently heat it	A colourless gas evolves. It gives a dense white fumes when a glass rod dipped in liquid ammonia is brought close to its mouth	Prsence of Chloride
6	Action of $MnO_2$ and Conc. $H_2SO_4$ : Small amount of salt in a dry test tube + pinch of $MnO_2$ + Conc. $H_2SO_4$ and gently heat it	A greenish yellow gas turning starch iodide paper blue evolves	Prsence of Chloride
7.	Action of Conc. $H_2SO_4$ and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	No reddish brown gas evolves	Absence of nitrate.
8.	Action of dil. NaOH solution: Small amont of a salt + dil.NaOH solution and gently heat it.	A colourless gas with the pun gent smell giving dense white fumes with a glass rod dipped in dil. HCl evolves	Presence of ammonium salt

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Chromyl chloride test: Small amount of salt in + a pinch of potassium dichromate and three drops Conc. H2SO4.Gently heat it. Pass the vapours into dilute sodium hydroxide solution. If a yellow solution is obtained, add dil. Acetic acid and lead acetate	A yellow ppt is obtained	Presence of chloride.
• • •	•	ater. Boil the solution
<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. HNO <sub>3</sub> + 1ml of AgNO <sub>3</sub> , and shake it	A curdy white ppt insoluble in dil. Ammonia is formed	Presence of chloride
<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	No white ppt is obtained	Absence of sulphate
Test with leadacetate: 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	No white ppt is obtained	Absence of sulphate
<b>Brown ring test:</b> 1ml of the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	No brown ring is formed	Absence of nitrate
Ammonium molybdate test: 1 ml of the extract + dil $HNO_3$ + about 1ml each of ammonium molybdate and Conc. $HNO_3$	No canary yellow ppt is formed.	Absence of phosphate
Test with sodium nitrobruside: 1ml of the sodium carbonate extract + 1ml of dil .aommonia. + few drops of sodium nitro bruside.	No purple or violet colouration appears	Absence of sulphide.
	Chromyl chloride test: Small amount of salt in + a pinch of potassium dichromate and three drops Conc. H2SO4.Gently heat it. Pass the vapours into dilute sodium hydroxide solution. If a yellow solution is obtained, add dil. Acetic acid and lead acetate sis with Sodium carbonate extract ration of Sodium carbonate extract Ig of the given salt + 3g of solid sodium mins, filter. The filtrate is called sodium for mins, filter. Mi of the sodium carbonate extract the dil. H2SO4 + freshly prepared ferrous sulphate solution then add Conc. H2SO4 along the sides of the test tube. Min of the extract + dil HNO3 + about 1ml each of ammonium molybdate and Conc. HNO3 Test with sodium carbonate extract 1ml of the so	Chromyl chloride test:         Small amount of salt in + a pinch of potassium dichromate and three drops Conc. H2SO4.Gently heat it. Pass the vapours into dilute sodium hydroxide solution. If a yellow solution is obtained, add dil. Acetic acid and lead acetate       A yellow ppt is obtained         Pass the vapours into dilute sodium hydroxide solution. If a yellow solution is obtained, add dil. Acetic acid and lead acetate       A yellow ppt is obtained         Sis with Sodium carbonate extract ration of Sodium carbonate extract       Is obtained, add dil. Acetic acid and lead acetate         Ig of the given salt + 3g of solid sodium carbonate extract.       A curdy white ppt is obtained w or mins, filter. The filtrate is called sodium carbonate extract.         Test for halides:       A curdy white ppt isoluble in dil. Ammonia is formed         Test with barium chloride:       No white ppt is obtained         One ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1       No white ppt is obtained         Brown ring test:       Iml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1         Iml of the sodium carbonate extract + dil.H2SO4 + freshly prepared ferrous sulphate solution then add Conc. H2SO4 along the sides of the test tube.       No brown ring is formed         Ammonium molybdate test:       1 ml of the sodium nitrobruside:       No canary yellow ppt is formed.         Test with sodium nitrobruside:       1 ml of the sodium carbonate extract       No canary yellow ppt is formed.

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1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	A chocolate brown ppt is obtained.	Presence of 0 group metal ion $(NH_4^+)$
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
3	<b>GROUP II</b> To the above solution pass H <sub>2</sub> S gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )
4	<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of NH <sub>4</sub> CI, NH <sub>4</sub> OH and shake it well	No ppt is obtained	Absence of 3rd group metal ions (Al <sup>3+</sup> / Fe <sup>3+</sup> )
5	<b>GROUP IV</b> To the above solution pass $(H_2S)$ gas	No dirty white ppt is obtained	Absence of 4 th group metal ion (Zn <sup>2+</sup> )
6	<b>GROUP V</b> To the salt solution add 1ml each of $NH_4CI$ , $NH_4OH$ and $(NH_4)_2CO_3$ and shake it well.	No white ppt is obtained	Absence of 5th group metal ions (Ba <sup>2+</sup> / Ca <sup>2+</sup> )
7	<b>GROUP VI</b> To the original salt solution add 1ml each of $NH_4Cl$ , $NH_4OH$ and $NH_4H_2PO_4$ , and scratch the sides of the test tube.	No white ppt is obtained.	Absence of 6th group metal ion (Mg <sup>2+</sup> )
Analys	sis of the Ammonium		
1	To 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	A chocolate brown ppt is obtained.	Presence of Ammonium is Confirmed
The The	Result:         The Anion Present       : CHLORIDE         The cation Present       : AMMONIUM         The Given simple salt       : AMMONIUM CHLORIDE		

## SYSTEMATIC ANALYSIS OF SIMPLE SALT- XV

S NO	Experiment	Observation	Inference		
	Analysis of anions				
4	<b>Colour:</b> Note the colour of the salt		Absence of copper, Iron salts		

Action of heat:		
A small amount of a salt is heated in a test tube	A colourless gas with the pungent small turning red litmus paper into blue evolves. It gives a dense white fumes when a glass rod dipped in Conc. HCl is brought close to its mouth	Presence of an ammonium salt
Flame test: Small amount of salt + A drop of Conc. HCl ,form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flame	No Characteristic flame Colour is Observed.	Absence of Copper, Barium, Calcium
Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat it	No Charactristic gas evolves	Absence of Carbonate,Nitrate, Sulphide
	A reddish brown gas turning moist fluorescein paper green evolves	Prsence of Bromide
	A reddish brown gas turning moist fluorescein paper red evolves	Prsence of Bromide
Action of Conc. $H_2SO_4$ and copper turning: small amount of salt in a dry test tube + few copper turnings + Conc. $H_2SO_4$ . Gently heat it	No reddish brown gas evolves	Absence of nitrate.
amont of a salt + dil.NaOH solution and gently heat it.	A colourless gas with the pungent smell giving dense white fumes with a glass rod dipped in dil. HCI evolves	Presence of ammonium salt
<b>Chromyl chloride test:</b> Small amount of salt in + a pinch of potassium dichromate and three drops Conc. $H_2SO_4$ .Gently heat it.	No Red Orange Vapour is Observed.	Absence of chloride.
	Flame test:Small amount of salt + A drop ofConc. HCl ,form a paste. Take thepaste at the charred end of thesplinter and introduce it near theBunsen flameAction of dil. HCl:Small amount of salt + 1ml of dil. HCl. Gently heat itAction of Conc.H <sub>2</sub> SO <sub>4</sub> :Small amount of a salt in a dry testtube + Conc. H <sub>2</sub> SO <sub>4</sub> and gently heatitAction of MnO <sub>2</sub> and Conc. H <sub>2</sub> SO <sub>4</sub> :Small amount of salt in a dry testtube + pinch of MnO <sub>2</sub> +Conc.H <sub>2</sub> SO <sub>4</sub> and gently heat itAction of Conc. H <sub>2</sub> SO <sub>4</sub> and copperturning: small amount of salt in a drytest tube + few copper turnings +Conc. H <sub>2</sub> SO <sub>4</sub> . Gently heat itAction of dil. NaOH solution: Smallamont of a salt + dil.NaOH solutionamont of a salt + dil.NaOH solution	Initial paper into bulle evolves. It gives a dense white fumes when a glass rod dipped in Conc. HCI is brought close to its mouthFlame test: Small amount of salt + A drop of Conc. HCI form a paste. Take the paste at the charred end of the splinter and introduce it near the Bunsen flameNo Characteristic flame Colour is Observed.Action of dil. HCI: Small amount of salt + 1ml of dil. HCI . Gently heat itNo Charactristic gas evolvesAction of Conc.H2SO4: Small amount of a salt in a dry test tube + Conc. H2SO4 and gently heat itA reddish brown gas turning moist fluorescein paper green evolvesAction of MnO2 and Conc. H2SO4: Small amount of salt in a dry test tube + pinch of MnO2 + Conc.H2SO4 and gently heat itA reddish brown gas turning moist fluorescein paper red evolvesAction of Conc. H2SO4 and gently heat itA reddish brown gas turning moist fluorescein paper red evolvesAction of Conc. H2SO4 and copper turning: small amount of salt in a dry test tube + pinch of MnO2 + Conc. H2SO4 and gently heat itA colourless gas with the pungent smell giving dense with a glass rod dipped in dil. HCI evolvesAction of dil. NaOH solution: and gently heat it.A colourless gas with the pungent smell giving dense with a glass rod dipped in dil. HCI evolvesChromyl chloride test: Small amount of salt in + a pinch of potassium dichromate and threeNo Red Orange Vapour is

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10.	<b>Test for halides:</b> 1 ml of sodium carbonate extract +dil. HNO <sub>3</sub> + 1ml of AgNO <sub>3</sub> , and shake it	A pale yellow ppt sparingly soluble in ammonia is formed	Presence of Bromide is Confirmed
11	<b>Test with barium chloride:</b> One ml of the sodium carbonate extract + dil. Aceticacid + 1ml of bariumchloride solution and shake	No white ppt is obtained	Absence of sulphate
12	<b>Test with leadacetate:</b> 1ml of the sodium carbonate extract, + 1ml of dil acetic acid and heat it + 1 ml of Lead Acetate	No white ppt is obtained	Absence of sulphate
13	<b>Brown ring test:</b> 1ml of the sodium carbonate extract + dil.H <sub>2</sub> SO <sub>4</sub> + freshly prepared ferrous sulphate solution then add Conc. H <sub>2</sub> SO <sub>4</sub> along the sides of the test tube.	No brown ring is formed	Absence of nitrate
14	Ammonium molybdate test: 1 ml of the extract + dil HNO <sub>3</sub> + about 1ml each of ammonium molybdate and Conc. HNO <sub>3</sub> Test with sodium nitro bruside:	No canary yellow ppt is formed.	Absence of phosphate
15	<ul> <li>1ml of the sodium carbonate extract</li> <li>+ 1ml of dil .aommonia. + few drops of sodium nitro bruside.</li> </ul>	No purple or violet colouration appears	Absence of sulphide.
To a s	ration of salt solution: mall amount of salt in a test tube add 2 on is called "original solution".	to 3ml of water, shake it and g	gently heat it. This
1	<b>GROUP 0</b> 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	A chocolate brown ppt is obtained.	Presence of 0 group metal ion $(NH_4^+)$
2	<b>GROUP I</b> Take about 1 ml of the salt solution in a test tube Add about 1ml of dil HCl, and shake it	No White ppt is formed.	Absence of 1st group metal ions (Pb <sup>2+</sup> )
3	<b>GROUP II</b> To the above solution pass $H_2S$ gas.	No Black ppt is formed	Absence of 2nd group metal ions (Cu <sup>2+</sup> )

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4	<b>GROUP III</b> To about 1ml of the salt solution add about 1ml each of $NH_4CI$ , $NH_4OH$ and shake it well	No ppt is obtained	Absence of 3rd group metal ions (Al <sup>3+</sup> / Fe <sup>3+</sup> )
5	<b>GROUP IV</b> To the above solution pass $(H_2S)$ gas	No dirty white ppt is obtained	Absence of 4 th group metal ion (Zn <sup>2+</sup> )
6	<b>GROUP V</b> To the salt solution add 1ml each of $NH_4CI$ , $NH_4OH$ and $(NH_4)_2CO_3$ and shake it well.	No white ppt is obtained	Absence of 5th group metal ions (Ba <sup>2+</sup> , Ca <sup>2+</sup> )
7	<b>GROUP VI</b> To the original salt solution add 1ml each of $NH_4CI$ , $NH_4OH$ and $NH_4H_2PO_4$ , and scratch the sides of the test tube.	No white ppt is obtained.	Absence of 6th group metal ion (Mg <sup>2+</sup> )
Analysis of the Ammonium			
1	To 1ml of the original salt solution add about 1ml each of Nessler's reagent and NaOH.	A chocolate brown ppt is obtained.	Presence of Ammonium is Confirmed
Result:         The Anion Present       : BROMIDE         The cation Present       : AMMONIUM         The Given simple salt       : AMMONIUM BROMIDE			