

1. Lead Nitrate

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Crystalline	May be sulphate, nitrate or chloride
2	SOLUBILITY A little of the salt is shaken with water.	Soluble	May be Sulphate, Nitrate, Chloride or Ammonium Carbonate.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	Decipitation occurs with evolution of reddish brown gas.	May be Nitrate.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	No characteristic coloured ash.	Absence of Zinc, Aluminium and Magnesium.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	No characteristic change.	Absence of Sulphide and Carbonate.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.	Reddish brown gas is evolved.	Presence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	No pungent smelling gas evolved.	Absence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	No Red orange vapours evolved.	Absence of chloride.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	No characteristic precipitate is appeared.	Absence of chloride and sulphide.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	No characteristic precipitate is appeared.	Absence of sulphate and sulphide.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	No white precipitate.	Absence of Sulphate
13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO ₄ + conc Sulphuric acid is	Brown ring is formed at the junction of the two layers.	Nitrate is confirmed.

	added drop by drop.		
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of water .

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	No Reddish brown precipitate is appeared	Absence of Ammonium.
15	I - group: Original solution + 2 ml of dil Hcl.	White precipitate soluble when boiled with water is obtained.	Presence of lead.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
16	I - group: Original solution + 2 ml of Potassium Iodide.	Yellow precipitate soluble in hot water which reappears as golden yellow spangles on cooling.	Lead is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO + conc Sulphuric acid is added drop by drop.	Brown ring is formed at the junction of the two layers.	Nitrate is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Lead 2. Acid Radical : Nitrate
The given simple salt is : Lead Nitrate

2. Aluminium Sulphate

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Crystalline	May be sulphate, nitrate or chloride
2	SOLUBILITY A little of the salt is shaken with water.	Soluble	May be Sulphate, Nitrate, Chloride or Ammonium Carbonate.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	No characteristic change	Absence of carbonate, nitrate, ammonium, and zinc.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	Blue ash	Presence of aluminium.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	No characteristic change.	Absence of Sulphide and Carbonate.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.	No reddish brown gas is	Absence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	No pungent smelling gas evolved.	Absence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	No Red orange vapours evolved.	Absence of chloride.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	No characteristic precipitate is appeared.	Absence of chloride and sulphide.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	A white precipitate soluble in ammonium acetate and sodium hydroxide mixture	Presence of sulphate.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	A white precipitate, insoluble in conc. HCl.	Sulphate is confirmed.

13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO_4 + conc Sulphuric acid is added drop by drop.	No brown ring is appeared.	Absence of Nitrate.
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of water .

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	No Reddish brown precipitate is appeared.	Absence of Ammonium.
15	I – group: Original solution + 2 ml of dil HCl.	No white precipitate is appeared.	Absence of Lead.
16	II – group: Original solution + 2 ml of dil HCl + H_2S gas.	No black precipitate is appeared.	Absence of Copper.
17	III – group: Original solution 1 ml + NH_4Cl + 2 ml NH_4OH	Gelatinous white precipitate is appeared.	Presence of Aluminium.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
18	III – group: Original solution + Ammonium Hydroxide + Aluminon reagent.	A bright red lake is appeared.	Aluminium is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	A white precipitate, insoluble in conc. HCl.	Sulphate is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Aluminium 2. Acid Radical : Sulphate

The given simple salt is : Aluminium Sulphate.

3. Aluminium Nitrate

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Crystalline	May be sulphate, nitrate or chloride
2	SOLUBILITY A little of the salt is shaken with water.	Soluble	May be Sulphate, Nitrate, Chloride or Ammonium Carbonate.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	Decipitation occurs with evolution of reddish brown gas.	May be Nitrate.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	Blue ash	Presence of Aluminium.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	No characteristic change.	Absence of Sulphide and Carbonate.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.	Reddish brown gas is evolved.	Presence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	No pungent smelling gas evolved.	Absence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	No Red orange vapours evolved.	Absence of chloride.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	No characteristic precipitate is appeared.	Absence of chloride and sulphide.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	No characteristic precipitate is obtained.	Absence of sulphate and sulphide.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	No white precipitate is appeared.	Absence of Sulphate

13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO_4 + conc Sulphuric acid is added drop by drop.	Brown ring is formed at the junction of the two layers.	Nitrate is confirmed.
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of water .

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	No Reddish brown precipitate is appeared.	Absence of Ammonium.
15	I – group: Original solution + 2 ml of dil Hcl.	No white precipitate is appeared.	Absence of Lead.
16	II – group: Original solution + 2 ml of dil HCl + H_2S gas.	No black precipitate is appeared.	Absence of Copper.
17	III – group: Original solution 1 ml + NH_4Cl + 2 ml NH_4OH	Gelatinous white precipitate is obtained.	Presence of Aluminium.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
18	III – group: Original solution + Ammonium Hydroxide + Aluminon reagent.	A bright red lake is obtained.	Aluminium is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO_4 + conc Sulphuric acid is added drop by drop.	Brown ring is formed at the junction of the two layers.	Nitrate is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Aluminium 2. Acid Radical : Nitrate

The given simple salt is : Aluminium Nitrate.

4. Zinc Sulphide

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Powdery	May be carbonate, Sulphide (expect ammonium Carbonate).
2	SOLUBILITY A little of the salt is shaken with water.	Insoluble	May be Carbonate or Sulphide.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	The white salt turns yellow on heating.	May be Zinc.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	Green ash.	Presence of Zinc.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	Rotten egg smelling gas turning Lead acetate paper black.	Sulphide is confirmed.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid +	No reddish brown gas is evolved.	Absence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	No pungent smelling gas evolved.	Absence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	No Red orange vapours evolved.	Absence of chloride.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	A black precipitate is obtained.	Presence of Sulphide.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	A black precipitate soluble in hot dil nitric acid.	Presence of sulphide.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	No white precipitate is obtained.	Absence of Sulphate
13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO ₄ + conc Sulphuric acid is	No brown ring is obtained.	Absence of Nitrate.

	added drop by drop.		
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of dilute Nitric acid.

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	No Reddish brown precipitate is appeared.	Absence of Ammonium.
15	I - group: Original solution + 2 ml of dil HCl.	No white precipitate is appeared.	Absence of Lead.
16	II - group: Original solution + 2 ml of dil HCl + H ₂ S gas.	No black precipitate is appeared.	Absence of Copper.
17	III - group: Original solution + 1 ml NH ₄ Cl + 2ml NH ₄ OH	No gelatinous white precipitate is appeared.	Absence of Aluminium.
18	IV - group: Original solution + 1 ml NH ₄ Cl + 2 ml NH ₄ OH + H ₂ S gas.	Dirty white precipitate is obtained.	Presence of Zinc.

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
18	IV - group: Original solution + Potassium Ferro cyanide.	White precipitate soluble in excess of Sodium hydroxide and insoluble in dilute acid.	Zinc is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	ACTION OF DIL HCl Salt + dilute HCl	Rotten egg smelling gas turning Lead acetate paper black.	Sulphide is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Zinc 2. Acid Radical : Sulphide

The given simple salt is : Zinc Sulphide.

5. Zinc Sulphate

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Crystalline	May be sulphate, nitrate or chloride
2	SOLUBILITY A little of the salt is shaken with water.	Soluble	May be Sulphate, Nitrate, Chloride or Ammonium Carbonate.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	The white salt turns yellow on heating.	May be Zinc.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	Green ash.	Presence of Zinc.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	No characteristic change is obtained.	Absence of Sulphide and Carbonate.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.	No reddish brown gas is	Absence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	No pungent smelling gas evolved.	Absence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	No Red orange vapours evolved.	Absence of chloride.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	No characteristic precipitate.	Absence of chloride and sulphide.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	A white precipitate soluble in ammonium acetate and sodium hydroxide mixture	Presence of sulphate.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	A white precipitate, insoluble in conc. HCl.	Sulphate is confirmed.

13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO_4 + conc Sulphuric acid is added drop by drop.	No brown ring is obtained.	Absence of Nitrate.
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of dil nitric acid .

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	No Reddish brown precipitate is appeared.	Absence of Ammonium.
15	I - group: Original solution + 2 ml of dil HCl.	No white precipitate is appeared.	Absence of Lead.
16	II - group: Original solution + 2 ml of dil HCl + H_2S gas.	No black precipitate is appeared.	Absence of Copper.
17	III - group: Original solution + 1 ml NH_4Cl + 2ml NH_4OH	No gelatinous white precipitate is appeared.	Absence of Aluminium
18	IV - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + H_2S gas.	Dirty white precipitate is obtained.	Presence of Zinc.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
18	IV - group: Original solution + Potassium Ferro cyanide.	White precipitate soluble in excess of Sodium hydroxide and insoluble in dilute acid.	Zinc is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	A white precipitate, insoluble in conc. HCl.	Sulphate is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Zinc 2. Acid Radical : Sulphate

The given simple salt is : Zinc Sulphate.

6. Calcium Carbonate.

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Powdery	May be carbonate, Sulphide (expect ammonium Carbonate).
2	SOLUBILITY A little of the salt is shaken with water.	Insoluble	May be Carbonate or Sulphide.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	Colourless, odourless gas turning Lime water milky.	May be Carbonate.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	No characteristic coloured ash.	Absence of Zinc, Aluminium and Magnesium.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	Brisk effervescence of colourless, odourless gas turning Lime water milky.	Carbonate is confirmed.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.		
8	ACTION OF NaOH: Salt + NaOH + heated.	No pungent smelling gas evolved.	Absence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	No Red orange vapours evolved.	Absence of chloride.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	No characteristic precipitate is obtained.	Absence of chloride and sulphide.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	No characteristic precipitate is obtained.	Absence of sulphate and sulphide.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	No white precipitate is obtained.	Absence of Sulphate

13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO_4 + conc Sulphuric acid is added drop by drop.	No brown ring is obtained.	Absence of Nitrate.
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of dil nitric acid .

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	No Reddish brown precipitate is appeared.	Absence of Ammonium.
15	I - group: Original solution + 2 ml of dil HCl.	No white precipitate is appeared.	Absence of Lead.
16	II - group: Original solution + 2 ml of dil HCl + H_2S gas.	No black precipitate is appeared.	Absence of Copper.
17	III - group: Original solution + 1 ml NH_4Cl + 2ml NH_4OH	No gelatinous white precipitate is appeared.	Absence of Aluminium
18	IV - group: Original solution + 1 ml NH Cl + 2 ml NH OH + H S gas.	No dirty white precipitate is appeared.	Absence of Zinc.
19	V- group: Original solution + 1 mlNH Cl + 2 ml NH OH + 2 ml (NH) CO solutions	White precipitate is obtained.	Presence of Calcium or Barium.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
20	V- group: Original solution + Ammonium Hydroxide + Ammonium Oxalate.	White precipitate insoluble in Acetic acid.	Calcium is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	ACTION OF DIL HCl Salt + dilute HCl	Brisk effervescence of colourless, odourless gas turning Lime water milky.	Carbonate is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Calcium 2. Acid Radical : Carbonate

The given simple salt is : Calcium Carbonate.

7. Barium Chloride.

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Crystalline	May be sulphate, nitrate or chloride
2	SOLUBILITY A little of the salt is shaken with water.	Soluble.	May be Sulphate, Nitrate, Chloride or Ammonium Carbonate.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	No characteristic change.	Absence of Carbonate, Nitrate, Ammonium and Zinc.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	Grassy green flame.	Presence of Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	No characteristic coloured ash.	Absence of Zinc, Aluminium and Magnesium.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	No characteristic change.	Absence of Sulphide and Carbonate.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.	No reddish brown gas is evolved.	Absence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	No pungent smelling gas evolved.	Absence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	Red orange vapours evolved are passed through water to get a yellow solution, which on adding Lead acetate forms a yellow precipitate.	Chloride is confirmed.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	A curdy white precipitate, soluble in excess of Ammonium hydroxide.	Presence of Chloride.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	No characteristic precipitate is obtained.	Absence of sulphate and sulphide.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	No white precipitate is obtained.	Absence of Sulphate

13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO_4 + conc Sulphuric acid is added drop by drop.	No brown ring is obtained.	Absence of Nitrate.
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of water.

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	No Reddish brown precipitate is appeared.	Absence of Ammonium.
15	I - group: Original solution + 2 ml of dil HCl.	No white precipitate is appeared.	Absence of Lead.
16	II - group: Original solution + 2 ml of dil HCl + H_2S gas.	No black precipitate is appeared.	Absence of Copper.
17	III - group: Original solution + 1 ml NH_4Cl + 2ml NH_4OH	No gelatinous white precipitate is appeared.	Absence of Aluminium
18	IV - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + H_2S gas.	No dirty white precipitate is appeared.	Absence of Zinc.
19	V - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + 2 ml $(\text{NH}_4)_2\text{CO}_3$ solutions	White precipitate is obtained.	Presence of Calcium or Barium.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
20	V - group: Original solution + Potassium Chromate is added.	Yellow precipitate, soluble in acid.	Barium is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	Red orange vapours evolved are passed through water to get a yellow solution, which on adding Lead acetate forms a yellow precipitate.	Chloride is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Barium 2. Acid Radical : Chloride

The given simple salt is : Barium Chloride.

8. Magnesium Carbonate

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Powdery	May be carbonate, Sulphide (expect ammonium Carbonate).
2	SOLUBILITY A little of the salt is shaken with water.	Insoluble	May be Carbonate or Sulphide.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	Colourless, odourless gas turning Lime water milky.	May be Carbonate.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	Pink ash.	Presence of Magnesium.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	Brisk effervescence of colourless, odourless gas turning Lime water milky.	Carbonate is confirmed.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.	No reddish brown gas is evolved.	Absence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	No pungent smelling gas evolved.	Absence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	No Red orange vapours.	Absence of chloride.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	No characteristic precipitate is obtained.	Absence of chloride and sulphide.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	No characteristic precipitate is obtained.	Absence of sulphate and sulphide.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	No white precipitate is obtained.	Absence of Sulphate
13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO ₄ + conc Sulphuric acid is	No brown ring is obtained.	Absence of Nitrate.

	added drop by drop.		
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of dil. Nitric acid .

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	No Reddish brown precipitate is appeared.	Absence of Ammonium.
15	I - group: Original solution + 2 ml of dil HCl.	No white precipitate is appeared.	Absence of Lead.
16	II - group: Original solution + 2 ml of dil HCl + H ₂ S gas.	No black precipitate is appeared.	Absence of Copper.
17	III - group: Original solution + 1 ml NH ₄ Cl + 2ml NH ₄ OH	No gelatinous white precipitate is appeared.	Absence of Aluminium
18	IV - group: Original solution + 1 ml NH ₄ Cl + 2 ml NH ₄ OH + H ₂ S gas.	No dirty white precipitate is appeared.	Absence of Zinc.
19	V - group: Original solution + 1 ml NH ₄ Cl + 2 ml NH ₄ OH + 2 ml (NH ₄) ₂ CO ₃ solutions	No white precipitate is appeared.	Absence of Calcium or Barium.
20	VI - group: Original solution + 1 ml NH ₄ Cl + 2 ml NH ₄ OH + 2 ml Di Sodium Hydrogen Phosphate.	White precipitate is obtained.	Presence of Magnesium.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
20	VI - group: Original solution + Magneson reagent	Blue precipitate is obtained.	Magnesium is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	ACTION OF DIL HCl Salt + dilute HCl	Brisk effervescence of colourless, odourless gas turning Lime water milky.	Carbonate is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Magnesium 2. Acid Radical : Carbonate

The given simple salt is : Magnesium Carbonate.

9. Magnesium Sulphate

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Crystalline	May be sulphate, nitrate or chloride
2	SOLUBILITY A little of the salt is shaken with water.	Soluble.	May be Sulphate, Nitrate, Chloride or Ammonium Carbonate.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	No characteristic change.	Absence of Carbonate, Nitrate, Ammonium and Zinc.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	Pink ash.	Presence of Magnesium.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	No characteristic change.	Absence of Sulphide and Carbonate.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.	No reddish brown gas is evolved.	Absence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	evolved.	
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	No Red orange vapours.	Absence of chloride.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	No characteristic precipitate is obtained.	Absence of chloride and sulphide.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	A white precipitate soluble in ammonium acetate and sodium hydroxide mixture	Presence of sulphate.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	A white precipitate, insoluble in conc. HCl.	Sulphate is confirmed.
13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO ₄ + conc Sulphuric acid is	No brown ring is obtained.	Absence of Nitrate.

	added drop by drop.		
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of water.

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	No Reddish brown precipitate is appeared.	Absence of Ammonium.
15	I - group: Original solution + 2 ml of dil HCl.	No white precipitate is appeared.	Absence of Lead.
16	II - group: Original solution + 2 ml of dil HCl + H ₂ S gas.	No black precipitate is appeared.	Absence of Copper.
17	III - group: Original solution + 1 ml NH ₄ Cl + 2ml NH ₄ OH	No gelatinous white precipitate is appeared.	Absence of Aluminium
18	IV - group: Original solution + 1 ml NH ₄ Cl + 2 ml NH ₄ OH + H ₂ S gas.	No dirty white precipitate is appeared.	Absence of Zinc.
19	V - group: Original solution + 1 ml NH ₄ Cl + 2 ml NH ₄ OH + 2 ml (NH ₄) ₂ CO ₃ solutions	No white precipitate is appeared.	Absence of Calcium or Barium.
20	VI - group: Original solution + 1 ml NH Cl + 2 ml NH OH + 2 ml Di Sodium Hydrogen Phosphate.	White precipitate is obtained.	Presence of Magnesium.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
20	VI - group: Original solution + Magneson reagent	Blue precipitate is obtained.	Magnesium is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	A white precipitate, insoluble in conc. HCl.	Sulphate is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Magnesium 2. Acid Radical : Sulphate

The given simple salt is : Magnesium Sulphate.

10. Ammonium Sulphate

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Crystalline	May be sulphate, nitrate or chloride
2	SOLUBILITY A little of the salt is shaken with water.	Soluble.	May be Sulphate, Nitrate, Chloride or Ammonium Carbonate.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	Salt sublimes with evolution of pungent smelling gas giving dense white fumes with a glass rod dipped in conc HCl.	May be Ammonium.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	No characteristic coloured ash.	Absence of Zinc, Aluminium and Magnesium.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	No characteristic change.	Absence of Sulphide and Carbonate.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.	No reddish brown gas is evolved.	Absence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	Pungent smelling gas forming dense white fumes with a glass rod dipped in conc. HCl and also turns red Litmus paper blue.	Presence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	No Red orange vapours.	Absence of chloride.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	No characteristic precipitate.	Absence of chloride and sulphide.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	A white precipitate soluble in ammonium acetate and sodium hydroxide mixture	Presence of sulphate.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	A white precipitate, insoluble in conc. HCl.	Sulphate is confirmed.

13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO_4 + conc Sulphuric acid is added drop by drop.	No brown ring is obtained.	Absence of Nitrate.
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of water.

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	Reddish brown precipitate is obtained.	Ammonium is confirmed.
15	I - group: Original solution + 2 ml of dil HCl.	No white precipitate is appeared.	Absence of Lead.
16	II - group: Original solution + 2 ml of dil HCl + H_2S gas.	No black precipitate is appeared.	Absence of Copper.
17	III - group: Original solution + 1 ml NH_4Cl + 2ml NH_4OH	No gelatinous white precipitate is appeared.	Absence of Aluminium
18	IV - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + H_2S gas.	No dirty white precipitate is appeared.	Absence of Zinc.
19	V - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + 2 ml $(\text{NH}_4)_2\text{CO}_3$ solutions	No white precipitate is appeared.	Absence of Calcium or Barium.
20	VI - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + 2 ml Di Sodium Hydrogen Phosphate.	No white precipitate is appeared.	Absence of Magnesium.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
20	0 - group: Original solution + Sodium Hydroxide + Nessler's reagent	Reddish brown precipitate is obtained.	Ammonium is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	A white precipitate, insoluble in conc. HCl.	Sulphate is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Ammonium 2. Acid Radical : Sulphate

The given simple salt is : Ammonium Sulphate.

11. Ammonium Chloride

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Crystalline	May be sulphate, nitrate or chloride
2	SOLUBILITY A little of the salt is shaken with water.	Soluble.	May be Sulphate, Nitrate, Chloride or Ammonium Carbonate.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	Salt sublimes with evolution of pungent smelling gas giving dense white fumes with a glass rod dipped in conc HCl.	May be Ammonium.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	No characteristic coloured ash.	Absence of Zinc, Aluminium and Magnesium.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	No characteristic change.	Absence of Sulphide and Carbonate.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.	No reddish brown gas is evolved.	Absence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	Pungent smelling gas forming dense white fumes with a glass rod dipped in conc. HCl and also turns red Litmus paper blue.	Presence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	Red orange vapours evolved are passed through water to get a yellow solution, which on adding Lead acetate forms a yellow precipitate.	Chloride is confirmed.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	A curdy white precipitate, soluble in excess of Ammonium hydroxide.	Presence of Chloride.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	No characteristic precipitate is obtained.	Absence of sulphate and sulphide.
12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	No white precipitate is obtained.	Absence of Sulphate

13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO_4 + conc Sulphuric acid is added drop by drop.	No brown ring is obtained.	Absence of Nitrate.
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IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of water.

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	Reddish brown precipitate is obtained.	Ammonium is confirmed.
15	I - group: Original solution + 2 ml of dil HCl.	No white precipitate is appeared.	Absence of Lead.
16	II - group: Original solution + 2 ml of dil HCl + H_2S gas.	No black precipitate is appeared.	Absence of Copper.
17	III - group: Original solution + 1 ml NH_4Cl + 2ml NH_4OH	No gelatinous white precipitate is appeared.	Absence of Aluminium
18	IV - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + H_2S gas.	No dirty white precipitate is appeared.	Absence of Zinc.
19	V - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + 2 ml $(\text{NH}_4)_2\text{CO}_3$ solutions	No white precipitate is appeared.	Absence of Calcium or Barium.
20	VI - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + 2 ml Di Sodium Hydrogen Phosphate.	No white precipitate is appeared.	Absence of Magnesium.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
20	0 - group: Original solution + Sodium Hydroxide + Nessler's reagent	Reddish brown precipitate is obtained.	Ammonium is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	Red orange vapours evolved are passed through water to get a yellow solution, which on adding Lead acetate forms a yellow precipitate.	Chloride is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Ammonium 2. Acid Radical : Chloride

The given simple salt is : Ammonium Chloride.

12. Ammonium Carbonate

I. PRELIMINARY TESTS			
	EXPERIMENT	OBSERVATION	INFERENCE
1	a) COLOUR Colour of the salt is noted	Colourless	Absence of copper and iron salts
	b) APPEARANCE Appearance of the salt is noted	Crystalline	May be sulphate, nitrate or chloride, Ammonium Carbonate
2	SOLUBILITY A little of the salt is shaken with water.	Soluble.	May be Sulphate, Nitrate, Chloride or Ammonium Carbonate.
3	ACTION OF HEAT A small amount of the salt is heated gently in a dry test tube.	Colourless, odourless gas turning Lime water milky.	May be Carbonate.
		Salt sublimes with evolution of pungent smelling gas giving dense white fumes with a glass rod dipped in conc HCl.	May be Ammonium.
4	FLAME TEST: Salt + conc. HCl is made into a paste and introduced into the Bunsen flame.	No characteristic coloured flame.	Absence of Copper, Calcium and Barium.
5	ASH TEST: salt + conc. HCl / HNO ₃ + Cobalt Nitrate solution + filter paper is soaked and burnt.	No characteristic coloured ash.	Absence of Zinc, Aluminium and Magnesium.
II. IDENTIFICATION OF ACID RADICALS			
6	ACTION OF DIL HCl Salt + dilute HCl	Brisk effervescence of colourless, odourless gas	Carbonate is confirmed.
7	COPPER TURNINGS TEST: Salt + Copper Turnings + conc. Sulphuric acid + heated.	No reddish brown gas is evolved.	Absence of Nitrate.
8	ACTION OF NaOH: Salt + NaOH + heated.	Pungent smelling gas forming dense white fumes with a glass rod dipped in conc. HCl and also turns red Litmus paper blue.	Presence of Ammonium.
9	CHROMYL CHLORIDE TEST: Salt + a pinch of Potassium Dichromate + conc. Sulphuric acid + heated .	No Red orange vapours.	Absence of chloride.

III. TESTS WITH SODIUM CARBONATE EXTRACT

PREPARATION OF SODIUM CARBONATE EXTRACT:

A small amount of salt is mixed with twice the amount of sodium carbonate and 20 ml of distilled water is added, boiled for 10 minutes, cooled and filtered. The filtrate is called "Sodium carbonate extract".

	EXPERIMENT	OBSERVATION	INFERENCE
10	SILVER NITRATE TEST: Extract + dilute Nitric Acid added until the effervescence ceases + 2 ml of Silver Nitrate	No characteristic precipitate is obtained.	Absence of chloride/ sulphide.
11	LEAD ACETATE TEST: Extract + dilute acetic Acid added until the effervescence ceases + 2 ml of lead acetate	No characteristic precipitate is obtained.	Absence of sulphate and sulphide.

12	BARIUM CHLORIDE TEST: Extract + dilute Hydrochloric Acid added until the effervescence ceases + Barium chloride solution	No white precipitate is obtained.	Absence of Sulphate
13	BROWN RING TEST: Extract + dilute Sulphuric acid is added until the effervescence ceases + freshly prepared FeSO_4 + conc Sulphuric acid is added drop by drop.	No brown ring is obtained.	Absence of Nitrate.

IV. IDENTIFICATION OF THE BASIC RADICALS

PREPARATION OF ORIGINAL SOLUTION: The original solution is prepared by dissolving the salt in 10 to 15 ml of water.

GROUP IDENTIFICATION			
	EXPERIMENT	OBSERVATION	INFERENCE
14	0 - group: Original solution + Nessler's reagent + excess of Sodium Hydroxide.	Reddish brown precipitate is obtained.	Ammonium is confirmed.
15	I - group: Original solution + 2 ml of dil HCl.	No white precipitate is appeared.	Absence of Lead.
16	II - group: Original solution + 2 ml of dil HCl + H_2S gas.	No black precipitate is appeared.	Absence of Copper.
17	III - group: Original solution + 1 ml NH_4Cl + 2ml NH_4OH	No gelatinous white precipitate is appeared.	Absence of Aluminium
18	IV - group: Original solution + 1 ml NH Cl + 2 ml NH OH + H S gas.	No dirty white precipitate is appeared.	Absence of Zinc.
19	V - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + 2 ml $(\text{NH}_4)_2\text{CO}_3$ solutions	No white precipitate is appeared.	Absence of Calcium or Barium.
20	VI - group: Original solution + 1 ml NH_4Cl + 2 ml NH_4OH + 2 ml Di Sodium Hydrogen Phosphate.	No white precipitate is appeared.	Absence of Magnesium.

V. CONFIRMATORY TESTS FOR BASIC RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
20	0 - group: Original solution + Sodium Hydroxide + Nessler's reagent	Reddish brown precipitate is obtained.	Ammonium is confirmed.

VI. CONFIRMATORY TESTS FOR ACID RADICALS

	EXPERIMENT	OBSERVATION	INFERENCE
1	ACTION OF DIL HCl Salt + dilute HCl	Brisk effervescence of colourless, odourless gas turning Lime water milky.	Carbonate is confirmed.

RESULT

The given simple salt contains 1. Basic Radical : Ammonium 2. Acid Radical : Carbonate

The given simple salt is : Ammonium Carbonate.