A SCHEME FOR SYSTEMATIC ANALYSIS OF INORGANIC SALT MIXTURE: (C-142, Exp-2)

EXPERIMENT	OBSERVATION	INFERENCE
1. Color and Appearance	(a) Colorless	Absence of Cu, Cr, Fe, Ni etc
	(b) Blue or Bluish green	Cu Present
	(c) Green,	Fe, Cu, Ni, Cr present
	(d) Brown	Cu, Ni, Ferric Present
	(e) Black	Sulphides present
	(f) Pink	Mn, Co Present
2. Action of Heat A little of the substance is heated in a clear and dry test tube	(a) Yellow when hot and white when cold (b) White sublimation and a gas with ammonia smell (c) Reddish brown gas (d) Colorless gas turning lime water milky (e) Charring takes place	(a) May be Zn (b) May be Ammonium Salts (c) May be Nitrate (d) May be Carbonate or Oxalate (e) May be oxalate
3. Flame Test: The salt is made into a paste by mixing with Conc. HCl. A small amount of the paste is introduced into the flame using a charred splinter	(a) Bluish green (b) Bright green (c) Apple green (d) Crimson Red (e) Brick Red (f) Golden yellow in naked eye & colorless through Co blue glass (g) Violet in naked eye & crimson red through Co blue glass (h) Bluish white	(a) May be Cu (b) May be Borate (c) May be Ba (d) May be Sr (e) May be Ca (f) May be Na (g) May be K (h) May be Pb, As, Sb, Bi
4. Action of dil. HCl: A small amount of salt is treated with dil. HCl	(a) Brisk effervescence and the gas turns lime water milky (b) A gas with rotten egg smell turning lead acetate paper black	(a) Carbonate confirmed (b) Sulphide confirmed

	(c) Gas with burning sulphur smell – turns acidified $K_2Cr_2O_7$ green	(c) Sulphite confirmed
5. A little of the substance is heated with Conc. H_2SO_4.	(a) Colorless, irritating gas giving dense white fumes with NH_4OH (b) Immediate reddish brown gas fuming with NH_4OH (c) Violet vapors (d) Oily drops are formed. The test tube acquires a greasy appearance. A colorless gas forming a white film on a wet glass rod introduced is evolved	(a) Presence of Chloride (b) Presence of Bromide (c) Presence of Iodide (d) Presence of Fluoride
6. A little of the salt is heated with solid MnO_2 and Conc. H_2SO4.	(a) Greenish yellow gas with pungent smell (b) Immediate reddish brown gas (c) Violet vapors (d) Effervescence of a gas turning lime water milky	(a) Presence of Chloride (b) Presence of Bromide (c) Presence of Iodide (d) Presence of Oxalate
7. A little of the salt is heated with a bit of copper turning and conc. H_2SO_4	Reddish brown gas is formed. Solution becomes green	Presence of Nitrate
8. 1 ml of salt solution is acidified with dil. HCl and $BaCl_2$ solution was added drop wise	White precipitate insoluble in con. HCl	Sulphate confirmed
9. Ammonium Molybdate Test: A little of the salt is dissolved completely in conc. HNO_3, cooled. Then, this is added to a few drops of ammonium molybdate solution in another test tube.	(a) Yellow precipitate in cold or on slight warming (b) Yellow precipitate on Boiling	Phosphate confirmed Arsenite or Arsenate present
10. Action of NaOH A little of the salt is warmed with NaOH solution To 0.5 ml of the salt solution add few drops of Nesseler's reagent	Colorless gas with ammonia smell giving dense white fumes with conc. HCl, also which turns $Hg_2(NO_3)_2$ paper black. Brown solution or precipitate is obtained	Ammonium Present Ammonium confirmed

11. 0.2 g of the sample is dissolved in hot con. HCl and add few drops of NH_4OH followed by dimethyl glyoxime soln.	Rose Red precipitate	Ni present
12. 0.2 g of the sample is dissolved in hot con. HCl and add few drops of NH_4OH, then acidified with dil. Acetic acid + few drops of potassium ferrocyanide solution.	Chocolate (brown) precipitate	Cu Present
13. To 0.5 ml of the salt solution add few drops of potassium pyroantimonate	White Crystalline precipitate	Na confirmed
14. To 0.5 ml of the salt solution add 2 drops of $Co(NO_3)_2$ + solid $NaNO_2$ and dil. Acetic acid	Yellow precipitate	K confirmed
15. 1 m of salt solution is saturated with NH_4Cl and made alkaline with NH_4OH. To this saturated $(NH_4)_2CO_3$ solution is added.	White precipitate	Ba, Ca or Sr
The white precipitate is dissolved in dil. CH_3COOH to which K_2CrO_4 solution is added.	Yellow precipitate	Ba confirmed
TESTS WITH Na_2CO_3 EXTRACT: About 0.5 g of the salt is mixed with thrice its amount of Na_2CO_3 and 10 ml of distilled water. The solution is then boiled well for about 10 minutes and filtered. The filtrate is known as "Na_2CO_3 extract"		
1. (a) A little of the extract is acidified with dil. HNO_3 till effervescence stops, boiled and cooled. Then $AgNO_3$ is added	(a) A curdy white precipitate soluble in NH_4OH (b) A pale yellow precipitate partly soluble in NH_4OH (c) A yellow precipitate insoluble in NH_4OH	Chloride confirmed Bromide confirmed Iodide confirmed
2. A little of the extract is acidified with dil. HCl and boiled. Then $BaCl_2$ is added	A white precipitate insoluble in conc. HCl	Sulphate confirmed
3. Brown ring Test: A little of the extract is acidified with dil. H_2SO_4 and mixed with freshly prepared $FeSO_4$ solution. To this mixture, conc. H_2SO_4 is added along the sides of the test tube without shaking	Brown ring	Nitrate confirmed