GOVT. POLYTECHNIC, GAJAPATI

Experiment No. : 07 Page No. : 27 Date :

AIM OF THE EXPERIMENT :-

To test the unknown acid radicals present in the given salt.

APPARATUS REQUIRED :-

1. Test tubes 2. Test tube holders 3. Bunsen burners 4. Spatula 5. Watch glass

CHEMICALS REQUIRED :-

1. Given salt 2. Various reagents 3. Litmus paper.

THEORY & PROCEDURE :-

A. PRELIMINARY TEST :

1. Salt No :
2. Colour of the salt :
3. Structure :
4. Solubility of the salt :

B. TEST FOR ACID RADICALS :

Experiment	Observation	Inference
1. Test with dil. HCl (for CO_3^{2-}, S^{2-}) :		
About 2ml of dil. HCl was taken in a clean test tube. It was warmed and small amount of the supplied salt was added to it.	(a) Effervescence took place with the evolution of a colourless, odourless gas.	(a) It may be CO_2 from CO_3^{2-}.
	(b) Effervescence took place with the evolution of a colourless gas with the smell of rotten egg.	(b) It may be H_2S from S^{2-}.
	(c) No effervescence and no gas was evolved.	(c) CO_3^{2-}, S^{2-} are absent.
Confirmatory Test for CO_3^{2-} :		
The gas evolved from the reaction of dil. HCl and the salt was passed through lime water.	Lime water was turned milky and with excess of gas disappeared.	CO_3^{2-} is confirmed
Confirmatory Test for S^{2-} :		
The gas was passed through	It was turned into black.	S^{2-} is confirmed.

lead acetate solution or a filter paper dipped in lead acetate solution was shown to the gas.		
Experiment	Observation	Inference
II. Test with conc. H_2SO_4 (For Cl^-):		
A pinch of salt was taken in a clean and dry test tube. About 2 to 3 drops of conc. H_2SO_4 was added. Then it was warmed slightly.	(a) Effervescence took place with the evolution of a colourless gas with pungent odour. White fumes were produced when a glass rod dipped in conc. NH_4OH was shown to the gas.	(a) May be $Cl^\ominus$ (To be confirmed by $AgNO_3$ test)
Confirmatory Test for Cl^- (Silver Nitrate Test)		
About 1ml of salt solution taken in a test tube was acidified with dil. HNO_3 and $AgNO_3$ solution was added	Curdy white precipitate soluble in dil. NH_4OH which reappeared on addition of dil. HNO_3.	Cl^- is confirmed.
Experiment	Observation	Inference
III. Test for NO_3^- (Conc. H_2SO_4 and Copper turning).		
A little of the salt was heated with concentrated H_2SO_4 and a few copper turnings.	Brown fumes were evolved and the solution in the test tube was turned green.	May be NO_3^-.
Confirmatory test for NO_3^- (Brown Ring test)		
To about 1ml of salt solution was taken in a test tube, equal volume of conc. H_2SO_4 was added. It was cooled under tap water. Then freshly prepared $FeSO_4$ solution was added slowly	A brown ring was formed at the junction of the two rings.	NO_3^- is confirmed.

Experiment No. : Page No. : 29 Date :

Experiment	Observation	Inference
Confirmatory test for SO_4^{2-} ($BaCl_2$ test)		
About 1ml of salt solution was taken a test tube and then it was acidified with dil. HCl and $BaCl_2$ solution was added.	White precipitate was obtained which was insoluble in conc. HCl even on boiling.	SO_4^{2-} is confirmed.

CONCLUSION :-

Hence the acid radical present in the given salt is found to be