Hydrogen Chloride

1. How will you convert iron to iron (II) chloride? Support your answer by a chemical equation.

2. Explain the term constant boiling mixture.

3. State why cannot be dilute hydrochloric acid concentrated beyond certain concentration on boiling.

4. Write an ionic equation when HCl gas dissolves in water.

5. Name an ion responsible for acidic nature of HCl acid.

6. State which of the two — a solution of HCl in water and a solution of HCl in toluene is an electrolyte. Give reasons for your answer.

7. How will you obtain following from dil HCl acid? Give equations.

(a) Hydrogen (b) carbon dioxide

(c) Sulphur dioxide (d) hydrogen sulphide

8. Name two soluble nitrates which can be converted into insoluble chlorides by the use of dilute HCl. Support your answer by chemical equations.

9. How does silver nitrate solution react with sodium chloride solution? State your observations when above mixture is treated with excess of ammonium hydroxide. Support your answer by chemical equations.

10. The statements given below pertain to HCl gas or HCl acid.

Complete the statements with appropriate words. [1 mark of each blank space]

(i) Hydrogen chloride gas is not dried by using [conc H_2SO_4/P_2O_5].

(ii) Addition of [sodium nitrate/zinc nitrate/silver nitrate] to hydrochloric acid, gives an insoluble ppt. of the respective chloride. This ppt. is [soluble/insoluble] in ammonium hydroxide and [soluble/insoluble] in dilute nitric acid.

(iii) Hydrogen chloride gas on heating above 500°C gives hydrogen and chlorine gas. This reaction is an example of [thermal decomposition/thermal dissociation].

(iv) Addition of [iron (III) sulphide/iron (II) sulphide/iron pyrites] to dilute hydrochloric acid results in the liberation of hydrogen sulphide gas.

(v) Iron reacts with hydrogen chloride gas forming [iron (II) chloride/iron (III) chloride] and hydrogen gas. The reaction is an example of [double decomposition /synthesis /simple displacement].

(vi) Hydrochloric acid can be converted into chlorine by heating it with [calcium oxide/lead (II) oxide], which acts as a/an [oxidising/reducing] agent.

(vii) Hydrogen chloride and water are examples of [polar covalent/nonpolar covalent] compounds and the solution of hydrogen chloride in water [contains/does not contain] free ions.

(viii) An aqueous solution of HCl gas is named [aquafortis/oil of vitriol/muriatic acid].

(ix) The salt obtained when rock salt reacts with conc. sulphuric acid below 200°C is a/an [acid/normal] salt.

(x) In the preparation of HCl acid from HCl gas, a funnel arrangement provides [more/less] surface area for the absorption of gas.

11. Select the correct words from the list given below to complete the following word equations : metallic oxide, active metal, metal carbonate, metal bisulphite, metal hydroxide, metal bicarbonate, metal sulphate and metal sulphide.

(i) ……. + HCl (dil.) ⟶ Metal salt + water + Carbon dioxide gas

(ii) …… .+ HCl (dil.) ⟶ Metal salt + hydrogen sulphide gas

(iii) …… .+ HCl (dil.) ⟶ Metal salt + hydrogen gas

(iv) …… .+ HCl (dil.) ⟶ Metal salt + water + Sulphur dioxide gas

(v) …… .+ HCl (dil.) ⟶ Metal salt + water

12. Select the correct word/formula from the choices given below :

(i) A substance which reacts with conc. HCl to liberate chlorine. [PbO/PbO_2/$PbCl_2$]

(ii) An acid which is not monobasic acid [HNO_3/HCl/HCOOH/H_2SO_4]

(iii) A metal which reacts with dil HCl to liberate hydrogen [Zn/Cu/Ag/Pb]

(iv) An acid which is not an oxidising agent. [H_2SO_4/HNO_3/HCl]

(v) A salt insoluble in cold water, but soluble in hot water. [($PbCl_2$/$PbSO_4$/PbS]