5.Acid Bases and Salts

Q.1 Crystalline Blue vitriol, Crystalline Common salt, Crystalline ferrous sulphate, Crystalline sodium carbonate.

Ans- Crystalline Common Salt is the odd one here. Crystalline common salt is an ionic compound. The ionic compounds are crystalline in nature. It does not contain water of crystallization. The others have a crystalline nature because of their water of crystallization.

Q.2 Two or three of copper fling were added to 10 ml dilute nitric acid an stirred.

Ans.- When two or three flings of copper are added, to 10 ml dilute nitric acid, the copper metal reacts with dilute nitric acid, it does not displace hydrogen from the acid. The reaction produces Nitric oxide (NO) it forms copper Nitrate and Hydrogen gas.

$3(ucs) + 8NHO_3(aq) \rightarrow 3Cu(NO_3)_2(aq) + 2NO(g) + 4H_2O_{(1)}$

copper nitric acid(dil) copper + nitrate nitric + oxide + water

Q.3 Magnesium oxide was added to dilute HCl and Magensium oxide was added to dilute NaOH.

Ans- When Magnesium oxide was added to dilute HCl, it forms Magnesium chloride and water.

Magnesium oxide + dil HCl Magnesium oxide is basic in nature, it neutralizes acid Magnesium oxide being insoluble

base, reacts with dilute HCl and procedure soluble salt $MgCl_2$ and water H_2O.

$$MgO_{(5)} + 2HCl_{(aq)} \rightarrow MgCl_2(aq) + H_2O(1)$$

When Magnesium oxide was added to dilute NaOH no chemical reaction takes place in Magnesium oxide and sodium Hydroxide, because both are basic in nature.

Explain by drawing a figure of the electronic configuration

Q.4 Formation of sodium chloride form sodium and chlorine

Ans.- 1) The electronic configuration of sodium is (2,8,1) Its atomic number is 11. The electronic configuration of chlorine is (2,8,7) its atomic number is 17.

2) The outermost shell of sodium and chlorine is not in octate state. Sodium atom has one electron in its outermost shell, while chlorine has seven electrons in its outermost shell. Hence sodium and chlorine are unstable.

3) When these two atoms come together, sodium donates one electron, while chlorine accepts it. Sodium donates one electron to chlorine and forms Na^+ ion, that has an octet state. Chlorine gains this electron and forms Cl^- ion that has complete octet. An ionic bond is formed in oppositely charged Na^+ and Cl^- ions, thus an ionic compound Nacl is formed.

$Na \rightarrow Na^+ + e^-$, $cl + e^- \rightarrow cl^-$

(2,8,1) (2,8)

$Na^+ + cl^- \rightarrow$ Nacl

Q.5 Obtain a sample of rainwater. Add to it a few drops of universal indicator. Measure its PH. Describe the nature of the sample of rainwater and explain effect if it has on living world.

Ans- 1) When an universal indicator is added to a sample of rain water, colors rainwater turns greenish yellow. Its PH is between 5 and 5.5, which shows that rainwater is slightly acidic.

2) Rainwater contains micro-nutrients that are useful for the growth of plants. Plants receive nitrates that are formed when nitrogen present in air which dissolves in water.

Effects of acid rain- 1) When acid rain combines with soil, acid adds hydrogen ions to soil, they get pushed in deeper soil. Roots use these ions for nutrients, the roots of plants die.

2) Acid rain affects chemical and PH balance of ground water and other water bodies.

3) It leaches calcium from soil that badly affects plants.

4) It damages human respiratory system, if inhaled deeply.

5)It dames buildings, structures made of stone or metal, paints etc.

6) Animals reproductive system gets affected, Bone decalcification, abnormal growth or may prove fatal.