

# PNS SCHOOL OF ENGINEERING & TECHNOLOGY

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Internal Assessment Examination-2022

Subeject-Th-2(B)-Engineering Chemistry

F.M= 20

(2\*5=10)

1.(a) Write the three fundamental particle of an atom

Ans-electron ,proton and neutron are three fundamental particle of an atom

(b). Write the conjugate acid of  $\text{CH}_3\text{COO}^-$  ,  $\text{NH}_3$

Ans- $\text{CH}_3\text{COOH}$  ,  $\text{NH}_4$

(c). Write the electronic configuration of  $\text{Mg}^{2+}$  ,K

Ans –The electronic configuration of  $\text{Mg}^{2+}$  -  $1s^2 2s^2 2p^6$  & K- $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$

(d). What is normal salt?Give example of it .

Ans- Salts are the ionic compounds that are formed by the neutralisation reaction. These are the products of an acid and a base. For example, when **Sodium hydroxide reacts with Hydrochloric acid it forms a normal salt of Sodium chloride.**

(e). Define Isotopes with an examples.

Ans- The atoms belonging to the same element, having same atomic number Z, but different mass number A, are called isotopes. For example, Protium  ${}_1\text{H}^1$ , Deuterium  ${}_1\text{H}^2$  Tritium  ${}_1\text{H}^3$

(f)Write the formation of NaCl

Ans- When sodium interacts with chlorine, it donates its outermost electron to the chlorine atom, generating a sodium ion ( $\text{Na}^+$ ) and a chloride ion ( $\text{Cl}^-$ ) by acquiring an electron. The attractive electrical force holds sodium and chloride ions together to create sodium chloride,  $\text{Na}^+\text{Cl}^-$  or NaCl.

(g) What is complex salt?

Ans- A complex salt is a **compound composed of a central metal atom having coordination bonds with ligands around it.** This also called a coordination compound. This compound is called a complex salt because the structure is complex and there are cations and anions bonded to each other.

2. Answer the following questions. (5\*2=10)

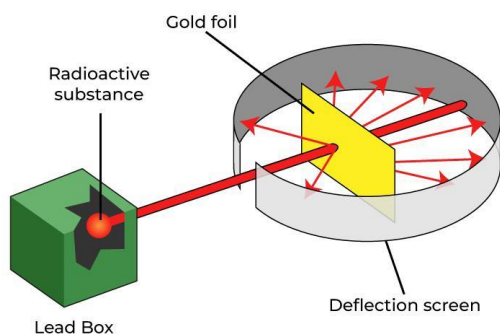
(a) Explain Rutherford Gold foil experiment ?

**Ans**

### Rutherford Gold foil experiment –

After the failure of Thomson's atomic model, E. Rutherford in 1911 performed a series of experiments in order to study the structure of an atom.

- ❖ The experiment involves the bombardment of a thin sheet of gold foil (0.004mm thickness) with  $\alpha$ -particles ( $\text{He}^{++}$ )
- ❖  $\alpha$ -particles are obtained from a radioactive element like Uranium or Radium.
- ❖ A thin sheet with a hole was placed to form of  $\alpha$ -particles



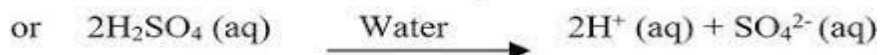
(RUTHERFORD GOLD FOIL EXPERIMENT)

(b) Write down the Arrhenius theory of acids & bases ?

Ans-

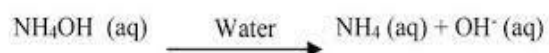
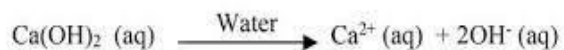
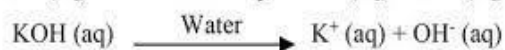
### Arrhenius acids

Acids are those substances which give  $\text{H}^+$  ions in an aqueous solution



### Arrhenius bases-

Base are those substances which give  $\text{OH}^-$  ions in an aqueous solution



**(C)**What is covalent bond ?Write the formation of  $\text{N}_2, \text{Cl}_2, \text{O}_2$  .

**Ans-**Covalent bond is defined as the force of attraction which arises by the mutual sharing of electrons between the two atoms & the compound is formed called covalent bond.

**Formation of  $\text{N}_2$ -**

