13. Chemical change and chemical bond

Practice Questions

Q.1 Answer the question in detail.

Write short note.

1) Combustion of fuel.

Ans. Energy can be obtained by burning of wood, coal or charcoal, petrol and gas. In all this fuel carbon is common combusting factor. In the process of burning, carbon get react with oxygen in air and forms the carbon dioxide. Burning of fuel is fast and irreversible change.

Word equation : Carbon + Oxygen → Carbon dioxide

Chemical equation : $C + O_2 \rightarrow CO_2$

2) Chemical bond

Ans. The relationship between electronic configuration and valency of an element is very close. Noble gases do not form any chemical bond as their electron octet/duplet is complete while the atoms with incomplete electron octet/duplet form chemical bonds. Reason for this is that an atoms

used its valence electron during formation of a chemical bond moreover on forming chemical bonds equal to its valency the atom attains the electronic configuration of complete oclet/duplet. There are two method's of formation of chemical bonds.

1) Ionic bond
2) Covalent bond

3) Ionic bond

Ans. The chemical bond formed due to an electrostatic force of attraction between the oppositely charged cations and anions is called an ionic bond or an electrovalent bond. The compound formed by ionic bonding is in solid state. Ionic bond is present in between metal and non metals. Force of attraction is higher in ionic bonds.

4) Covalent bond

Ans. The chemical bond formed by sharing of valence electrons of two atoms with each other is called a covalent bond. Ions are absent in the covalent bond. In this bond, the pair of 1, 2 or 3 pair of electron is shared equally in between two

atoms covalent bond is found in molecules of non metals shared electrons are common in both atoms, hence octet and duplet of both the atoms get completed.

Q.2 Explain the photosynthesis process in plants.

Ans. In a green plants, with the help of chlorophyll carbon di oxide and water react together in presence of sunlight and forms the glucose and evolves the oxygen word equation.

Carbon di oxide + water $\xrightarrow[\text{Chlorophyll}]{\text{Sun light}}$

Glucose + Oxygen

Chemical reaction –

$$CO_2 + H_2O \xrightarrow[\text{Chlorophyll}]{\text{Sun light}} C_6H_{12}O_6 + O_2$$

Q.3 Write the answers of following question.

1) What is mean by Ionic compound? Explain in detail.

Ans. The compound in which ionic bond is present is called ionic compound. These compounds are formed by exchange of electrons. Exchange of electrons is occurs in metal and non metal. The storng ionic bond is present. The melting and

boiling point of ionic compound is very high. Ionic compound can dissolve in water. Ex. NaCl, CaO, NaOH.

2) What is mean by covalent compound? Explain in detail.

Ans. The compound in which covalent bond is present is called covalent compound. These compounds are formed by sharing of electrons. The covalent bond is week. The melting and boiling point of covalent compound is less. The covalent compound cannot dissolves in water. But it can dissolves in organic solvent such as keroscene, carbon di sulphide and methyl Benzene. Ex. HCl, H_2SO_4, CO_2.

Q.4 Differentiate the following question.

1) Physical change and chemical change.

Ans.

Physical change	Chemical change
1) In physical change physical properties of substance changes.	1) In chemical change chemical properties of substance changes.
2) No new substance get	2) New substance get

formed.	formed.
3) Original substance can get back easily. Ex. Boiling water, melting ice.	3) Original substance can not get back. Ex. Smell after ripening of fruit. Smell of rotten food.

Q.5 Explain in detail formation of chemical equation.

Ans. Making word equation of respective substance is first step of chemical reaction. Instead of name, if chemical formula is used then it becomes chemical equation. Original substance are right on left side while newly formed substance are represent on right side and arrow is drawn at middle. The head of arrow is towards the newly formed substance. The arrow represents the direction of chemical reaction. The substance on the left side are reactant. After the reaction of reactant product is formed. Product present on the right side of arrow.

Q. 6 Give reasons.

1) Noble gases represents the zero valency.

Ans. 1) The electron octet or duplet of noble gas is complete. Hence they do not form the chemical bond.

2) Chemical bonds form in the compound are as same as its valency, hence noble gas represent the zero valency.

2) HCl is a covalent compound.

Ans. 1) Electronic configuration of Hydrogen (H+) is one. Electronic configuration of chlorine (Cl) is 2, 8, 7.

2) Hydrogen requires one electron to complete its duplet, while chlorine requires one electron to complete its octet.

3) Hence both the elements shares the electron with each other. Hence HCl is covalent compound.

Q.7 Identify the relation.

1) ……. : Exchange of electron : : covalent bond : sharing of electron.

Ans.- Chemical bond.

2) Ripening of fruit : …… : : sharpening the nip of pencil : fast change
Ans. Slow change.

3) Vapourisation of water : …… : : conversion of milk into curd : Chemical change
Ans. Physical change

Q. 8 State true of false.

1) The number of chemical bonds formed by single atom is known as atomic number.
Ans. False (The number of chemical bonds formed by single atoms is known as valency.)

2) Octate state is consider for the formation of chemical bond.
Ans. True.

3) Glucase and oxygen are the products of photosynthesis reaction.
Ans. True.

4) Carbon di oxide and water react together in the respiration process.
Ans. False (θ Glucose and oxygen react together in respiration process)

5) Respiration is a continuously processing biological process.
Ans. True.

Q. 9 Give the examples.

1) Natural change.
Ans. Ripening of fruit, sunset and sunrise, growth of plants.

2) Physical change.
Ans. Vapour formation of water, melting of ice, dissolving sugar in water.

Q. 10 Write answer in one line.

1) Which salts are dissolved in hard water.
Ans.- Calcium, magnesium chloride and sulphate these salts are dissolves in hard water.

2) Which common combustible substance is present in all fuels?
Ans. Carbon is a common combustible substance present in all fuels.

3) Which acid is present in soda – lemon juice?
Ans. Carbon di oxide and cirtric acid is present in soda – lemon juice.

4) Which type of changes occurs when baking soda is added to lemon juice?

Ans. When baking soda is added to lemon juice the chemical changes takes place.

5) Which type of electron is used by atom for chemical bonding?

Ans. Valence electron is used by atom for chemical bonding.

6) What is the position of product in a chemical reaction?

Ans. The position of product in a chemical reaction is on the right side of the arrow.

7) what is the position of reactant in a chemical reaction?

Ans. The position of reactant in a chemical reaction is on the left side of the arrow.

8) Where the ionic bond is formed?

Ans. Ionic bond is formed in elements of metal and non metal.

9) What is mean by manmade chemical changes?

Ans. If chemical changes are happened due to humans, then these changes are known as manmade chemical changes.

10) Conversion of green mango into mango is which type of change?

Ans. Conversion of green mango into ripen mango is slow change.