

ST. JOSEPH'S CONVENT SCHOOL, MOGA

ASSIGNMENT-1 CHEMISTRY –X

Notes on Chemical Reactions and Equations

- 1. Chemical reactions-** The transformation of chemical substance into a new chemical substance by making and breaking of bonds between different atoms is known as Chemical Reaction.
- 2. Signs of a chemical reaction-** These factors denote that a chemical reaction has taken place- change of state of substance, change of color of substance, evolution of heat, absorption of heat, evolution of gas and evolution of light.
- 3. Chemical Equation:** The representation of chemical reaction by means of symbols of substances in the form of formulae is called chemical equation. E.g. - $H_2 + O_2 \Rightarrow H_2O$
- 4. Balanced Chemical Equation:** A balanced chemical equation has number atoms of each element equal on both left and right sides of the reaction.

*Note- According to Law of Conservation of Mass, mass can neither be created nor destroyed in a chemical reaction. To obey this law, the total mass of elements present in reactants must be equal to the total mass of elements present in products.

5. Types of Chemical Reactions-

I. Combination- When two elements or one element and one compound or two compounds combines to give one single product.

II. Decomposition- Splitting of a compound into two or more simple products.

III. Displacement- It takes place when a more reactive metal displaces a less reactive metal.

IV. Double displacement- Reactions in which ions are exchanged between two reactants forming new compounds are called double displacement reactions.

V. Precipitation- The insoluble compound called precipitate forms in this reaction.

VI. Exothermic- Reactions which produce energy are called exothermic reaction.

Most of the decomposition reactions are exothermic.

VII. Endothermic- Reactions which absorb energy are called endothermic reaction.

Most of the combination reactions are endothermic.

VIII. Oxidation: Gain of oxygen or removal of hydrogen or metallic element from a compound is known as oxidation.

IX. Reduction: Addition of hydrogen or removal of oxygen from a compound is called reduction.

X. Redox- A chemical reactions where oxidation and reduction both take place simultaneously are also known as redox reaction.



6. Rusting- When iron reacts with oxygen and moisture forms a red substance called rust.

7. Rancidity- Oils and fats when get oxidized on exposure to air show a change in taste and smell.

8. Corrosion- Metals when attacked by oxygen, water, acids, gases, present in air changes its surface which is called corrosion.

Multiple Choice Questions For Chemical Reactions and Equations

1. The chemical formula of lead sulphate is

- (a) Pb_2SO_4
- (b) $Pb(SO_4)_2$

- (c) PbSO_4
 - (d) $\text{Pb}_2(\text{SO}_4)_3$
2. Which information is not conveyed by a balanced chemical equation?
- (a) Physical states of reactants and products
 - (b) Symbols and formulae of all the substances involved in a particular reaction
 - (c) Number of atoms/molecules of the reactants and products formed
 - (d) Whether a particular reaction is actually feasible or not
3. Chemically rust is
- (a) hydrated ferrous oxide
 - (b) only ferric oxide
 - (c) hydrated ferric oxide
 - (d) none of these
4. Both CO_2 and H_2 gases are
- (a) heavier than air
 - (b) colourless
 - (c) acidic in nature
 - (d) soluble in water
5. Which of the following gases can be used for storage of fresh sample of an oil for a long time?
- (a) Carbon dioxide or oxygen
 - (b) Nitrogen or helium
 - (c) Helium or oxygen
 - (d) Nitrogen or oxygen
6. The electrolytic decomposition of water gives H_2 and O_2 in the ratio of
- (a) 1 : 2 by volume
 - (b) 2 : 1 by volume
 - (c) 8 : 1 by mass
 - (d) 1 : 2 by mass
7. In the decomposition of lead (II) nitrate to give lead (II) oxide, nitrogen dioxide and oxygen gas, the coefficient of nitrogen dioxide (in the balanced equation) is
- (a) 1
 - (b) 2
 - (c) 3
 - (d) 4
8. Fatty foods become rancid due to the process of
- (a) oxidation
 - (b) corrosion
 - (c) reduction
 - (d) hydrogenation
9. We store silver chloride in a dark coloured bottle because it is
- (a) a white solid
 - (b) undergoes redox reaction
 - (c) to avoid action by sunlight
 - (d) none of the above
10. Silver article turns black when kept in the open for a few days due to formation of
- (a) H_2S

- (b) AgS
 - (c) AgSO₄
 - (d) Ag₂S
- 11.** When crystals of lead nitrate are heated strongly in a dry test tube
- (a) crystals immediately melt
 - (b) a brown residue is left
 - (c) white fumes appear in the tube
 - (d) a yellow residue is left
- 12.** Dilute hydrochloric acid is added to granulated zinc taken in a test tube. The following observations are recorded. Point out the correct observation.
- (a) The surface of metal becomes shining
 - (b) The reaction mixture turns milky
 - (c) Odour of a pungent smelling gas is recorded
 - (d) A colourless and odourless gas is evolved
- 13.** When carbon dioxide is passed through lime water,
- (a) calcium hydroxide is formed
 - (b) white precipitate of CaO is formed
 - (c) lime water turns milky
 - (d) colour of lime water disappears.
- 14.** When a magnesium ribbon is burnt in air, the ash formed is
- (a) black
 - (b) white
 - (c) yellow
 - (d) pink
- 15.** In which of the following, heat energy will be evolved?
- (a) Electrolysis of water
 - (b) Dissolution of NH₄Cl in water
 - (c) Burning of L.P.G.
 - (d) Decomposition of AgBr in the presence of sunlight
- 16.** Rancidity can be prevented by
- (a) adding antioxidants
 - (b) storing food away from light
 - (c) keeping food in refrigerator
 - (d) all of these
- 17.** The reaction of H₂ gas with oxygen gas to form water is an example of
- (a) combination reaction
 - (b) redox reaction
 - (c) exothermic reaction
 - (d) all of these reactions
- 18.** The reaction in which two compound exchange their ions to form two new compounds is called
- (a) displacement reaction
 - (b) combination reaction
 - (c) double displacement reaction
 - (d) redox reaction
- 19.** On immersing an iron nail in CuSO₄ solution for few minutes, you will observe

- (a) no reaction takes place
- (b) the colour of solution fades away
- (c) the surface of iron nails acquire a black coating
- (d) the colour of solution changes to green

20. An element X on exposure to moist air turns reddish-brown and a new compound Y is formed. The substance X and Y are

- (a) $X = \text{Fe}$, $Y = \text{Fe}_2\text{O}_3$
- (b) $X = \text{Ag}$, $Y = \text{Ag}_2\text{S}$
- (c) $X = \text{Cu}$, $Y = \text{CuO}$
- (d) $X = \text{Al}$, $Y = \text{Al}_2\text{O}_3$