A

Absolute Zero: This is the lowest temperature on any temperature scale. On the kelvin scale, it is the zero point and on Celsius scale it is -273.15 degree Celsius. It is the lowest temperature at which the kinetic energy of the atoms and molecules becomes minimum. Absolute temperature can be attained theoretically only. It is not possible to achieve the temperature by any artificial or natural means.

Acid: An acid is a chemical substance which has a tendency to release hydrogen ions or protons and accept electrons. In an aqueous state, an acid readily produces a large amount of H+ (aq) ions. Most of the strong acids get ionized almost completely in the dilute aqueous solution, whereas, the ones that are weak acids, ionize partially.

Activated Charcoal: A carbon which is porous in nature and possess high adsorption power. It is useful for removing toxic substances from air and water.

activation energy: During a chemical reaction, the minimum amount of energy which is needed by the reactants to get converted into products is known as activation energy.

Acyl Group: It is a functional group of organic compounds which is usually obtained by replacing the hydroxyl group (--OH) from any carboxylic acid.

Addition Reaction: A type of chemical reaction in which an atom or a group of atoms is added to a double or triple bond compound, in order to change it into a single and double bond compound respectively.

Alcohol: An organic compound which consists of a hydroxyl group (--OH) attached to a carbon atom of an alkyl group chain.

Aldehyde: A functional group of organic compounds, consisting of one atom each of carbon, hydrogen and oxygen. Here, the carbon atom forms a single bond with the hydrogen atom and is bonded to the oxygen atom with the help of a double bond.

Aliphatic: An organic compound in which the carbon atoms are bonded together in the form of a chain. It does not have aromatic rings.

Alkali Metals: Elements which belong to Group IA of the periodic table.

Alkaline Earth Metals: Elements which belong to Group IIA of the periodic table.

Alkanes: Alkanes are a series of organic compounds, consisting of carbon and hydrogen atoms, where all the carbon atoms are bonded to each other only by single bonds.

Alkenes (Olefins): Unsaturated organic compounds which have at least one carbon-carbon double bond.

Alkynes: A type of unsaturated hydrocarbon compound which has at least one carbon-carbon triple bond.

Allotrope: Two or more elements with same physical components but different structural forms. The physical and chemical properties of various allotropic forms of an element are totally different from each other.

Alpha Particle: A positively charged particle with a charge of 2+. It contains two protons and two neutrons, like the nucleus of a helium atom.

Alum: It is a white crystalline compound of aluminum. Hydrated aluminum potassium sulfate is commonly known as alum. Its chemical formula is Kal(SO4)2.12H2O.

Ammonia: Ammonia is an inorganic compound made of nitrogen and hydrogen atoms and is chemically represented by the formula NH3.

Anion: A negatively charged particle or ion.

Aromatic Hydrocarbons: Aromatic hydrocarbon is a type of hydrocarbon compound, which has at least one structural ring of 6-carbon atoms.

Atom: The smallest structural unit of any chemical element is called an atom.

Atomic Number: The number of protons present in the nucleus of an atom.

Aufbau ('building up') Principle: It is the law that governs electronic configuration in the orbitals of an atom.

Avogadro's Number: Also known as Avogadro's constant. It is the number of particles present in one mole of any substance. It is equal to 6.023x10^23.

B

Back Titration: A technique of analytical chemistry, used to analyze the concentration of a given substance. It is carried out on those substances that do not exhibit any valid result in the usual titration method.

Baeyer's Reagent: A chemical agent consisting of cold dilute potassium permanganate solution and is used in organic chemistry to detect the existence of unsaturated bonds (double or triple bonds) in a compound.

Balanced Equation: A chemical equation, where the number of atoms and the charge of every element of the reactants and the products are the same or are in a balanced state.

Balmer Series: Balmer series is used to define a set of spectral lines emitted by the hydrogen atoms, due to movement of its electrons from one energy level to the another.

Base: A chemical substance that readily donates electrons during formation of a bond.

Beta Particle: Negatively charged particles emitted by the nucleus of radioactive elements.

Bohr atom: The model of an atom formulated by Neils Bohr. He predicted that the negatively charged electrons of the atom revolve around the nucleus of an atom.

Boiling Point: The temperature at which the atmospheric pressure and the vapor pressure of the liquid becomes equal is called the boiling point.

Boyle's Law: Boyle's law states that at constant temperature the pressure and volume of a given amount of gas is inversely proportional to each other.

Branched Chain Alkane: Those compounds of alkane that form branches, as a result of bonding the main chain of the molecule with functional groups are called branched chain alkanes.

Brownian motion: The zigzag motion of the tiny particles, suspended in a fluid substance is called Brownian motion.

Buffer Solution: A solution that shows resistance towards change in pH value. Basically, it is either made of a weak acid and a conjugate base or a weak base and a conjugate acid.

Butanol: An organic compound which consists of four carbon atoms bonded with each other by single bonds and one alcohol or hydroxyl group.

C

Catalyst: A substance which when added to a chemical reaction, increases the rate of the reaction without participating in it.

Catenation: The ability of an element to form a series of covalent bond with itself and make long chains is known as catenation.

Cathode Ray: Cathode ray can be defined as a flow of electrons released by the negative electrode or cathode in a vacuum tube.

Cation: A positively charged particle.

Chain Reaction: A series of reactions in which the product or by-product of the reaction initiates further reaction.

Charle's Law: Charle's law established a relation between the volume and temperature of gaseous substances. According to the law, at constant pressure the volume of an ideal gas increases with rise in temperature.

Chemical Bonds: A force of attraction that binds two or more atoms together, in order to form a compound is known as a chemical bond.

Chemical Element: An element is a chemical substance made up of only one type of atoms.

Chemical Reaction: The process by which atoms of one or more chemical substances interact with each other, to produce new products with different composition and properties.

Combustion: Combustion is a chemical process in which a reaction takes place between a fuel and an oxidizer and a large amount of heat and light is released.

Covalent Bond: A type of chemical bond in which sharing of electrons takes place between the reacting atoms.

Crystallization: The process which leads to the formation of regular shaped crystals naturally or artificially.

D

D -Transition elements (metals): Elements that have incomplete d-orbitals and belong to the d-block of the periodic table.

D-Orbitals: The third energy level of an atom which can be occupied by electrons. Every d-orbital consists of five set of orbitals.

Dalton's Atomic Theory: Dalton's atomic theory states that elements are made up of very small particles called atoms. It also states that atoms of every element are identical.

Deliquescent: The property of a substance to readily absorb the moisture present in atmosphere and converting into liquid is known as deliquescent.

Deuterium: Deuterium is an isotope of hydrogen which is heavier than common hydrogen. This is because, deuterium has one neutron in its nucleus which is not present in the nucleus of an ordinary hydrogen.

Displacement Reaction: A type of chemical reaction in which one element of a compound is displaced by another, to form a new compound.

Distillation: The physical process of separation of various components of a mixture of liquids, on the basis of their different boiling points is called distillation.

Donor Atom: A donor atom is the one that shares or donates its electrons to a Lewis acid to form a coordination complex.

Double Bond: A type of covalent bond in which double pairs of electrons are shared between two reacting atoms.

Double Salt: A salt that consists of two or more cations or anions. When in a dissolved state, double salt ionizes to form two different salts but it becomes one substance as it is crystallized.

Dry Cells: An electrochemical cell in which the electrolyte is not in a liquid form but is in the form of a paste with low moisture content.

E

Electrodes: In an electrochemical cell, an electrode can be defined as a surface, on which the transfer of electrons takes place.

Electrolyte: An electrolyte is a chemical substance that splits up into ions in aqueous state or molten state and acts as a medium to conduct electricity.

Electron: Electron is a negatively charged subatomic particle that revolves around the nucleus of an atom.

Electron Affinity: Electron affinity of an atomic or molecular particle is the energy change that takes place as a result of addition or deletion of an electron from a neutrally charged atom or molecule.

Electron Configuration: The arrangement of electrons in the orbitals of an atom is known as electron configuration.

Electronegativity: In a covalent bond between two dissimilar atoms, electronegativity can be defined as the capacity of the atom of an element to draw the valence electrons towards itself.

Emulsion: An emulsion is a mixture of two or more liquid substances where the components are non-miscible with each other.

Endothermic Reaction: A type of chemical reaction which absorbs heat energy during the process.

Enthalpy: Enthalpy is a thermodynamic property of a substance used to quantify the heat content of its any given amount.

Entropy: Entropy is a thermodynamic property, used to measure that energy of a given system which cannot be utilized to carry out any external work.

Exothermic Reaction: A type of chemical reaction that

F

Fermentation: In biochemistry, fermentation is a process in which large complex organic molecules are broken down into simpler forms, where the enzymes act as catalysts.

First Law of Thermodynamics: According to the first law of thermodynamics, energy can neither be created nor destroyed. It can only be converted from one energy form to another.

Fluorescence: The visible light emitted by a substance, after absorption of light of a different wavelength (mostly longer wavelength than the visible light).

Fossil Fuels: Fossil fuels are exhaustible source of energy, rich in hydrocarbons. They are formed as a result of decomposition of organic matter for millions of years in an anaerobic condition, under high temperature and pressure. Coal, oil, natural gas are examples of fossil fuels.

Fractional Distillation: A distillation process, where a liquid mixture whose components have varying boiling points are separated using a fractioning column in the distillation apparatus.

Frasch Process: A technique used for mining and extraction of sulfur from its minerals, from the underground deposits.

Free Energy, Gibbs Free Energy: In a thermodynamic system with constant temperature and pressure, free energy or Gibbs free energy is the measure of the total amount of energy that can be utilized for doing useful work.

Free Radical: Those atoms or ions or molecules which have one or more number of unpaired electrons in them are known as free radicals. Presence of free electrons in a radical makes it highly reactive substance.

Freezing Point Depression: The phenomenon that causes lowering of freezing point of a liquid solvent substance, on addition of another compound into it is known as freezing point depression.

Fuel Cells: Fuel cells are devices that can produce electrical energy by converting the chemical energy of any particular fuel.

Functional Group: In the molecule of an organic compound, a certain set of atoms characterize the chemical properties of the organic molecule. These groups of atoms are known as functional groups.

G
Galvanized Steel: The steel whose surface has been coated with a layer of zinc in order to prevent corrosion is known as galvanized steel.

Gamma Ray: Gamma rays are a type of electromagnetic radiation with high energy and penetrating power and are released by atoms of radioactive elements. As it has a high penetrating power, gamma rays are used for radiation therapy to treat cancer.

Gangue: The impurities that come with the minerals of an ore, during its mining are known as gangue.

Geiger-Müller counter: Geiger-Müller counter is a special device used for detection of various ionizing radiations like beta particles, gamma rays etc.

Gel: Gel is a jelly like substance where a solid is suspended in the liquid dispersion medium.

Geometrical Isomers: Compounds with same number of atoms and same functional groups but different geometric structures are called geometric isomers.

Graham's Law: Graham's law establishes the relationship between molecular effusion of a gaseous substance and its molecular weight. It states that the rate of effusion of any particular gas is inversely proportional to the square root of molecular weight of the gas.

Graphite An allotropic form of element carbon, Graphite, is a good conductor of electricity and possess good lubricating properties.

Ground State: The state in which an atom or molecule or ion has the lowest energy, is termed as ground state. It signifies a stabilized form of that particle.

Group (Periodic Table): In the periodic table, the vertical columns in which elements with similar properties are placed are known as groups.

H
Haber Process: This process is used for industrial preparation of ammonia. Here, nitrogen and hydrogen gases are reacted under high temperature and pressure, in presence of an iron catalyst to produce ammonia.

Half-Life Constant: In nuclear chemistry, half life constant can be defined as the time period required for a radioactive element, to reduce to half of its actual number of atoms, due to radioactive decay.

Heat of Formation ( Δhf): The amount of heat absorbed or released due to formation of a pure chemical compound, by the reaction of its constituting elements, under constant pressure is known as heat of formation.

Heisenberg Uncertainty Principle: According to Heisenberg uncertainty principle, the momentum as well as the position of an electron in an atom cannot be determined precisely at the same time.

Henry's Law: As per Henry's law, when the temperature remains constant, the solubility of a gas in a liquid substance is directly proportional to the partial pressure exerted by the gas on the surface of the solution.

Hess' Law: The law states that the energy change that takes place during a chemical or physical process, does not depend on the total number of intermediate steps needed for the completion of the process.

Heterogeneous Mixture: A heterogeneous mixture is made by combining two or more substances with different structure or phases.

Homogeneous Mixture: A type of mixture made up of substances that have uniformity in terms of composition and property.

Homologous Series: A series of organic compounds, that can be represented by a general chemical formula. Members of any homologous series have similar chemical properties.

Hund's Rule: Hund's rule is a guiding principle for filling up of p, d and f subshells of an atom. As per the rule, the pairing of electrons in the same sub-shell begins only after all the orbitals are filled by single electrons.

Hybridization of Orbitals: The term hybridization is used to define the merging of one set of atomic orbitals, for the formation of new orbitals.

Hydrocarbons: Hydrocarbons are simple organic compounds that are made up of hydrogen and carbon atoms only.

Hydrogenation: A chemical reaction, where addition of hydrogen takes place to double or triple bonded unsaturated organic compounds, in presence of a catalyst. In this way, the organic compounds get converted into saturated ones.

I
Ideal Gas: An ideal gas is a hypothetical gas that completely follows the ideal gas law.

Ideal Gas Law: The law states that the product of the volume of the gas and its pressure, is proportional to the amount of the gas and its temperature. Ideal gas law evaluates the behavior of various gases by establishing the relation between the variables like pressure, volume and temperature of a gas. In the equation form, it is given by: pV=nRT where p is absolute pressure, V is the volume of the given gas, T stands for absolute temperature, n is the quantity of gas and R is the gas constant.

Ideal Solution: An ideal solution is the one whose enthalpy is zero. In such a solution, the intermolecular forces between the solvent molecules and different components of solutes are the same.

Inert Gas: Any gas that is inert in nature and does not readily react with other chemical elements is known as inert gas.

Inorganic Compound: The class of compound that does not have any carbon hydrogen bonds in them is called inorganic compounds. The origin of an inorganic compound is mineral and not any living organism.

Internal Energy: Internal energy can be defined as the sum of kinetic energy, potential energy and all other forms of energy that exist inside metals or crystals or molecules.

Ion: An atom or a molecule carrying an electric charge is called an ion. It is formed as a result of losing or gaining of electrons.

Ionic Bond: A kind of chemical bond formed as a result of attraction between oppositely charged particles or ions.

Ionization Potential: Also known as ionization potential, it can be defined as the least amount of energy required for the removal of an electron from a gaseous atom or molecule in its ground state.

Isomers: Molecules whose molecular formulas are same but the structural formulas are different are known as isomers.

IUPAC: It stands for International Union of Pure and Applied Chemistry. It is an international organization that is responsible for setting up standards for naming of elements and compounds and also for symbols and physical quantities related to chemistry.

K

K Capture: A decay mode of radioactive isotopes, where a proton of the nucleus is converted into a neutron, by capturing an electron from the K shell of the same atom.

Ketone: An organic compound that consists of a carbonyl (C=O) functional group. The carbon atom of the carbonyl group are also bonded with two alkyl groups or two aryl groups or one alkyl and one aryl group.

Kinetic-Molecular Theory: Also called collision theory. Kinetic molecular theory defines the various properties of different gases like temperature, pressure, volume etc., on the basis of the composition and movements of their molecules.

L

Lattice energy: The amount of energy needed to separate the constituent ions of an ionic solid is called lattice energy.

Law of Chemical Equilibrium: According to the law, in any reversible reaction at equilibrium state, the rate of forward reaction is directly proportional to the rate of reverse reaction.

Law of Combining Volumes (Gay-Lussac's Law): In a chemical reaction, that is taking place under constant pressure and temperature, the ratio of the volumes of the reacting gases and the resultant products is defined in whole numbers.

Law of Conservation of Energy: According to the law of conservation of energy, the total energy present in a closed system will always be constant. It can be summarized as, the energy of a closed system can neither be created nor destroyed.

Law of Conservation of Matter: Law of conservation of matter states that the total mass of a system in a closed state, remains unchanged despite the changes that are taking place within the system.

Law of Definite Proportions (Law of Constant Composition): The law states that in any chemical compound, the mass of the constituent elements is always present in the same proportion.

Law of Multiple Proportions: The law states that when any two elements combine to give two different compounds by similar types of bonds, then the ratio of those elements is of simple whole numbers.

Law of Partial Pressures (Dalton's Law): The law states that the total pressure of a mixture of gases is equal to the summation of the partial pressures of various gaseous components of the mixture.

Le Chatelier's Principle: During a chemical reaction in the equilibrium state, if any change is brought about in the conditions like, change in temperature or pressure or concentration of the reactants, then a shift is observed in the reaction in order to counteract the change and retain the chemical equilibrium.

Lewis Acid: Lewis acid is that substance of a chemical compound which readily accepts lone pair of electrons to complete its octet.

Lewis Base: Lewis base is a substance that has a lone pair of electron which can be donated during bond formation.

Ligand: A ligand is a particle (atom or molecule or ion) which bonds with a central atom for the formation of coordination complex.

Litmus Paper: A narrow strip of paper that acts as acid-base indicator. When dipped into acid solution a blue litmus paper turns red, on the other hand if a red litmus paper is put into a base solution it becomes blue.

M

Magnetic Quantum Number (mc): The magnetic quantum number of an atomic orbital gives an account of its orientation in space.

Mass Number: The number of neutrons and number of protons present in the nucleus of an atom is added together to give its mass number.

Melting Point: The range of temperature at which any given solid substance gets converted into liquid state is called melting point.

Metals: Those substances whose atoms are ready to lose electrons and form cations are known as metals. Physically, they are characterized as lustrous and malleable substances with good heat and electrical conductivity.

Metalloids: Those elements in the periodic table, that exhibit intermediate properties of both metals as well as non metals are known as metalloids.

Mixture: A substance formed as a result of physical combination of two or more substances. In a mixture, each component can maintain its individual identity.

Moderator: In a nuclear reactor, a moderator is an intervening substance that helps in bringng down the speed of fast-moving neutrons during nuclear fission.

Molality: Molality is a unit of concentration used to measure the concentration of a solute in one kilogram of solvent substance.

Molarity: Molarity of a solution can be described as the measure of the quantity of solute substance, present in one liter of the given solvent.

Mole: A basic unit used to quantify the amount of a chemical substance. In other words, it is the number of molecules present in one gram molecular weight of any given substance.

Molecule: A small, neutrally charged particle formed as a result of chemical bonding between two or more atoms.

N

Natural Gas: A gas with high methane content, found along with various fossil fuels and is used as a fuel.

Neon: A noble gas element found rarely on the surface of the Earth but is abundantly found in the Universe.

Neutralization: A chemical reaction that takes place between an acidic and basic substance and leads to the formation of salt and water, is called neutralization.

Neutrino: A high-speed, neutrally charged, tiny particle with negligible mass, formed because of some radioactive decay.

Neutron: A sub atomic particle with no electrical charge, present in the nucleus of an atom.

Noble Gases (Rare Gases): Those elements that belong to the group 18 of the periodic table are called noble gases. They are - helium, neon, argon, krypton etc. All of them are found in the form of monatomic gases and are chemically less reactive.

Nonmetals: A class of chemical elements that do not have the characteristics of metallic substances.

Nonpolar Bond: A type of covalent bond where the electrical charge is evenly distributed.

Nuclear Energy :The energy generated as a result of splitting or fusion of the nuclei is known as nuclear energy.

Nuclear Fission: A type of nuclear reaction where the nucleus of an heavy element is split up to form lighter nuclei and a large number of free electrons and gamma rays are released in the process.

Nuclear Fusion: A type of nuclear reaction where nuclei of two atoms that are light in weight, combine together to form a heavier nucleus, resulting in release of high amount of energy.

Nuclear Reaction: The phenomenon that brings about alteration in the nucleus of an atom and is accompanied by energy-change in large-scale is called nuclear reaction.

Nucleons: Those particles that constitute the nucleus of an atom. In other words, protons and neutrons are collectively known as nucleons.

Nucleus: The densest part of an atom located at its center which contains protons and neutrons is called nucleus.

O

Octet Rule: According to octet rule, during the formation of a chemical bond, the atoms of the combining elements tend to attain eight electrons in their outermost orbit.

Olefin Fiber: A large chain of hydrocarbon compounds prepared by polymerization of alkenes. It is very popularly used in the manufacture of clothing, textiles etc.

Orbital: An orbital is a specific part within an atom where a pair of electrons with opposite spins are present.

Organic Compound: A class of chemical compounds that consists of hydrocarbons.

Osmosis: The process by which the solvent molecules of a solution, move from a higher concentration region to a lower concentration region, through a semipermeable membrane is called osmosis.

Ostwald Process: It is a method used for the production of nitric acid industrially, by using ammonia and oxygen.

Oxidation Half Reaction: That half of a redox reaction where loss of electrons takes place. In this half, the oxidation number of the reactant atoms increases.

Oxidation Numbers: Also referred to as oxidation state. It represents numerically, the magnitude of oxidation of any given atom in a compound.

Oxidizing Agent: A chemical substance that undergoes reduction in order to oxidize another reactant, during a chemical reaction is known as oxidizing agent.

P

Partial Pressure: In a mixture of gases, the partial pressure is the pressure exerted by one individual gas, when it occupies the entire volume.

Pauli Exclusion Principle: Pauli exclusion principle states that no two electrons of an atom can have similarity in the values of their four quantum numbers.

Periodic Law: According to the periodic law, as the atomic number of the elements increase, certain behavior tend to repeat systematically after regular intervals.

Periodic Table: In a periodic table, elements are arranged in accordance with their increasing atomic number. It provides us with all required information related to the elements.

Periodic Trend: The tendency of the elements to change certain properties, as we move from one side of the periodic table to another is described as periodic trend.

pH: pH is the scale used to measure the acid or base properties of a given solution.

Photochemistry: The study based upon the chemical reactions that occur with the help of light is known as photochemistry.

Photon: A primary particle that forms the basic unit of various forms of electromagnetic radiations, including light. It shows dual properties of both a wave as well as a particle.

Physical Property: That aspect of any substance which can be evaluated without bringing any change to its chemical structure is known as physical property.

Planck's Constant: Planck constant is a proportionality constant that is used to express the relationship between the energy and frequency of an electromagnetic radiation.

Polar Bond: A type of covalent bond where there is an uneven distribution of charges is called polar bond.

Polymer: A large chain of molecule, formed as a result of repeatability of the basic structural units, where each unit is attached with the other by means of covalent bonds is called a polymer.

Polymerization: The process where the smaller units of molecules are combined to form a large three-dimensional structure of polymer chains is called polymerization.

Positron: A tiny particle produced and released during a radioactive decay. It carries a single positive charge and its mass is equal to that of an electron.

Propane: An organic compound that consists of three carbon atoms which are bonded with each other by single bonds. It is found as a colorless, odorless gas and is highly inflammable in nature.

Q

Quantum Theory: Also called quantum mechanics, it is a set of theory that deals with the behavior of different objects at the atomic and subatomic level.

Qualitative Analysis: Qualitative analysis is the identification of the components that are present in a particular compound or mixture with unknown composition.

Quantitative Analysis: A form of chemical analysis which helps to ascertain the amount of a particular component present in a given sample.

Quantum Number: Numbers that are used for the quantization of the energy levels of the electrons present in an atom are known as quantum numbers.

R

Radioactive Dating: A method used for calculating the age of various naturally occurring or man-made ancient objects, with the help of the half life constant of the radioactive element present in them.

Radioactivity:The phenomena of disintegration of the nuclei of unstable atoms, that results in loss of energy in the form of different types of radiations like alpha and beta particles, gamma rays etc. is known as radioactivity.

Radioisotope: Radioisotope is an atom that has a highly unstable nucleus which causes radioactive decay and leads to radioactive emissions.

Raoult's Law: The law states that in an ideal solution in the equilibrium state, the total vapor pressure depends on the vapor pressure of every individual component and their mole fractions in the solution.

Rare Earth Elements: A set of elements that are positioned in those two periods (or rows) of periodic table that are detached from its main body.

Rate of Reaction: During a chemical reaction, rate of reaction can be defined as the pace at which the conversion of the reactants into products takes place.

Reactants: In a chemical reaction, those chemical substances that are used up to form the final products are known as reactants.

Reaction Kinetics: Also known as reaction kinetics, it is the study of the rate at which a chemical reaction takes place.

Reagent: A reagent is a chemical which when added during a chemical reaction helps in producing, detecting and measuring other substances.

Redox Reaction: A chemical reaction where both reduction and oxidation processes take place due to exchange of electrons between participating atoms.

Reducing Agent: A chemical substance that oxidizes itself for the reduction of another reactant, in a chemical reaction is known as reducing agent.

Reduction: The chemical process that involves gaining of electrons by an atom or an ion.

Reversible Reaction: The chemical reaction that takes place both in the forward as well as in the backward direction.

Roasting: Roasting is a common chemical process that is used to extract metals from their sulfide ores. It involves, heating of the ore at high temperature in presence of atmospheric oxygen, in order to get rid of the sulfide. This way, the metal is obtained either in a free state or in the form of an oxide.

S

Salt: Salt is a chemical compound obtained by the neutralization of acidic and basic substances. Table salt that we use at home is also produced by the neutralization of acid and base.

Saturated Hydrocarbons: The most simplest forms of hydrocarbon compounds, where all the carbon atoms are bonded to each other with the help of single bonds only.

Saturated Solution: A solution where the solvent is in a completely saturated state and cannot dissolve additional amount of solute into it.

Second Law of Thermodynamics: The second law of thermodynamics states that in any cyclic process, it is impossible to convert hundred percent of the heat energy into work.

Single Bond: A type of chemical bond that consists of only one shared pair of electrons in between two atoms.

Solute: The substance which is present in a dissolved state in a solution is called solute.

Solvent: In a solution, the substance in which the solute substances can get dissolved is known as solvent.

Stoichiometry: The branch of chemistry that deals with the measurement of the quantities of reactants and products of a chemical reaction is called stoichiometry.

Structural Formula: When the structure of the molecule of a compound is represented in graphical form, it is known as structural formula.

Structural Isomers: Compounds that have same set of atoms with same molecular formula, but are arranged in different geometrical patterns are known as structural isomers.

Substitution Reaction: A chemical reaction in which a functional group present in a given chemical compound is substituted by a new group.

T

Ternary Acid: An acidic substance that consists of three different elements. Usually, it contains one hydrogen atom, one oxygen atom and a nonmetal.

Ternary Compound: A chemical compound that is made up of three different elements

Tetrahedral: Describes the shape of a molecule, where one atom at the center is bonded with four atoms placed in the four vertices of a tetrahedron.

Thermal Cracking: The process by which organic molecules with complex structures are broken down into simpler forms, by heating them without the presence of atmospheric oxygen, under the influence of a catalyst.

Thermodynamic Equilibrium: A system is said to be in a state of thermodynamic equilibrium when the energy gained by it from the surroundings is perfectly balanced with the energy lost to the environment. In other words, in a thermodynamic equilibrium condition the temperature of a system remains constant.

Third Law of Thermodynamics: The third law of thermodynamics states that at absolute zero temperature, the entropy of an element in a perfect crystalline form would become zero.

Titrant: A titrant is a chemical reagent with known concentration, which is added to the analyte during the process of titration, in order to calculate the concentration of the analyte in the solution.

Titration: It is a common laboratory technique used for the calculation of the concentration of a reactant, in different types of chemical reactions.

Transition State: Transition state theory assumes, that during a chemical reaction, the reactants are first changed into a highly activated transition state and then they get converted into the final products.

Triple Bond: A type of covalent bond where three pairs of electrons are shared between the bonding atoms.

Tritium: An isotope of hydrogen that has an unstable nucleus and hence, exhibits radioactive properties. It has a heavy nucleus that contains two neutrons and one proton.

Tyndall Effect: When a ray of light passes through a colloidal substance, it gets scattered by the tiny, suspended particles of the colloid. This scattering effect of light is called Tyndall effect.

U
Unimolecular Reaction: A type of chemical reaction where only one single molecule is involved. The molecule usually undergoes decomposition or isomerization or rearrangement due to this process.

Unit Cell: A simple arrangement of atoms or molecules which is repeated to develop a solid crystal structure is called unit cell.

Universal Indicator: It is an indicator that changes its colors through a large range of pH values of the pH chart, for identification of acidic or basic nature of different solutions.

Unpaired Spin: Unpaired spin is referred to as the single electron that fills up an orbital of an atom. The characteristic of an unpaired spin is that it is highly unstable and tends to react to form a paired electron.

Unsaturated Hydrocarbons: A type of organic compound that consists of one or more number of double or triple bonds between the carbon atoms.

V

Valency: Valency is a chemical property of an element, that defines the highest number of bonds that its atom can form with other univalent atoms like hydrogen, chlorine etc.

Valence Bond Theory: Valence bond theory describes the formation of bond in a molecule. It states that partially-filled atomic orbitals of different atoms overlap with each other in order to form covalent bonds.

Valence Electrons: Those electrons that are present in the outermost orbit of an atom and participate in the formation of chemical bonds are called valance electrons.

Valence Shell: The outermost electron orbit of an atom is known as valence shell. The electrons of valence shell take part in chemical reactions to form bonds.

Valence Shell Electron Pair Repulsion (VSEPR) Theory: Valence shell electron pair repulsion (VSEPR) theory is a model that deals with the shape, which a molecule will acquire after the formation of a chemical bond. It states that the atoms in a particular molecule assume a particular shape, in order to keep maximum distance between the electron pairs, so that, the repulsive forces between them can be minimum.

Van der Waals Force: The force of attraction or repulsion that exists between the non-bonded parts of a molecule. For example - the forces between dipole-dipole or induced dipole-induced dipole etc.

Vapor Pressure: The pressure exerted by the vapor of a substance, when at equilibrium with its non vaporous phases is known as vapor pressure.

Vitrification: The process involved in the conversion of a substance from crystalline form to glass with amorphous structure is known as vitrification.

Voltaic Cells: A kind of electrochemical cell where two different metals are linked and are submerged in a fluid with high electrical conductivity. Voltaic cells generate electricity with the help of chemical reactions.

Vulcanization: A special chemical process, where rubber is treated with sulfur and other chemical substances under high temperature, so that they combine with the rubber to enhance its strength and elasticity is called vulcanization.

W

Water: Water is a colorless, odorless, transparent liquid substance. Its molecule is made up of two hydrogen atoms and one oxygen atom. It acts as an excellent solvent and is often referred to as the universal solvent.

Water Gas: A type of gaseous fuel made up of hydrogen and carbon monoxide. It is a highly combustible substance and requires careful handling.

Water Hardness (or hard water): When the water gets contaminated with a high content of cations of various metals, like magnesium, calcium etc. in dissolved state, then it is called water hardness. Hard water often forms layers in boilers, water pipes etc. It also reduces the cleaning effect of soaps and detergents.

Water of Crystallization: The water that is found along with solid crystals but is not chemically bonded with any of the ions or molecules of the crystals is known as the water of crystallization.

Water Softener: The chemical substances which when added to water, help in the removal of the ions that cause hardness of water are known as water softeners. Sodium carbonate or washing soda is an excellent water softener. These chemicals are used in the water softening systems.

Wax: Wax is a form of lipid substance that is made up of long-chains of a large variety of hydrocarbon compounds. They include alkanes, alcohols, esters, fatty acids etc. Due to the presence of ester in it, wax has a very high melting point.

Weak Acid: A weak acid is the one, which does not get dissociated completely into anions and hydrogen ions in its solution.

Weak Base: A basic substance that gets only partly ionized in an aqueous solution is called a weak base.

Weak Electrolyte: A substance that does not produce sufficient free ions in its solution form, as the ions do not get dissociated completely. As a result, a weak electrolyte in solution form or molten state is not a good conductor of electricity.

Wurtz reaction: It is a reaction where coupling of two molecules of alkyl halides takes place, when they are reacted with sodium and a new alkane is formed as a result.
Up

X

X-Group: In an organic compound, X group defines the presence of a halogen group in it. It is used to define the structural formula of the compound.

Xenon: A noble gas element whose atomic number is 54. Chemically, it is denoted by Xe. It is a heavy gas and does not have any color and odor of its own.

Y

Yield: It is often termed as reaction yield or chemical yield. The actual quantity of a product that is being produced in any chemical reaction is called yield.

Ytterbium: It is a rare earth element that belongs to the lanthanide series of the periodic table. Its atomic number is 70 and is denoted by the chemical symbol Yb.

Yttrium: A transition metal that belongs to Group 3 of the periodic table. Chemically, it is represented with the letter Y. The atomic number of yttrium is 39.

Z

Zaitsev Rule: As per the rule, when a number of alkenes are formed due to dehalogenation, caused by an elimination reaction, then the alkene which is more stable in nature will be the major product of the reaction.

Zeolite: A solid, mineral substance with numerous tiny pores on its surface. Due to the pores, it has a high adsorption power and is commercially used as adsorbents.

Zero Order Reaction: A chemical reaction which does not depend on the concentration of the reactants is known as zero order reaction.

Zero Point Energy: The least energy possessed by an atom in its ground state. It can also be defined as the quantity of energy that exists in a vacuum space.

Zinc: Zinc is a bluish-white, lustrous, metallic substance. It is the first member of the Group 12 of the periodic table. Atomic number of zinc is 30 and it is represented by Zn.

Zirconium: Zirconium is a transition metal with a grayish white color. It shows strong resistance towards corrosion and therefore, is used in various alloys.

Zone Refining: A technique used for purification of substances, that require high amount of purity. For this, a narrow molten zone is moved along the length of the solid, accumulating the impurities in the molten zone which are then carried to the end of the bar.

Zwitterion: Zwitterion is a chemical compound whose net charge is zero and hence is electrically neutral. But there are some positive and negative charges in it, due to the formal charge, owing to the partial charges of its constituent atoms.

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