

- The smallest particle of an element that retains its chemical properties is called a _____.
(Atom)
- The central, dense region of an atom that contains protons and neutrons is called the _____.
(Nucleus)
- The number of protons in the nucleus of an atom is called the _____ number. (Atomic)
- The sum of the number of protons and neutrons in an atom is called the _____ number. (Mass)
- Negatively charged particles that orbit the nucleus of an atom are called _____. (Electrons)
- The region around the nucleus where electrons are likely to be found is called an _____.
(Electron cloud)
- The total number of protons and neutrons in the nucleus of an

- **Chemical bonds formed by the complete transfer of electrons from one atom to another are called _____ bonds. (Ionic)**
- **Chemical bonds formed by the sharing of electrons between atoms are called _____ bonds. (Covalent)**
- **The force of attraction between the oppositely charged ions in an ionic compound is called _____. (Electrostatic attraction)**
- **The sharing of electrons unequally between atoms in a covalent bond leads to the formation of _____. (Polar covalent bonds)**
- **A chemical bond in which electrons are shared equally between atoms is called a _____ bond. (Nonpolar covalent)**
- **The attractive forces between molecules in a substance are called _____ bonds. (Intermolecular)**
- **The breaking of chemical bonds and the formation of new bonds**

- The breaking of chemical bonds and the formation of new bonds to create a different substance is called a _____. (Chemical reaction)
- The number written in front of a chemical formula to balance a chemical equation is called a _____. (Coefficient)
- The substance that speeds up a chemical reaction without being consumed in the process is called a _____. (Catalyst)
- The reaction that absorbs heat energy from the surroundings is called an _____ reaction. (Endothermic)
- The reaction that releases heat energy into the surroundings is called an _____ reaction. (Exothermic)
- The process by which a solid changes directly into a gas without passing through the liquid state is called _____. (Sublimation)
- The process by which a gas changes directly into a solid

- The process by which a gas changes directly into a solid without passing through the liquid state is called _____.
(Deposition)

- The reaction in which two or more substances combine to form a single product is called a _____ reaction. (Combination)

- The state of matter with definite shape and volume is _____.
(Solid)

- The state of matter with definite volume but no definite shape is _____. (Liquid)

- The state of matter with no definite shape or volume is _____. (Gas)

- The state of matter that exists at extremely high temperatures where atoms are ionized is _____. (Plasma)

- The process of a solid changing directly into a gas without passing through the liquid state is called _____. (Sublimation)

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- The state of matter that exhibits properties of both a solid and a liquid is _____. (Liquid crystal)
- The state of matter composed of neutral atoms with low temperatures close to absolute zero is _____. (Bose-Einstein condensate)
- The state of matter that exhibits properties of both a superconductor and a superfluid is _____. (Superfluid)
- The state of matter that consists of particles that are larger than individual molecules but smaller than bulk matter is _____. (Colloid)
- The process of a liquid changing into a gas at the surface is called _____. (Evaporation)
- The process of a liquid changing into a gas throughout its volume is called _____. (Boiling)
- The state of matter in which the

_____. (Evaporation)

- **The process of a liquid changing into a gas throughout its volume is called _____. (Boiling)**
- **The state of matter in which the particles are arranged in a regular, repeating pattern is _____. (Crystalline)**
- **The state of matter in which the particles are randomly arranged with no long-range order is _____. (Amorphous)**
- **The state of matter in which the particles are spread apart and have low density is _____. (Gaseous)**
- **A mixture that has a uniform composition and appears as a single phase is called a _____. (Solution)**
- **The substance that is present in the largest amount in a solution is called the _____. (Solvent)**
- **The substance that is dissolved in a solution is called the _____. (Solute)**
- **The maximum amount of solute that can dissolve in a given**

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(Solute)
- **The maximum amount of solute that can dissolve in a given amount of solvent at a specific temperature is called _____.**
(Solubility)
- **A solution that contains the maximum amount of solute that can be dissolved at a specific temperature is called a _____ solution.** (Saturated)

- The compound with the chemical formula NaOH is _____.
(Sodium hydroxide)
- The element with the atomic number 79 and symbol Au is _____. (Gold)
- The element in Group 17 and Period 2 of the periodic table is _____. (Fluorine)
- The element in Period 3 and Group 1 of the periodic table is _____. (Sodium)
- The element with the highest electronegativity value on the periodic table is _____.
(Fluorine)
- The element in the f-block of the periodic table that is commonly used in nuclear power plants is _____. (Uranium)
- The element in Period 4 and Group 14 that is a semiconductor is _____. (Silicon)
- The element with the electron configuration $[\text{He}]2s^2p^3$ is _____. (Phosphorus)
- The element with the highest

- The element with the highest ionization energy on the periodic table is _____. (Helium)
- The element with the highest melting point on the periodic table is _____. (Tungsten)
- The element in Period 5 and Group 17 that is a halogen is _____. (Iodine)
- An organic compound that contains only carbon and hydrogen is called a _____. (Hydrocarbon)
- The process of breaking a large molecule into smaller fragments by heating it is called _____. (Pyrolysis)
- The functional group characterized by a carbon-oxygen double bond is called a _____. (Carbonyl)
- The reaction in which a nucleophile attacks an electrophile, resulting in the formation of a new covalent bond, is called _____. (Nucleophilic substitution)
- The reaction in which a compound

- The reaction in which a compound is broken down into smaller molecules by the addition of water is called _____.
(Hydrolysis)
- The reaction in which a compound is formed by the combination of two or more reactants with the elimination of a small molecule, such as water, is called _____.
(Condensation)
- The reaction in which a compound is converted into a different compound through the addition of a functional group is called _____. (Functional group transformation)
- The compound formed by the reaction of an acid with an alcohol is called an _____. (Ester)
- The compound formed by the reaction of an acid with a base is called a _____. (Salt)
- The reaction in which a compound is converted into a different compound through the addition of a halogen is called _____.
(Halogenation)

- The reaction in which a compound is converted into a different compound through the addition of a halogen is called _____.

(Halogenation)

- The reaction in which a compound is converted into a different compound through the addition of hydrogen is called _____.

(Hydrogenation)

- The process of separating a mixture of compounds based on their differing affinities for a stationary phase and a mobile phase is called _____.

(Chromatography)

- The compound that donates a pair of electrons to form a covalent bond with an electrophile is called a _____.

(Nucleophile)

- The compound that accepts a pair of electrons to form a covalent bond with a nucleophile is called an _____.

(Electrophile)

- The study of the three-dimensional arrangement of atoms in molecules and the effects of this arrangement on

Question: What is the maximum number of electrons that can occupy the third energy level ($n = 3$) of an atom?

- A) 2
- B) 8
- C) 18
- D) 32

Answer: C) 18

Question: Which of the following elements is a halogen?

- A) Sodium (Na)
- B) Chlorine (Cl)
- C) Calcium (Ca)
- D) Iron (Fe)

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Answer: B) Chlorine (Cl)

Question: What type of bond is formed between a metal and a non-metal?

- A) Covalent bond
- B) Ionic bond

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- A) Covalent bond
- B) Ionic bond
- C) Metallic bond
- D) Hydrogen bond

Answer: B) Ionic bond

Question: Which of the following is NOT a property of gases?

- A) Definite shape
- B) High compressibility
- C) Low density
- D) Expands to fill the container

 **Chemistry**

Answer: A) Definite shape

Question: What is the pH of a neutral solution at 25°C?

- A) 0
- B) 7
- C) 14
- D) 10

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- A) 0
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- C) 14
- D) 10

Answer: B) 7

Question: In a combustion reaction, what is always a product?

- A) Carbon dioxide (CO₂)
- B) Water (H₂O)
- C) Oxygen (O₂)
- D) Both A and B

Answer: D) Both A and B

Question: Which functional group is present in alcohols?

- A) -COOH
- B) -OH
- C) -CHO
- D) -NH₂

Question: Which functional group is present in alcohols?

- A) -COOH
- B) -OH
- C) -CHO
- D) -NH_2

Answer: B) -OH

Question: Which law of thermodynamics states that energy cannot be created or destroyed?

- A) Zeroth Law
- B) First Law
- C) Second Law
- D) Third Law

Answer: B) First Law

Question: In an electrochemical cell, oxidation occurs at which electrode?

- A) Cathode
- B) Anode
- C) Both electrodes

Question: In an electrochemical cell, oxidation occurs at which electrode?

- A) Cathode
- B) Anode
- C) Both electrodes
- D) Salt bridge

Answer: B) Anode

Question: What is the effect of a catalyst on a  chemical reaction?

- A) Increases the activation energy
- B) Decreases the activation energy
- C) Does not affect the activation energy
- D) Stops the reaction

 Chemistry

Answer: B) Decreases the activation energy

Question: How many moles of oxygen are required to completely react with 2 moles of hydrogen to form water?

- A) 1 mole
- B) 2 moles

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- A) 1 mole
- B) 2 moles
- C) 0.5 moles
- D) 4 moles

Answer: A) 1 mole

Question: What is emitted during alpha decay?

- A) An electron
- B) A helium nucleus
- C) A photon
- D) A neutron

Answer: B) A helium nucleus

Question: What is the term for a solution that contains the maximum amount of solute at a given temperature?

Question: What is the term for a solution that contains the maximum amount of solute at a given temperature?

- A) Unsaturated
- B) Saturated
- C) Supersaturated
- D) Dilute

Answer: B) Saturated

Question: In the reaction $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$, which element is oxidized?

- A) Magnesium (Mg)
- B) Oxygen (O)
- C) Both
- D) Neither

Answer: A) Magnesium (Mg)

Question: What is the coordination number of the central metal ion in $[\text{Co}(\text{NH}_3)_6]^{3+}$?

- A) 2