

# CHEMISTRY

## MID-TERM REVISION



# X

**SEED STEMers**

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# TEST BANK



## CH.1.08



If matter is uniform throughout, cannot be separated into other substances by physical processes, but can be decomposed into other substances by chemical processes, it is called a (an) \_\_\_\_\_.

- A) heterogeneous mixture
- B) element
- C) homogeneous mixture
- D) compound

Answer: D

Which of the following pairs correctly represents intensive property?

- a) Entropy, Gibb's energy
- b) Enthalpy, Heat capacity
- c) Electrode potential. Vapor pressure
- d) Resistance, Conductance

Answer : C

An ideal gas cannot be qualified because:

- A) Its critical temperature is always above 0 Celsius
- b) its molecules are relatively smaller in size
- c)It solidifies before becoming a liquid.
- d)Forces operating between its molecules are negligible.

Answer: D

A gas cannot be liquefied if:

- a) Forces of attraction are low under ordinary conditions
- b) Forces of attraction are high under ordinary conditions
- c) Forces of attraction are zero under ordinary conditions
- d) Forces of attraction are either high or low under ordinary conditions

Answer: C

A method of separation that employs a system with two phases of matter, a mobile phase and a stationary phase, is called

- A) filtration
- B) chromatography
- C) distillation
- D) vaporization
- E) homogenization

Answer : B

Which of the following will show the Tyndall effect

- A. Aqueous solution of soap below critical micelle concentration
- B. Aqueous solution of soap above critical micelle concentration
- C. Aqueous solution of Sodium Chloride
- D. Aqueous solution of Sugar

Answer: B

A separation process that depends on differing abilities of substances to form gases are called \_\_\_\_\_.

- A) filtration
- B) solvation
- C) distillation
- D) chromatography

Answer : c

In the following list, only \_\_\_\_\_ is not an example of matter.

- A) planets
- B) light
- C) dust
- D) elemental phosphorus

Answer : B

Helium would be classified as

- a) A homogeneous mixture
- b) A heterogeneous mixture
- c) An element
- d) A compound

Answer : C

Two substances physically combined and that appear the same throughout is classified as.

- a) A homogeneous mixture

- b) A heterogeneous mixture.
- c) An element
- d) A compound

Answer: A

Which of the following properties of colloids does not depend on the charge on particles

- A) Coagulation
- B) Electro-osmosis
- C) Electrophoresis
- D) Tyndall effect

Answer: D

Between which of the following phases can a solution not form?

- A) Solid and solid
- B) Gas and liquid
- C) Gas and solid
- D) None of the above

Answer : D

Which one of the following is NOT a solution?

- a) Glass of milk
- b) Glass of cola
- c) Seawater
- d) Cup of coffee

Answer : A

Which of the following will increase the rate at which a solid dissolves in a liquid?

- a) Lowering the temperature of the solvent.

- b) Grinding the solid into smaller pieces.
- c) Placing the solution in opaque pieces.
- d) Supersaturating the solution.

Answer: B

Which of the particles may not be found in solutions?

- a) atoms
- b) ions
- c) molecule
- d) cluster of molecules

Answer : D

Which among the following is an example of a solid solution?

- A) Copper dissolved in gold.
- B) Ethanol dissolved in water.
- C) Glucose dissolved in water.
- D) Sodium chloride dissolved in water.

Answer : A

This method is commonly used for destruction of colloid

- A) Addition of electrolytes
- B) Condensation
- C) Dialysis
- D) Filtration by animal membrane

Answer : A

Fog is an example of which type of colloidal system?

- A) Gas in liquid
- B) Solid in gas Liquid in gas
- C) Gas in gas
- D) Liquid in gas

Answer : B

which of the following is a set of mixtures:

- A) Air, Water, Wood
- B) Wood, Salt, Sand
- C) Salt, Sand, Water
- D) Wood, Air, Sand

Answer : D

The interaction between solute particles and water molecules, which tends to cause a salt to fall apart in water, is called.

- A) hydration
- B) polarization
- C) dispersion
- D) coagulation

Answer : A

Which of the following will show Tyndall effect?

- A. Aqueous solution of soap below critical micelle concentration
- B. Aqueous solution of soap above critical micelle concentration
- C. Aqueous solution of Sodium Chloride
- D. Aqueous solution of Sugar

Answer: B

Solubility is the amount of solute dissolved in

- A. 50 g of solvent
- B. 100 g of solvent
- C. 250 g of solvent
- D. 200 g of solvent

Answer: B

In solutions the particles are

- A. invisible
- B. visible by naked eye
- C. visible by ordinary microscope
- D. visible by electron microscope

Answer : A

The solution of mercury with other metals is called

- A. amalgam
- B. saturated solution
- C. supersaturated solution
- D. unsaturated solution

Answer : A

1	LO : 11
<b>What is the mass of calcium carbonate that contains the same number of molecules in 10 g of sodium hydroxide?</b>	
A-	10 g
B-	50 g
<b>C-</b>	<b>25 g</b>
D-	100 g

Answer: C



2	LO : 11
<p><b>When 10.0 g of zinc and 8.0 g of Sulphur are allowed to react, 14.9 g of zinc sulphide are produced , So we can say that</b></p>	
A- Zinc is the limited reactant and 2 g are remained	
B- Sulphur is the limited reactant and 3 g are remained	
C- The amounts used are all consumed	
D- Impossible to predict from these information alone	

Answer: B

3	LO : 11
<p><b>If you know the ratio of iron in our blood is 2.9 g , if you know that there <math>2.6 \times 10^{13}</math> red blood cell approximately in your body , Find out how many iron atom inside each red blood cell</b></p>	
A- $2.64 \times 10^{13}$	
B- $3.13 \times 10^{22}$	
C- $1.18 \times 10^9$	
D- $8.44 \times 10^{-10}$	

Answer: C

The boiling of water is a

- A) physical change because the water merely disappears
- B) physical change because the gaseous water is chemically the same as the liquid
- C) chemical change because heat is needed for the process to occur
- D) chemical change because a gas (steam) is given off

Answer: B

The state of matter for an object that has a definite volume but not a definite shape is

- A) solid state
- B) liquid state
- C) gaseous state
- D) elemental state

Answer: B

The state of matter for an object that has both definite volume and definite shape is

- A) solid state
- B) liquid state
- C) gaseous state
- D) elemental state

Answer: A

Are substances with constant composition that can be broken down into elements by chemical processes.

- A) Solutions
- B) Mixtures

C) Compounds

Answer: C

A method of separation that employs a system with two phases of matter, a mobile phase and a stationary phase, is called

A) filtration

B) chromatography

C) distillation

Answer: B

Which of the following statements is false?

A) Solutions are always homogeneous mixtures.

B) The terms “atom” and “element” can have different meanings.

C) Elements can exist as atoms or molecules.

D) Compounds can exist as atoms or molecules.

Answer: D

The solution of mercury with other metals is called

A. amalgam

B. saturated solution

C. supersaturated solution

D. unsaturated solution

Answer: A

An example of a pure substance is

A) Elements

B) compounds

- C) pure water
- D) all of these

Answer: D

A solution is also called a

- A) homogeneous mixture
- B) heterogeneous mixture
- C) pure mixture

Answer: A

The most likely reason for colloidal dispersion is \_\_\_\_\_

- A) the Tyndall effects
- B) coagulation
- C) precipitation
- D) emulsion formation
- E) electrostatic repulsion

Answer: E

Because: In a colloidal dispersion, the particles are typically charged, either positively or negatively.

The electrostatic charges on the particles cause them to repel each other, preventing them from settling or aggregating. This electrostatic repulsion is a key factor in maintaining the stability of the colloidal dispersion.

The other options listed are not the primary reason for colloidal dispersion:

- A) The Tyndall effect refers to the scattering of light by the dispersed particles in a colloidal dispersion, but it is an observable phenomenon rather than the underlying reason for the dispersion.
- B) Coagulation is the opposite of colloidal dispersion and refers to the process of particles coming together or clumping, leading to the breakdown of the colloidal system.

C) Precipitation refers to the formation of solid particles that settle out of a solution, which is different from the dispersed particles in a colloidal dispersion.

D) Emulsion formation typically refers to the dispersion of immiscible liquids, such as oil and water, and is not specific to colloidal dispersions.

So, the correct one is (E)

What type of colloid is formed when a liquid is dispersed in a gas?

A) foam

B) aerosol

C) emulsion

D) sol

E) gel

Answer: B

Because: When a liquid is dispersed in a gas, the resulting colloid is called an aerosol. An aerosol is a colloidal system in which liquid droplets are dispersed and suspended in a gas medium. Examples of aerosols include fog, mist, and airborne particulate matter.

Foam refers to a colloid in which gas bubbles are dispersed in a liquid.

C) Emulsion refers to a colloid in which two immiscible liquids are dispersed in each other, such as oil droplets dispersed in water or vice versa.

D) Sol refers to a colloid in which solid particles are dispersed in a liquid medium.

E) Gel refers to a colloid in which a liquid is dispersed in a solid medium, resulting in a jelly-like consistency.

What type of colloid is formed when a gas is dispersed in a liquid?

A) foam

B) gel

C) Emulsion

Answer: A

Shaving cream is an example of which colloid type?

- A) aerosol
- B) foam
- C) Emulsion

Answer: B

Among the colloids cheese (C), milk (M), and smoke (S), the correct combination of the

- A) C: liquid in solid; M: liquid in liquid; S: solid in gas
- B) C: solid in liquid; M: liquid in liquid; S: gas in solid
- C) C: liquid in solid; M: liquid in solid; S: solid in gas
- D) C: solid in liquid; M: solid in liquid; S: solid in gas

Answer: A

In a 0.1 molar solution of NaCl in water, which one of the following will be closest to 0.1?

- A) The mole fraction of NaCl.
- B) The mass fraction of NaCl.
- C) The mass percent of NaCl.
- D) The molality of NaCl.

Answer: D

Which of the following concentration measures will change in value as the temperature of a solution changes?

- A) mass percent
- B) mole fraction
- C) Molality
- D) molarity

Answer: D

A solution containing 292 g of  $\text{Mg}(\text{NO}_3)_2$  per liter has a density of 1.108 g/mL. The molality of the solution is:

- A) 2.00 m
- B) 2.41 m
- C) 1.77 m

Answer: B

When a substance dissolves in water, heat energy is released if:

- A) The lattice energy is positive.
- B) The hydration energy is positive.
- C) The hydration energy is more negative than the lattice energy is positive.
- D) The hydration energy is negative.

Answer: C

Which statement about hydrogen bonding is true?

- A) Hydrogen bonding is the intermolecular attractive forces between two hydrogen atoms in solution.
- B) The hydrogen bonding capabilities of water molecules cause  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$  to be more soluble in water than  $\text{CH}_3\text{OH}$ .
- C) Hydrogen bonding of solvent molecules with a solute will not affect the solubility of the solute.
- D) Hydrogen bonding interactions between molecules are stronger than the covalent bonds within the molecule.
- E) Hydrogen bonding arises from the dipole moment created by the unequal sharing of electrons within certain covalent bonds within a molecule.

Answer: E

Between which of the following phases can a solution not form?

- A) Solid and solid
- B) Gas and liquid
- C) Gas and solid
- D) None of the above

Answer: D

Oil is solubilized in soapy water by the

- a) formation of micelles
- b) Tyndall effect
- c) reverse osmosis process
- d) eutrophication process

Answer: A

What would happen to the solubility of a gas in water if the volume of the water were decreased but the volume of the gas remained constant?

- A) Decreases
- B) Nothing
- C) Increases
- D) Triples

Answer: B

What are the dispersed phase and dispersion medium in alcohol respectively?

- a) Alcohol, water
- b) Solid, water



c) Water, alcohol

d) Solid, alcohol

Answer: D

How are colloidal solutions of gold prepared by different colors?

a) Different diameters of colloidal gold particles

b) Variable valency of gold

c) Different concentration of gold particles

d) Impurities produced by different methods

Answer: A

Which law explained the solubility of gasses in a liquid?

(a) Charles law

(b) Henry's law

(c) Raoult's law

(d) Boyle's law

Answer: B

How does the solubility of gasses vary with pressure?

(a) Increases with pressure

(b) Decreases with pressure

(c) First increases and then decreases

(d) No effect

Answer: A

Which gas dissolves the most in water?

(a) Carbon dioxide

(b) Nitrogen

(c) Hydrogen

(d) Ammonia

Answer: D

Iodine when heated the change is:

a) Distillation

b) Filtration

c) Sedimentation

d) Sublimation

Answer: D

What type of colloid is formed when a liquid is dispersed in a gas

A) Foam

B) aerosol

C) Emulsion

Answer: B

The amount of the solute present in the saturated solution at this temperature is called its.....

a) Unsaturation

b) Diffusion

c) Collusion

d) Solubility

Answer: D

Colloids can be distinguished from true solutions by

a) the hydrophobic nature of the solute

- b) the dispersing medium
- c) the fact that no settling out occurs in the colloidal dispersion
- d) the sizes of the dispersed particles

Answer: D

The Tyndall effect describes

- a) precipitation of colloidal particles using electrically charged plates.
- b) the scattering of light by colloidal particles.
- c) reverse osmosis involving saline solutions.
- d) the adsorption of positive ions onto the surface of a hydrophilic solid.

Answer: B

Which among the following is an example of a solid solution

- A) oxidation number
- B) coagulation value
- C) gold number
- D) critical micelle concentration

Answer: A

The ability of an ion to coagulate a given colloid is dependent on the

- A) only charge
- B) magnitude
- C) both magnitude and charge
- D) sign of the charge

Answer: C

This method is commonly used for the destruction of colloid

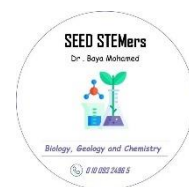
- A) Addition of electrolytes

- B) Condensation
- C) Dialysis
- D) Filtration by animal membrane

Answer: A



## CH.1.09



Which element is ductile and malleable?

- A: Au
- B: S
- C: Ge
- D: Si

Answer : A

Which one of the following will show the Tyndall Effect?

- a) Oxygen gas
- b) fog
- c) water
- d) sugar solution

Answer : b

Which of the following must be the same before and after a chemical reaction?

- A. The sum of the masses of all substances involved.
- b. The number of molecules of all substances involved.
- c. The number of atoms of each type involved.
- d. Both (a) and (c) must be the same.
- e. Each of the answers (a), (b), and (c) must be the same

Answer : d

Assume a beaker of pure water has been boiling for 30 minutes. What is in the bubbles in the boiling water?

- A. Air.
- B. Oxygen gas and hydrogen gas.
- C. Oxygen.
- D. Water vapor.
- E. Heat.

Answer : d

A glass of cold milk sometimes forms a coat of water on the outside of the glass (Often referred to as 'sweat'). How does most of the water get there?

- A. Water evaporates from the milk and condenses on the outside of the glass.
- B. The glass acts like a semi-permeable membrane and allows the water to pass, but not the milk.
- C. Water vapor condenses from the air.
- D. The coldness causes oxygen and hydrogen from the air combine on the glass forming water.

Answer : C

What is the mass of the solution when 1 pound of salt is dissolved in 20 pounds of water?

- A. 19 Pounds.
- b. 20 Pounds.
- c. Between 20 and 21 pounds.
- d. 21 pounds

Answer : d

True or False? When a match burns, some matter is destroyed.

- a. True
- b. False

Answer : b

What is the reason for your answer to the previous question?

- a. This chemical reaction destroys matter.
- b. Matter is consumed by the flame.
- c. The mass of ash is less than the match it came from.
- d. The atoms are not destroyed, they are only rearranged.

Answer: D

Heat is given off when hydrogen burns in air according to the equation  $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$  Which of the following is responsible for the heat?

- a. Breaking hydrogen bonds gives off energy.
- b. Breaking oxygen bonds gives off energy.
- c. Forming hydrogen-oxygen bonds gives off energy.
- d. Both (a) and (b) are responsible. e. (a), (b), and (c) are responsible.

Answer : c

Two ice cubes are floating in water: After the ice melts, will the water level be:

- a. higher
- b. lower
- c. the same

Answer : c

What is the approximate number of carbon atoms it would take placed next to each other to make a line that would cross this dot:

- a. 4
- b. 200
- c. 30,000,000
- d.  $6.02 \times 10^{23}$

Answer : C

Which of the following instruments can be used to observe a water molecule?

- (A) magnifying lens.
- (B) eyeglasses.
- (C) microscope
- (D) none of these

Answer : d

100 mL of water at 25°C and 100 mL of alcohol at 25°C are both heated at the same rate under identical conditions. After 3 minutes the temperature of the alcohol is 50°C. Two minutes later the temperature of the water is 50°C. Which liquid received more heat as it warmed to 50°C?

- a. The water.
- b. The alcohol.
- c. Both received the same amount of heat.
- d. It is impossible to tell from the information given.

Answer : A

Iron combines with oxygen and water from the air to form rust. If an iron nail were allowed to rust completely, one should find that the rust weighs:

- a. less than the nail it came from.
- b. the same as the nail it came from.
- c. more than the nail it came from.

Answer : C

A gold necklace is always shiny. This is because

- (A) people are more careful handling gold.
- (B) gold repels dirt.
- (C) gold does not easily react with the air.
- (D) gold is valuable

Answer : C

What happens to the weight of iron nails when they rust?

- (A) There is no change in the weight.
- (B) The weight increases.
- (C) The weight decreases



Answer : b

Bronze is an alloy of

- (A) Copper and Nickel
- (B) Copper and iron.
- (C) Copper and Tin

Answer : C

Brass is an alloy of

1. Copper and tin
2. Copper and nickel
3. Copper and Aluminum.
4. Copper and zinc

Answer : 4

By adding chromium to steel which of the following property is enhanced?

- A. Resistance to corrosion
- B. Electrical characteristics
- C. Magnetic property
- D. Ductility

Answer : A

Duralumin is an alloy of

- A) Aluminium and Copper
- B) Aluminium and iron

- C) Aluminium and Carbon
- D) Aluminium and mercury

Answer : A

Manganin is an alloy of

- A) Manganese and Aluminum
- B) Copper and magnesium
- C) Copper, manganese, and nickel
- D) Manganese, aluminum, and iron

Answer : C

The property of metals by which they can be beaten in to thin sheets is called

- A .malleability
- b .Ductility
- c .conduction
- d. Expansion

Answer : A

The property of metal by which it can be drawn into wires is called

- a. Conductivity
- b. malleability
- c. Ductility
- d. Decorating

Answer : C

Of the following, only \_\_\_\_\_ is an extensive property.

- A) density

- B) mass
- C) boiling point
- D) freezing point

Answer: B

Is malleable and ductile". This best describes:

- a) a metal
- b) a compound
- c) a non-metal
- d) a solution

Answer: A

The highly conducting state of matter is

- a) plasma
- b) solid
- c) liquid
- d) gas

Answer: A

Composite materials are classified based on:

- (a) Type of matrix
- (b) Size-and-shape of reinforcement
- (c) Both
- (d) None

Answer : C

Usually, softer constituent of a composite is :

- (a) Matrix
- (b) Reinforcement
- (c) Both are of equal strength
- (d) Can't define

Answer : A

Usually, stronger constituent of a composite is :

- (a) Matrix
- (b) Reinforcement
- (c) Both are of equal strength
- (d) Can't define

Answer : B

Which states of matter are significantly compressible?

- A) gases only
- B) liquids only
- C) solids only
- D) liquids and gases

Answer : A

In the following list, only \_\_\_\_\_ is not an example of matter.

- A) planets
- B) light
- C) dust
- D) elemental phosphorus

Answer : B

Iron combines with oxygen and water from the air to form rust. If an iron nail were allowed to rust completely, one should find that the rust weighs:

- a. less than the nail it came from.
- b. the same as the nail it came from.
- c. more than the nail it came from.
- d. It is impossible to predict.

Answer: C

What is the reason for your answer to previous question ?

- a. Rusting makes the nail lighter.
- b. Rust contains iron and oxygen.
- c. The nail flakes away.
- d. The iron from the nail is destroyed.

Answer: B

A sugar cube is added to a hot cup of coffee. What happens to the sugar particles?

- (A) They cease to exist.
- (B) They spread out through the hot coffee.
- (C) They melt in the hot coffee
- (D) They formed a new and different type of substance with the coffee

Answer: B

Questions X & Y & Z refer to the following story: The evening before a birthday party, several balloons are filled with helium gas . The birthday party occurs on a hot summer day.

X- The next day some of the balloons have burst! They burst because

- (A) The helium particles got bigger.
- (B) The space between the helium particles increased
- (C) A and B are the correct reasons.
- (D) B and C are the correct reasons.

Answer: B

Y- The next day the balloons made of latex became smaller. This is because

- (A) Some of the helium particles escaped through pores in the latex.
- (B) The helium particles became smaller.
- (C) The helium particles compressed each other as they moved.
- (D) None of the above explains it.

Answer: A

Z- A guest at the party dives in the swimming pool holding an inflated balloon! When she gets to the bottom of the pool, the balloon (

- A) becomes smaller.
- (B) becomes bigger.
- C) does not change in size.
- (D) does not submerge with the diver

Answer: A

The elements sodium and lithium have similar chemical properties because they both have the same:

- a) Number of completely filled sublevels
- b) Mass number
- c) Number of valence electrons
- d) atomic number

Answer: C

Which property would you use to determine what family an atom belongs to?

- a) atomic number
- b) atomic mass
- c) volume
- d) density

Answer: A

Which process below represents a chemical change?

- a) Evaporation of water
- b) Sublimation of iodine
- c) melting of ice
- d) corrosion of iron

Answer: D

Which substance should have the highest boiling point?

- a) He
- b) H<sub>2</sub>O
- c) F<sub>2</sub>
- d) H<sub>2</sub>

Answer: B

Major load carrier in dispersion-strengthened composites

- (a) Matrix
- (b) Fiber
- (c) Both
- (d) Can't define

Answer: A

Which group of atoms should have similar chemical behavior?

- a) Li, Be, Mg, Al
- b) F, Cl, Br, I
- c) K, Ca, Sc, Zn
- d) C, S, Br, Xe

Answer: A

What is the total number of completely filled sublevels found in a krypton atom in the ground state?

- a) 10
- b) 8
- c) 2
- d) 4

Answer: D

Two Bromine atoms are held together by a covalent bond. What statement correctly describes this bond.

- a) The bond is polar and forms a nonpolar molecule.
- b) The bond is nonpolar and forms a polar molecule.
- c) The bond is nonpolar and forms a nonpolar molecule.



d) The bond is polar and forms

Answer: C

Mechanical properties of fiber-reinforced composites depend on

- (a) Properties of constituents
- (b) Interface strength
- (c) Fiber length, orientation, and volume fraction
- (d) All the above

Answer: D

An unknown substance dissolves readily in water but not in benzene (nonpolar solvent). Molecules of what type are present in the substance?

- A) neither polar nor nonpolar
- B) polar
- C) either polar or nonpolar
- D) nonpolar

Answer: B

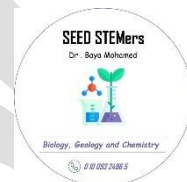
Which of the following given compound is least soluble in water?

- (a) Hexanol
- (b) glycerol
- (c) Propane 1, 3-diol
- (d) ethylene glycol

Answer: A



## CH.1.10



What is the total number of moles of sulfur atoms in 1.0 mole of  $\text{Fe}_2(\text{SO}_4)_3$  ?

- A) 12
- B) 3
- C) 1
- D) 17

Answer : b

One mole of O has about the same mass as one mole of:

- A) Li H.
- B) sulfur.
- C) Cl .
- D) magnesium.

Answer : b

What is the approximate total number of atoms in 1.0 mole of lithium?

- A) 3.0
- B) 6.0
- C) 6.9
- D) 1.0

Answer : b

The atomic mass unit is defined as exactly  $1/12$  the mass of which atom?

- A) Mg
- B) C
- C) Mg

Answer : b

The mass of one atom of carbon is about equal to the total mass of:

- A) 12 beta particles.
- B) 12 nucleons.
- C) 6 neutrons.
- D) 6 alpha particles.

Answer : b

Which subatomic particles have a mass of about 1 atomic mass unit each?

- A- electron and positron
- B- proton and neutron
- C- neutron and positron
- D- proton and electron

Answer : b

What is the total number of protons contained in the nucleus of a carbon-14 atom?

- A- 12
- B-14
- C- 6
- D- 8

Answer : c

Identical amounts of the four gases listed below are present in four separate balloons. At STP, which balloon size experiences the greatest deviation from the volume calculated using the Ideal Gas Law?

- (A) H<sub>2</sub>
- (B) O<sub>2</sub>
- (C) N<sub>2</sub>
- (D) F<sub>2</sub>

Answer : D

What is the mass percent of NaCl in a solution prepared from 10.0 g NaCl and 255 g of water?

- A) 2.1 %
- B) 10 %
- C) 3.8 %
- D) 3.9%

Answer: C

Between which of the following phases can a solution not form?

- A) Solid and solid
- B) Gas and liquid
- C) Gas and solid
- D) None of the above

Answer : D

The atomic number of oxygen is 8. The atomic number of sulfur is 16. Compared with a mole of oxygen, a mole of sulfur contains

- a) twice as many atoms
- b) half as many atoms
- c) an equal number of atoms
- d) 8 times as many atoms

answer : c

What is the percent composition, by mass, of CO?

- a) 50% C, 50% O
- b) 12% C, 88% O
- c) 25% C, 75% O
- d) 43% C, 57% O

Answer : D

What is the empirical formula for a compound that is 43.6% phosphorus and 56.4% oxygen?

- a) P<sub>3</sub>O<sub>7</sub>
- b) PO<sub>3</sub>
- c) P<sub>2</sub>O<sub>3</sub>
- d) P<sub>2</sub>O<sub>5</sub>

Answer : D

A sample of a compound contains 65.4 grams of zinc, 12.0 grams of carbon, and 48.0 grams of oxygen. What is the mole ratio of zinc to carbon to oxygen in this compound?

- a. 5:1:4
- b. 1:1:3
- c. 1:1:2
- d. 1:4:6

Answer : b

If 45.0 g of O<sub>2</sub> are mixed with 45.0 g of H<sub>2</sub> and the mixture is ignited, what mass of water is produced?

- A) 45.0 g
- B) 50.7 g

C) 79.7 g

D) 25.3 g

Answer: A

Equal masses (in grams) of hydrogen gas and oxygen gas are reacted to form water. Which substance is limiting?

A) Oxygen gas is limiting.

B) Hydrogen gas is limiting.

C) Water is limiting.

D) Nothing is limiting

E) More information is needed to answer this question

Answer: A

The reactant which, when used up completely, can produce the least amount of product, Is the limiting reactant.

B) False                      True

ANS: True

How many moles of hydrogen sulfide are contained in a 49.7-g sample of this gas?

A) 0.686 mol

B) 1.46 mol

C) 83.8 mol

D) 24.7 mol

E) 2.92 mol

Answer: B

What is the molar mass of ethanol (C<sub>2</sub>H<sub>5</sub>OH)?

A) 45.06 g/mol

B) 34.06 g/mol

C) 46.07 g/mol

D) 30.03 g/mol

Answer: C

Roundup, an herbicide manufactured by Monsanto, has the formula C<sub>3</sub>H<sub>8</sub>NO<sub>5</sub>P. How many moles of molecules are there in a 295.1-g sample of Roundup?

A) 0.5729

B) 2.137

C) 1.745

D) 16.39

Answer: C

Calculate the molar mass of barium sulfite.

A) 233.40 g/mol

B) 201.40 g/mol

C) 354.73 g/mol

D) 514.87 g/mol

E) 217.40 g/mol

Answer: E

What is the mass of a 6.761-mol sample of sodium hydroxide?

A) 40.00 g

- B) 270.4 g
- C) 162.3 g
- D) 5.916 g
- E) 0.1690 g

Answer: B

The molar mass of the compound formed by potassium and selenium is

- A) 157.2 g/mol
- B) 197.0 g/mol
- C) 118.1 g/mol
- D) 276.0 g/mol

Answer: A

$\text{NaHCO}_3$  is the active ingredient in baking soda. How many grams of oxygen are in 0.52 g of  $\text{NaHCO}_3$ ?

- A) 0.099 g
- B) 0.019 g
- C)  $6.19 \times 10^3$  g
- D) 0.033 g
- E) 0.30 g

ANS: E



What would be the g Al / mole S ratio for the product of a reaction between aluminum and sulfur?

- A) 26.98 g Al / mol S
- B) 80.94 g Al / mol S
- C) 40.47 g Al / mol S
- D) 53.96 g Al / mol S
- E) 17.99 g Al / mol S

ANS: E

How many grams of H<sub>2</sub>O will be formed when 32.0 g H<sub>2</sub> is mixed with 12.0 g of O<sub>2</sub> and allowed to react to form water?

- A) 13.5 g
- B) 286 g
- C) 6.8 g
- D) 3.4 g

ANS: A

The limiting reactant is the reactant

- A) for which you have the lowest mass in grams
- B) which has the lowest coefficient in the balanced equation
- C) which has the lowest molar mass
- D) which is left over after the reaction has gone to completion
- E) none of the above

ANS: E

The limiting reactant in a reaction

- A) has the lowest coefficient in a balanced equation
- B) is the reactant for which you have the fewest number of moles
- C) has the lowest ratio of moles available/coefficient in the balanced equation
- D) has the lowest ratio of coefficient in the balanced equation/moles available

ANS: C

The reactant with the highest molar mass is always the limiting reactant.

- A) True
- B) False

ANS: False

In balancing an equation, we change the \_\_\_\_\_ to make the number of atoms on each side of the equation balance.

- A) formulas of compounds in the reactants
- B) coefficients of compounds
- C) formulas of compounds in the products
- D) subscripts of compounds

ANS: B

What is the coefficient for water when the following equation is balanced?



- A) 1
- B) 2
- C) 4
- D) 6

ANS: D

A substance,  $A_2B$ , has the composition by mass of 60% A and 40% B. What is the composition of  $AB_2$  by mass?

- A) 40% A, 60% B
- B) 50% A, 50% B
- C) 27% A, 73% B
- D) 33% A, 67% B
- E) none of these

ANS: C

An oxide of iron has the formula  $Fe_3O_4$ . What mass percent of iron does it contain?

- A) 0.72%
- B) 28%
- C) 30%
- D) 70%
- E) 72%

ANS: E

Why is the actual yield lower than the theoretical yield?

- A) Because a few reactions truly proceed to completion.
- B) It's quite impossible to recover all of the product in a reaction.
- C) Both A and B
- D) None of the above

Answer: C

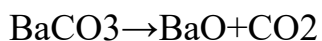
What is the molar mass of sodium bicarbonate (NaHCO<sub>3</sub>)?

- a) 88
- b) 83
- c) 84
- d) 72

Answer: C

On complete decomposition, the volume of CO<sub>2</sub> released at STP on heating 9.85 g of BaCO<sub>3</sub> (atomic mass, Ba=137) will be:

Answer:



N.OF MOLES OF BaCO<sub>3</sub>=0.05

Volume of CO<sub>2</sub>=0.05\*22.4=1.12 L

Determine the coefficient for O<sub>2</sub> when the following equation is balanced in standard form (smallest whole numbers). C<sub>8</sub>H<sub>18</sub>(g) + O<sub>2</sub>(g) → CO<sub>2</sub>(g) + H<sub>2</sub>O(g)

- A) 8
- B) 17
- C) 18
- D) 25

ANS: D

Which compound contains the highest percent by mass of hydrogen?

- A) HCl
- B) H<sub>2</sub>O
- C) H<sub>2</sub>SO<sub>4</sub>

D) H<sub>2</sub>S

E) HF

ANS: B

A substance contains 35.0 g nitrogen, 5.05 g hydrogen, and 60.0 g of oxygen. How many grams of hydrogen are there in a 153-g sample of this substance?

A) 7.72 g

B) 767 g

C) 15.4 g

D) 5.05 g

E) 30.3 g

ANS: A

Suppose the reaction  $\text{Ca}_3(\text{PO}_4)_2 + 3\text{H}_2\text{SO}_4 \rightarrow 3\text{CaSO}_4 + 2\text{H}_3\text{PO}_4$  is carried out starting with 153 g of  $\text{Ca}_3(\text{PO}_4)_2$  and 76.8 g of  $\text{H}_2\text{SO}_4$ . How much phosphoric acid will be produced?

A) 76.7 g

B) 51.1 g

C) 229.8 g

D) 115.1 g

ANS: B

The molar mass for each reactant is shown below the reactant, and the mass of each reactant for this problem is given above. Which reactant is the limiting reagent?

A) C

B) SiO<sub>2</sub>

C) Ca<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>

D) P<sub>4</sub>

ANS: B

A 15-g sample of lithium is reacted with 15 g of fluorine to form lithium fluoride:

$2\text{Li} + \text{F}_2 \rightarrow 2\text{LiF}$ . After the reaction is complete, what will be present?

A) 2.16 moles lithium fluoride only

B) 0.789 moles lithium fluoride only

C) 2.16 moles lithium fluoride and 0.395 moles fluorine

D) 0.789 moles lithium fluoride and 1.37 moles lithium

ANS: D

Given the equation  $3\text{A} + \text{B} \rightarrow \text{C} + \text{D}$ , you react 2 moles of A with 1 mole of B. Which of the following is true?

A) A is the limiting reactant because of its higher molar mass.

B) A is the limiting reactant because you need 3 moles of A and have 2.

C) B is the limiting reactant because you have fewer moles of B than A.

D) B is the limiting reactant because 3 A molecules react with 1 B molecule.

ANS: B

Consider the following reaction:  $2\text{A} + \text{B} \rightarrow 3\text{C} + \text{D}$  3.0 mol A and 2.0 mol B react to form 4.0 mol C. What is the percent yield of this reaction?

- A) 50%
- B) 67%
- C) 75%
- D) 89%

ANS: D

Which of the following statements is always true concerning a reaction represented by the following balanced chemical equation?  $2\text{C}_2\text{H}_6(\text{g}) + 7\text{O}_2(\text{g}) \rightarrow 6\text{H}_2\text{O}(\text{l}) + 4\text{CO}_2(\text{g})$

- A) If we have equal masses of  $\text{C}_2\text{H}_6$  and  $\text{O}_2$ , there is no limiting reactant.
- B) If we have an equal number of moles of  $\text{C}_2\text{H}_6$  and  $\text{O}_2$ , there is no limiting reactant.
- C) If we have more mass of  $\text{C}_2\text{H}_6$ , then  $\text{O}_2$  must be limiting.
- D) If we have more mass of  $\text{O}_2$ , then  $\text{C}_2\text{H}_6$  must be limiting.

ANS: C

When the equation  $\text{C}_6\text{H}_{14} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$  is balanced with the smallest set of integers, the sum of the coefficients is

- A) 4
- B) 47
- C) 15
- D) 27

ANS: B

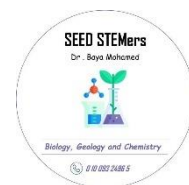
What is the sum of the coefficients of the following equation when it is balanced using smallest whole numbers?  $\text{NaNH}_2 + \text{NaNO}_3 \rightarrow \text{NaN}_3 + \text{NaOH} + \text{NH}_3$

- A) 5
- B) 6
- C) 7
- D) 8
- E) 9

ANS: E



## CH.1.11



Which of the following conditions is necessary for a chemical reaction?

- A) It must be accompanied with change in temperature and pressure



- B) At least one of the reactants must be in a fixed quantity
- C) It must follow the law of conservation of mass
- D) All of the above

Ans : C

What is the reaction in which a substance or substances undergo change to produce new substances with new properties called?

- A) biochemical reaction
- B) A nuclear reaction
- c) A chemical reaction

Ans: C

In which reaction is an atom or a group of atoms present in a molecule displaced by another atom?

- A) Displacement reaction
- B) Double decomposition reaction
- C) Decomposition reaction

Ans : A

In which reaction do two compounds exchange their ions to form two new compounds?

- A) Displacement reaction
- B) Double displacement reaction
- C) Synthesis reaction

Ans : B

Copper on reaction with dilute nitric acid gives \_\_\_\_\_ gas.

- A) nitrogen
- B) nitrogen dioxide
- C) hydrogen
- D) nitric oxide

Ans : D

$\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$  is a \_\_\_\_\_ reaction. (1)

- A) combination
- B) displacement
- C) double displacement
- D) Decomposition

Ans : D

The reaction of zinc dust with copper sulphate solution is an example of \_\_\_\_\_ .

- A) combination reaction
- B) decomposition reaction
- C) displacement reaction
- D) double displacement reaction

Ans : C

Which of the following is an exothermic reaction?

- A) electrolysis of water
- B) cellular respiration
- C) process of photosynthesis

D) conversion of limestone into quicklime

Ans : B

The removal of oxygen from a reactant is called \_\_\_\_\_ .

A) oxidation

B) corrosion

C) rancidity

D) reduction

Ans : D

The process of cellular respiration is \_\_\_\_\_ reaction.

A) Endothermic

B) reduction

C) redox

D) decomposition

Ans : C

Lime water turns milky when \_\_\_\_\_ gas is passed through it.

A) H<sub>2</sub>

B) CO

C) CO<sub>2</sub>

D) SO<sub>2</sub>

Ans : C

Identify the type of reaction:  $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$

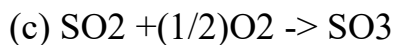
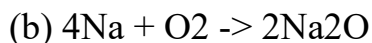
A) Decomposition reaction

B) Combination reaction

C) Double displacement reaction

Ans : B

Which of the following reactions involves the combination of two elements :-



ANS: B

What happens when copper rod is dipped in iron sulphate solution :-

(a) Copper displaces iron

(b) Blue color of copper sulphate solution is obtained

(c) No reaction takes place

(d) Reaction is exothermic

ANS: C

$\text{Zn} + \text{H}_2\text{SO}_4(\text{dil}) \rightarrow \text{ZnSO}_4 + \text{H}_2$  Previous reaction is

(a) Decomposition reaction

(b) Single displacement reaction

(c) Combination reaction

(d) Synthesis reaction

ANS: B

The reaction in which two compounds exchange their ions to form two new compounds is

(a) A displacement reaction

- (b) A decomposition reaction
- (c) An isomerization reaction
- (d) A double displacement reaction

ANS: D

A redox reaction is one in which

- (a) Both the substance is reduced
- (b) Both the substance is oxidized
- (c) An acid is neutralized by the base
- (d) One substance is oxidized while the other is reduced

ANS: D

In the following equation:

$\text{Na}_2\text{CO}_3 + x \text{HCl} \rightarrow 2\text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$ , the value of x is

- (a) 1
- (b) 2
- (c) 3
- (d) 4

ANS: B

In the equation,  $\text{NaOH} + \text{HNO}_3 \rightarrow \text{NaNO}_3 + \text{H}_2\text{O}$  nitric acid is acting as

- (a) An oxidizing agent
- (b) An acid
- (c) A nitrating agent
- (d) A dehydrating agent

ANS: B

$\text{MnO}_2 + 4\text{HCl} \rightarrow 2 + 2\text{H}_2\text{O} + \text{Cl}_2$  Identify the substance oxidized in the previous equation.

- (a)  $\text{MnCl}_2$
- (b)  $\text{HCl}$
- (c)  $\text{H}_2\text{O}$
- (d)  $\text{MnO}_2$

Answer: D

Select the oxidizing agent for the following reaction:  $\text{H}_2\text{S} + \text{I}_2 \rightarrow 2\text{HI} + \text{S}$

- (a)  $\text{I}_2$
- (b)  $\text{H}_2\text{S}$
- (c)  $\text{HI}$
- (d)  $\text{S}$

Answer: A

Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is:

- (a) 1 : 1
- (b) 2:1
- (c) 4:1
- (d) 1:2

Answer: b

Which of the following gases can be used for storage

- (a) Carbon dioxide or Oxygen
- (b) Nitrogen or Oxygen
- (c) Carbon dioxide or Helium
- (d) Helium or Nitrogen

Answer: d

When SO<sub>2</sub> gas is passed through saturated solution of H<sub>2</sub>S, which of the following reaction occurs?

- (a)  $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$
- (b)  $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow \text{H}_2\text{O} + 3\text{S}$
- (c)  $\text{SO}_2 + \text{H}_2\text{S} \rightarrow \text{H}_2\text{O} + \text{S}$
- (d)  $\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{SO}_3 + \text{H}_2$

Answer: a

What is observed when a solution of potassium iodide is added to silver nitrate solution ?

- (a) No reaction takes place
- (b) White precipitate of silver iodide is formed
- (c) yellow precipitate of AgI is formed
- (d) AgI is soluble in water.

Answer: A

Which of the following is a thermal decomposition reaction ?

- (a)  $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$
- (b)  $2\text{AgCl} \rightarrow 2\text{Ag} + \text{Cl}_2$
- (c)  $\text{ZnCO}_3 \rightarrow \text{ZnO} + \text{CO}_2$
- (d)  $\text{H}_2(\text{g}) + \text{Cl}_2(\text{g}) \rightarrow 2\text{HCl}(\text{g})$

Answer: C

The brown gas evolved on heating of copper nitrate is

- (a) O<sub>2</sub>
- (b) NO<sub>2</sub>
- (c) N<sub>2</sub>
- (d) NO

Answer: B

Zinc reacts with silver nitrate to form which compounds?

- (a)  $\text{Zn}(\text{NO}_3)_2 + \text{Ag}$
- (b)  $\text{ZnNO}_3 + \text{Ag}$
- (c)  $\text{AgNO}_3 + \text{Zn}(\text{NO}_3)_2$
- (d)  $\text{Ag} + \text{Zn}(\text{NO}_3)_3$

Answer: A

Consider equations:  $\text{Ca}^{+2}(\text{aq}) + 2\text{OH}^{-}(\text{aq}) \rightarrow \text{Ca}(\text{OH})_2 (\text{s})$ . The precipitate of calcium hydroxide will be of

- A) Green color
- B) Blue color
- C) Brown color
- D) White color

Answer: d

The chemical formula of lead sulphate is

- A)  $\text{Pb}_2\text{SO}_4$
- B)  $\text{Pb}(\text{SO}_4)_2$
- C)  $\text{PbSO}_4$
- D)  $\text{Pb}_2(\text{SO}_4)_3$

Answer: C



## Resources used

Old Exam

Ap exams

Zumdahl test bank

Teams' test banks: MEO, chess, ...

School Quizzes

Chemistry test bank

Khan academy

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## Social media and contacts

*QSC (Qena student club)*

Website

<https://qena-club123.github.io/Qena-Student-Club/index.html>

Whatsapp

<https://chat.whatsapp.com/BrQS1KjIlqP3mOpNyMoLug>

Instagram

[https://www.instagram.com/qena\\_student\\_club?igsh=MW9mczBvOWJ6aXR2YQ==](https://www.instagram.com/qena_student_club?igsh=MW9mczBvOWJ6aXR2YQ==)

Facebook

<https://www.facebook.com/profile.php?id=61556658005203&mibextid=ZbWKwL>

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*Dr. Baya education*

The main channel: [https://t.me/Baya\\_seed\\_stemers](https://t.me/Baya_seed_stemers)

Grade 10 Groups (senior 26) :

<https://chat.whatsapp.com/KLBqs2j9JgWGVZj8OoM5a0>

<https://chat.whatsapp.com/BnUTJqiASHj3gfM8ruA41F>

Facebook:

<https://www.facebook.com/Dr.BayaCourses>

YouTube:

[https://www.youtube.com/channel/UCrO\\_OheVxRXJXF\\_X1MjjT8Q](https://www.youtube.com/channel/UCrO_OheVxRXJXF_X1MjjT8Q)

Dr. Baya & Q&A