6. Composition of matter
Practice Questions

Question. 1) Write the answers of the following long questions.

1) What is compound? Write their examples.

Ans: When two or more elements come together in fixed weight proportion and by doing chemical process then new substance is formed, that new substance is called compound.

While formation of compound, elements combine in specific proportion.

Ex. 1) The weight proportion of hydrogen and oxygen in water is 1:8. (According to size this proportion is 2:1) and the weight proportion of iron and sulphur in sulphide is 7:4.

2) Sodium chloride (salt) is eatable. But chlorine in it is toxic. If we touch sodium then we get injured. The hydrogen in water is flammable and oxygen gas helps in burning. But the water formed from it is inflammable and does not help in burning. The dissolution or decomposition of compounds cannot be done by any physical method in their basic components. Only chemical method is used for it.

2) What is mixture? Write their properties and examples.

Ans: When two or more substances are mixed/ comes together in any quantity, in very simple way, without chemical reaction is called as mixture.

Properties:

1) The constituent substances in a mixture can be separated using a simple method.

2) The properties of mixture are similar to the properties of their constituent substances.

Ex. Tea, milk, syrup, ink, chivda, blood, fog, air, water + sand, chalk, soil, salt solution, steel, brass, bronze, amalgam, etc.

3) What is colloid? Tell the types of colloid mixture.

Ans: The constituent substances in a mixture which cannot be seen by naked eyes are called as colloid. Ex. Milk, blood, ink, fog, etc.

The size of particles of colloid mixture is smaller than the particles of suspension. The particles in these are found in two states. One state is mixed in another state. From these the particles which are in mixed form is called neutral stage and they are mixed in which is called as neutral medium.

Types of colloid mixture:

Sr no.	Neutral state	Neutral medium	Type of colloid	Examples
1)	Liquid	Gas	Aerosol	Fog, dew, Pesticide
2)	Solid	Gas	Aerosol	Smoke, dust
3)	Gas	Liquid	Foam	Shaving cream, beer
4)	Liquid	Liquid	Emulsion	Milk, liver oil, hair cream
5)	Solid	Liquid	Sol	Oil paint, cytoplasm, ink. Gum
6)	Gas	Solid	Foam	Polymeric foam
7)	Liquid	Solid	Jell	Jelly, cheese, paneer
8)	Solid	Solid	Solid Sol	Ruby glass, milch glass

4) What is homogeneous mixture? Tell their subtypes.

Ans: The mixture whose constituent substances are completely disjunct and do not maintain their own independent existence in a microscopic form is called as homogeneous mixture.

The size of particles in this mixture is between 10^{-6} to 10^{-9}.

Ex. Tea, syrup, air, salt solution, chalk, alloys (steel, brass, bronze), mercury alloy.

Subtypes:

Sr no.	Type of mixture	Examples
1)	Gas in gas	Air, gas mixture
2)	Liquid in gas	Cloud
3)	Solid in gas	Iodine vapour in air, dust particles in air
4)	Gasin liquid	Cold drink, oxygen in water
5)	Liquid in liquid	Alcohol and water, citric acid and water
6)	Solid in liquid	Sugar solution, salt solution, tea
7)	Gasin solid	Camphor, hydrogen in palladium metal
8)	Liquid in solid	Mercury in gold or silver, mercury in thallium
9)	Solid in solid	Steel, brass

5) Explain the methods of separating the components of the mixture.

Ans: 1) Crystalline: this method is used to separate the substances in the inorganic solid mixture. In this, solution is formed by putting the mixture into specific solution and heating it. After that, the mixture is strained, cooled

down and the pure substance in crystalline form is separated.

2) Vaporization: this method is used to separate the components in the liquid mixture. In this, liquid is converted into vapour by giving heat and again pure liquid is obtained by cooling down that vapour. Ex. Making distilled water.

3) Evaporation: in this method, if heat is given to the substance it gets converted into gas without getting converted into liquid. The pure substance in solid form can be obtained by cooling down this gas. Ex. Separating iodine from sand and iodine mixture.

4) Partial vaporisation: in this method, according to boiling point each liquid is separated from the liquid mixture having various boiling point with the help of heat. Ex. Purification of petroleum.

6) Describe the types of the solutionfrom the physical condition of the solution.

Ans: 1) Solid: when solvent is solid, solutes like gas, liquid and solid substances can dissolve in it.

Ex. a) Gas in solid – hydrogen gas in palladium metal.

b) Liquid in solid – mercury (mercury alloy) in gold or silver, hexane in paraffin.

c) Solid in solid – steel (iron + carbon), brass (copper + zinc), bronze (copper + tin).

2) Liquid: when solvent is liquid, solutes like gas, liquid and solid substances can dissolve in it.

Ex. a) Gas in liquid – oxygen in water, carbon dioxide in water, oxygen in blood.

b) Liquid in liquid – alcohol and water, lemon juice.

c) Solid in liquid – sugar in water, salt in water, potassium calcium iron in blood.

3) Gas: when solvent is gas, only gas substance comes together in specific condition as a solute and gaseous form solution is formed. Ex. air

7) Write the properties of solutions.

Ans: 1) The solution is a type of homogeneous mixture.

2) The minute/ fine particles of solute in solution are not visible to the naked eyes.

3) The radiation of light rays does not take place through solution.

4) The solute can be separated from solution by filtration process.

8) What are the states of liquid? Write their properties.

Ans: All substances are made of liquid but the quantity and composition of liquid are different. According to it there are three types of liquid i.e. solid, liquid and gas.

1) Solid: It has fixed size and fixed dimension.

Properties: The distance between two particles is less and power of attraction is more. Ex. wood, pen, stone, chalk, sugar.

2) Liquid: It does not have fixed size but has fixed dimension.

Properties: The distance between two particles is more than solid and power of attraction is less. Ex. water, kerosene, milk, blood, ink.

3) Gas: It does not have fixed size and fixed dimension.

Properties: The distance between two particles is much more and power of attraction is very less. Ex. oxygen, nitrogen, hydrogen.

9) Describe the classification of solids and write its examples.

Ans: The solids are classified into two groups.

1) Crystalline solids 2) Amorphous solids

Crystalline solids are classified into four groups.

1) Ionic solids. Ex. sodium chloride

2) Covalent solids. Ex. dry ice

3) Molecular solids. Ex. diamond, graphite

4) Metallic solids. Ex. iron, gold, silver

2) Amorphous solids. Ex. plastic, rubber, glass

10) In compound, the properties of constituent elements are different than the properties of a compound. Explain this concept with the help of an example.

Ans: i) Water is a compound formed by combination of the hydrogen and oxygen.

ii) Hydrogen and Oxygen are gas, but water is a liquid.

iii) Salt is a compound formed by sodium and chlorine. Sodium is blue coloured metal and chlorine is yellowish poisonous gas. But salt is white coloured crystal. From this examples we understand that properties of compound and the properties of their constituent elements are different.

Question. 2) Write reasons.

1) Solid is strong.

Ans: i) Solids are mostly incompressible.

ii) Their volume does not change due to external forces.

iii) If the external force is applied then shape of the solid also does not change. Therefore, solid is strong.

2) Milk is a mixture.

Ans: 1) Milk is a mixture of water, lactose, fats, protein and a few more natural substances.

2) The proportion of various ingredients of milk is different as per its sources.

3) The proportion of fats in cow milk is 3-5%.

4) The proportion of fats in buffalo milk is 6-9%.

5) The ingredient water is naturally present in large proportion in milk.

6) The sweetness of milk is due to the ingredient called lactose.

Question. 3) Identify the different term.

1) Lustre, Brittleness, Malleability, High density

Ans: Brittleness (it is property of non-metal. Others are properties of metals.)

2) Smoke, Fog, Milk, Mixture of water and saw dust

Ans: Mixture of water and saw dust (suspension solution. Others are colloid solution.)

Question. 4) Identify the correlation.

1) Alluminium: _____: : Carbon: Non-metal

Ans: Metal

2) Limestone: Inorganic compounds: : Chlorophyll: _____

Ans: Complex compounds

3) Steel: Compound: : Juice: _____

Ans: Mixture

4) Brass: Copper + zinc: : Bronze: _____

Ans: Copper + tin

Question. 5) Write true or false.

1) Carbohydrates are organic compounds.

Ans: True

2) The proportion of constituent elements in a compound is constant.

Ans: True

3) Non-metals shows the ductility property.

Ans: False (metals shows the ductility property.)

4) Water is the mixture of hydrogen and oxygen.

Ans: False (Water is the compound of hydrogen and oxygen.)

Question. 6) Match the pairs.

Column ‘a’	Column ‘b’
1) Limestone	a) Organic compound
2) Fog	b) Compound
3) Vitriol	c) Colloid
4) Proteins	d) Inorganic compound

Ans:

Column ‘a’	Column ‘b’
1) Limestone	a) Compound
2) Fog	b) Colloid
3) Vitriol	c) Inorganic compound
4) Proteins	d) Organic compound

Question. 7) Give two examples each.

1) Metal

Ans: Copper, Aluminium

2) Non-metal

Ans: Chlorine, Sulphur

Question. 8) Write the answers in one sentence.

1) What is necessary while preparing molecular formula?

Ans: The valency of element is necessary while preparing molecular formula.

2) How many types of compounds are there? Write their names.

Ans: There are three types of compounds.

1) Organic compounds

2) Inorganic compounds

3) Complex compounds

3) What is solution?

Ans: A homogeneous mixture of two or more substances is called solution.

4) What is solvent?

Ans: That component of a solution which is present in the largest proportion is called solvent.

5) Which is the lightest element?

Ans: Hydrogen is the lightest element.

6) Which is the heaviest element?

Ans: Osmium is the heaviest element.

7) What is molecular formula?

Ans: The together arrangement of symbols of elements and number of atoms in compound is called as molecular formula.

8) What is the size of the particles of heterogeneous mixture?

Ans: The size of the particles of heterogeneous mixture is approximately $10^{-3}$to 10^{-6}.

9) The domestic cylinder contains mixture of which gases?

Ans: The domestic cylinder contains mixture of butane, isobutene (C_4H_{10}) and propane gases.

10) What is transition of matter?

Ans: The process of conversion of solid into liquid, liquid into vapour after heating and vice versa, conversion of gas into liquid and liquid into solid after cooling down is called as transition of matter.

11) What is elements?

Ans: The substances which cannot be splitted/ partitioned or decomposed into simple substance by physical or chemical method, such substances are called as elements.

12) The elements can form how much bonds?

Ans: The elements can form maximum three bonds.