

Chapter: 6

Q.1 Find the odd one out

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- 1 Hydrogen, Hydrogen peroxide, Carbon dioxide, Water vapour

Ans Hydrogen is the odd one out as it is an element while others are compounds

OR

Hydrogen peroxide is the odd one out as it is a liquid while others are gases.

- 2 Water, Mercury, Bromine, Petrol

Ans **Petrol** is the odd one out as it is an inflammable substance or volatile substance while others are not.

- 3 Milk, Lemon juice, Carbon, Steel

Ans **Carbon** is the odd one out as it is an element while others are mixtures.

- 4 Gold, Silver, Copper, Brass

Ans **Brass** is the odd one out as it is a mixture while others are elements.

- 5 Hydrogen, Sodium, Potassium, Carbon

Ans Carbon is the odd one out as it is tetravalent while others are monovalent.

OR

Carbon is the odd one out as it is an organic compound while others are inorganic compounds.

- 6 Sugar, Salt, Baking soda, Blue vitriol.

Ans **Sugar** is the odd one out as it is an organic compound while others are inorganic compounds.

Q.2 Name the following

11

- 1 Name any two Colloid

Ans Ink, Milk

- 2 Name two Organic compound

Ans Urea, Glucose, Sugar

- 3 Element with valency 2

Ans Magnesium, Oxygen

- 4 Name two Complex compound

Ans Hemoglobin, Chlorophyll, Cyanocobalamin

- 5 Name two Homogeneous mixture

Ans Stainless steel, Salt solution

- 6 Name two Inorganic compound

Ans Limestone, Blue vitriol

- 7 Name two Liquid element

Ans Mercury, Bromine

- 8 Name two Element with valency 1

Ans Sodium, Chlorine, Potassium

9 Name two Solid element

Ans Iron, Copper

10 Name two Gaseous element

Ans Hydrogen, Oxygen

11 Name two Metalloid

Ans Silicon, Germanium

Q.3 Multiple Choice Questions (Activity)

7

1 Water, mercury and bromine are similar to each other, because three are
a. liquids b. compounds c. nonmetals d. elements

Ans Water, mercury and bromine are similar to each other, because three are **liquids**.

2 The intermolecular force is in the particles of solid.
a. minimum b. moderate c. maximum d. indefinite

Ans The intermolecular force is **maximum** in the particles of solid.

3 Milk is an example of type of matter called
a. solution c. heterogeneous mixture
b. homogeneous mixture d. suspension

Ans Milk is an example of type of matter called **heterogeneous mixture**.

4 Matter that contain two or more constituent substances is called
a. mixture b. compound c. element d. metalloid

Ans Matter that contain two or more constituent substances is called **compound**.

5 Solids retain their volume even when external pressure is applied. This property is called
a. plasticity b. incompressibility c. fluidity d. elasticity

Ans Solids retain their volume even when external pressure is applied. This property is called **incompressibility**.

6 Matter is classified into the types mixture, compound and element, by applying the criterion
a. states of matter c. chemical composition of matter
b. phases of matters d. all of these

Ans Matter is classified into the types mixture, compound and element, by applying the criterion **chemical composition of matter**.

7 Valency of carbon is 4 and that of oxygen is 2. From this, we understand that there are chemical bond/bonds between the carbon atom and one oxygen atom in the compound-carbon dioxide.
a. 1 b. 2 c. 3 d. 4

Ans Valency of carbon is 4 and that of oxygen is **2**. From this, we understand that there are **2** chemical bond/bonds between the carbon atom and one oxygen atom in the compound-carbon dioxide.

Q.4 Complete the given flow chart / table / diagram

6

1

Name of matter	Chemical composition	Main type of matter
Diamond	C	.....
Heated white powder of blue vitriol	CuSO ₄	.....
Lime stone	CaCO ₃	.....
Dilute hydrochloric acid	HCl + H ₂ O	.....

Ans			
	Name of matter	Chemical composition	Main type of matter

Diamond	C	Element
Heated white powder of blue vitriol	CuSO ₄	Compound
Lime stone	CaCO ₃	Compound
Dilute hydrochloric acid	HCl + H ₂ O	Mixture

2	Name of matter	Chemical composition	Main type of matter
	Baking soda	NaHCO ₃	.....
	Pure gold	Au	.....
	The gas in oxygen cylinder	O ₂	.....
	Bronze	Cu + Sn	.....

Ans	Name of matter	Chemical composition	Main type of matter
	Baking soda	NaHCO ₃	Compound
	Pure gold	Au	Element
	The gas in oxygen cylinder	O ₂	Element
	Bronze	Cu + Sn	Mixture

3	Name of matter	Chemical composition	Main type of matter
	Sea water	H ₂ O + NaCl + MgCl ₂	.....
	Distilled water	H ₂ O	.....
	Hydrogen gas filled in a balloon	H ₂	.....
	The gas in LPG cylinder	C ₄ H ₁₀ + C ₃ H ₈	.....

Ans	Name of matter	Chemical composition	Main type of matter
	Sea water	H ₂ O + NaCl + MgCl ₂	Mixture
	Distilled water	H ₂ O	Compound
	Hydrogen gas filled in a balloon	H ₂	Element
	The gas in LPG cylinder	C ₄ H ₁₀ + C ₃ H ₈	Mixture

Q.5 Answer the following

- 1** Deduce the molecular formulae of the compound obtained from the following pairs of elements by the cross multiplication method.
- (i) C (valency 4) & Cl (valency 1)
- (ii) N (valency 3) & H (valency 1)
- (iii) C (valency 4) & O (valency 2)
- (iv) Ca (valency 2) & O (valency 2)

Ans	(i) Elements	Carbon	Chlorine	(ii) Elements	Nitrogen	Hydrogen
	Symbol	C	Cl	Symbol	N	H
	Valency	4	1	Valency	3	1
	Cross-multiplication	C	Cl	Cross-multiplication	N	H
		4	1		3	1
	Molecular formula:	CCl ₄		Molecular formula:	NH ₃	

(iii) Elements	Carbon	Oxygen	(iv) Elements	Calcium	Oxygen
Symbol	C	O	Symbol	Ca	O
Valency	4	2	Valency	2	2
Cross-multiplication	C	O	Cross-multiplication	Ca	O
	4	2		2	2
Molecular formula: CO_2			Molecular formula: CaO		

- 2** Plants synthesize glucose in sunlight with the help of chlorophyll from carbon dioxide and water and give away oxygen. Identify the four compounds in this process and name their types.

Ans The four compounds involved in the process of photosynthesis are :

- Carbon dioxide: Inorganic compound
- Glucose- Organic compound
- Chlorophyll- Complex compound
- Water-Inorganic compound

Q.6 Give scientific reasons

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- 1** A solid matter has the properties of definite shape and volume.

Ans

- In solids, the particles are very close to each other and they vibrate at their fixed position.
- Due to this, solids get definite shape and volume.
- Also in solids, the distance between particles is least and so the intermolecular force of attraction is very strong.
- Hence, the molecules of solid remain bonded to one another and have a definite shape and volume.

- 2** Lemon sherbet has sweet, sour and salty taste and it can be poured in a glass.

Ans

- A mixture is formed when two or more substance combined together in any proportion and the properties of the elements are retained in the mixture.
- Lemon sherbet is prepared by adding sugar, lemon and common salt to water.
- The mixture so obtained is in the liquid state and can be poured in the glass.
- Thus, in the lemon sherbet, the properties of lemon, sugar and common salt are retained.
- Hence, lemon sherbet has sweet, sour and salty taste and it can be poured in a glass.

- 3** Constituent substances of a colloid cannot be separated by ordinary filtration.

Ans

- A colloid is a heterogeneous mixture in which the size of solute particles is intermediate between those in true solution and suspension.
- The pores of an ordinary filter paper are larger than colloid, hence the colloidal particles cannot be separated by filtration.
- Milk is an example of colloid and in it the solid and liquid particles of proteins, fats, etc. having diameter around 10^{-5} m cannot be separated by filtration.
- Hence, the constituent substances of a colloid cannot be separated by ordinary filtration.

- 4** Hydrogen is combustible, oxygen helps combustion, but water helps to extinguish fire.

Ans

- A compound is a pure substance formed when two or more elements combine chemically in a definite proportion and the properties of compound are always different from its constituent elements.
- Hydrogen is an inflammable gas while oxygen gas supports combustion.
- However, the compound water formed by chemical combination of the gaseous element hydrogen and oxygen is a liquid.
- Water is neither inflammable nor does it support combustion. On the contrary, it helps to extinguish fire.

Q.7 Activity based question (3 mks)

3

- 1** In one sample of brass, the following ingredients were found: copper (70%) and zinc (30%). Identify the solvent, solute and solution from these.

Ans

- A homogeneous mixture of two or more substance is called solution. In this case, Brass (a mixture, an alloy) made up of copper and zinc, is the solution.
- The component of a solution which is present in the largest proportion is called solvent. In Brass, the copper is 70% of the mixture and hence copper is the solvent.
- The other component which is in lesser proportion than the solvent is called solute. In Brass, zinc is 30% of

the mixture and hence zinc is the solute.

Q.8 Answer the following

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- 1 Sea water tastes salty due to the dissolved salt. The salinity (the proportion of salts in water) of some water bodies Lonar lake- 7.9%, Pacific Ocean-3.5 %, Mediterranean sea-3.8%, Dead sea-33.7%. Explain two characteristics of mixture from the above information.

- Ans** i. A mixture is formed when two or more substance combined together in any proportion and the properties of the elements are retained in the mixture. The proportion of the constituent substance in a mixture can change.
 ii. In all the above examples, water present in lakes, ocean and sea are examples of mixture.
 iii. The salinity of water in sea, ocean and lakes differs from place to place due to the percentage of salt dissolved in it changes but the properties of the salt are retained in each of them as the water is salty to taste.

Q.9 Answer the following in detail

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1

Sr. No.	Molecular formulae	Valency	Constituent elements
1	KCl Potassium Chloride
2	HBr Hydrogen Bromide	.....	.....
3	MgBr ₂ Magnesium Bromide	.....	.....
4	K ₂ O Potassium Oxide	.....	.....
5	NaH Sodium Hydrogen	.....	.....
6	CaCl ₂ Calcium Chlorine	.....	.....
7	CCl ₄ Carbon Chlorine	.....	.....
8	HI Hydrogen Iodine	.....	.....
9	H ₂ S Hydrogen Sulphur	.....	.....
10	Na ₂ S Sodium Sulphur	.....	.....
11	FeS Iron Sulphur	.....	.....
12	BaCl ₂ Barium Chlorine	.....	.....

Ans

Sr. No.	Molecular formulae	Valency	Constituent elements
1	KCl Potassium chloride	K=1, Cl=1	K=Potassium Cl=Chlorine
2	HBr Hydrogen bromide	H=1, Br=1	H=Hydrogen Br=Bromine
3	MgBr ₂	Mg=2, Br=1	Mg=Magnesium

	Magnesium bromide		Br=Bromine
4	K ₂ O Potassium oxide	K=1, O=2	K=Potassium O=Oxygen
5	NaH Sodium hydride	Na=1, H=1	Na=Sodium H=Hydrogen
6	CaCl ₂ Calcium Chlorine	Ca=2, Cl=1	Ca=Calcium Cl=Chlorine
7	CCl ₄ Carbon Chlorine	C=4, Cl=1	C=Carbon Cl=Chlorine
8	HI Hydrogen Iodine	H=1, I=1	H = Hydrogen I = Iodine
9	H ₂ S Hydrogen Sulphur	H=1, S=2	H = Hydrogen S = Sulphur
10	Na ₂ S Sodium Sulphur	Na=1, S=2	Na = Sodium S = Sulphur
11	FeS Iron Sulphur	Fe=2, S=2	Fe = Iron S = Sulphur
12	BaCl ₂ Barium Chlorine	Ba=2, Cl=1	Ba = Barium Cl = Chlorine

2

Sr. No.	Molecular formulae	Valency	Constituent elements
1	CaCl ₂	.....	.....
2	CCl ₄	.....	.....
3	HI	.....	.....
4	H ₂ S	.....	.....
5	Na ₂ S	.....	.....

Ans

Sr. No.	Molecular formulae	Valency	Constituent elements
1	CaCl ₂ Calcium chloride	Ca=2, Cl=1	Ca=Calcium Cl=Chlorine
2	CCl ₄ Carbon tetrachloride	C=4, Cl=1	C=Carbon Cl=Chlorine
3	HI Hydrogen iodide	H=1, I=1	H=Hydrogen I=Iodine
4	H ₂ S Hydrogen sulphide	H=1, S=2	H=Hydrogen S=Sulphur
5	Na ₂ S Sodium sulphide	Na=1, S=2.	Na=Sodium S=Sulphur

Q.10 Extra data

- 1 Deduce the molecular formulae of the compound obtained from the following pairs of elements by the cross multiplication method.
C (valency 4) & O (valency 2)

3

Ans	Elements	Carbon	Oxygen
	Symbol	C	O
	Valency	4	2
	Cross-multiplication	C	O
		4	2

Molecular formula: **CO₂**

- 2** Deduce the molecular formulae of the compound obtained from the following pairs of elements by the cross multiplication method.

Ca (valency 2) & O (valency 2)

Ans	Elements	Calcium	Oxygen
	Symbol	Ca	O
	Valency	2	2
	Cross-multiplication	Ca	O
		2	2

Molecular formula: **CaO**

- 3** Deduce the molecular formulae of the compound obtained from the following pairs of elements by the cross multiplication method.

N (valency 3) & H (valency 1)

Ans	Elements	Nitrogen	Hydrogen
	Symbol	N	H
	Valency	3	1
	Cross-multiplication	N	H
		3	1

Molecular formula: **NH₃**

