

Elements, Compounds Symbols and Formulae

Ex-1

Q3. Define a pure substance. How many types of pure substance do you know?

Ans Pure substance. "A substance of a definite composition which has consistent properties throughout is called a pure substance"

Types of pure substance: Pure substance are of two types (i) elements (ii) compounds

Q5. Metals Iron silver gold
Non metals Carbon sulphur oxygen
Metalloids Antimony silicon Boron
Noble gases Helium, argon neon

Q6. Name the elements which form water.
How will you justify that water is
a ~~so~~ compound?

Ans The elements which form water are
(i) Hydrogen and oxygen.

Justification: Water has entirely different
properties (i.e. is a liquid, extinguishes fire)
from the elements it is ~~not~~ made up of
(i.e.) Hydrogen a gas catches fire oxygen a
gas supporter of combustion.

1. Energy is needed to form water on
combining O^2 with H^2 .

2. We can not separate the constituents of
water by simple physical means.

Q7. Give three difference between metals and non metals.

Ans Metals

1. Metals are ductile i.e. ~~are~~ can be drawn into wires.
2. Metals are malleable i.e. can be beaten to form sheets.
3. They are sonorous.

Non Metals

1. Non metals are mostly soft solids cannot be drawn into wires.
2. They are mostly gases and are not malleable.
3. They do not produce sound when struck.

Q2. Give the symbols of: carbon, calcium, copper, chlorine, cobalt, argon.

Ans Carbon is C
 Chlorine is Cl
 Calcium is Ca
 Copper is Cu
 Cobalt is Co
 Argon is Ar

Periodic table ODM CONNIE

Gr: ↓	IA	IIA	IIIA	IVA	VA	VIA	VIIA	Zero
P → 1	H							He
2	Li	Be	B	C	N	O	F	Ne
3	Na	Mg	Al	Si	P	S	Cl	Ar
4	K	Ca						

Exercise - 1

Q1 Classify the following substance into elements and compounds.

Mercury, Sulphur, sugar, water, sand, gold, carbon, oxygen, alcohol, iron, marble, baking soda.

Ans Mercury, sulphur, sugar, water, sand, gold, coal, oxygen, alcohol.

Element: Mercury, sulphur, ~~gold~~ gold, coal, oxygen.

Compound: Sugar, Water, sand, alcohol.

Q4 Define: (a) Element (b) ~~Compound~~ Compound

Ans (a) Elements: An element is defined as a pure substance made up of only one kind of atoms that cannot be converted into anything simpler than itself by any physical or chemical process.

b) Compounds; Compound are pure substance composed of two or more elements in defined proportion by mass and has a defined set of properties. Compound is made up of only one kind of molecules.

Q8 How is sodium chloride different from its constituent elements, sodium and chlorine?

Ans: Sodium is a metal that is stored in kerosene oil as it reacts very fast with air and water. Chlorine is a reactive greenish yellow gas which is poisonous. When these two elements combine chemically they form common salt sodium chloride which is non poisonous colourless solid substance that we use in our food to add taste and to obtain some nutrition.

Q9 State four important characteristics of compounds.

Ans ① When a compound is formed energy like heat, light or electricity is either needed or produced.

② A compound has properties entirely different from the properties of its constituents.

③ Change in weight takes place.

④ It cannot be separated into its constituents by simple physical means.

Q10 Give two examples for each of the following

a) Non metal which are solids

b) Metals which are soft

c) Non metals which are lustrous

d) Element which are liquids

e) Inert gases

f) Metalloids

Ans a) Phosphorus, Sulphur

b) Lead and Sodium

c) Radium, Graphite

d) Mercury, Bromine

e) Helium, Neon

Antimony, ~~Are~~ ~~Are~~ Arsenic

Q11 Name the element present

- Ans a) Sugar: Carbon, hydrogen and oxygen
 b) Ammonia: Nitrogen and hydrogen
 c) Marble: Calcium, carbon and oxygen
 d) Washing soda: Sodium, carbon and oxygen

Q12. What is the proportion of element present in the following compounds?

	Elements	Proportion of element
a) H_2O	H:O	1:8
b) CO_2	C:O	3:8
c) CaO	Ca:O	5:2
d) NO_2	N:O	7:16

Q13 Name two compound which dissolved in water.

Ans Two compound which dissolve in water are sugar, table salt

Exd

Define

a) Atom: An atom is the smallest indivisible unit of an element which exhibits all the properties of that element and may or may not have independent ~~existence~~ existence.

b) Molecule: A molecule can be defined as the smallest unit of an element or a compound which exhibits all the properties of that element or compound which exhibits all the properties of that element or compound and has independent existence. They are divisible into atoms.

c) **Atomicity:** The number of atoms in a molecule of an element is called its atomicity.

d) **Formula:** Formula is a short way of representing the molecule of an element or a compound.

Q2 Why are symbols and formulae of a substance important?

Ans Importance of Symbols and Formulae
Symbols and formulae of substance gives a lot of information like

1. Types of elements present in the ~~com~~ compound, Eg. (H_2O is made of two elements hydrogen and oxygen)

2. Number of each kind of ~~at~~ atoms in one molecule. Eg. (Water has 2 atoms of hydrogen combined with 1 atom of oxygen)

3. Mass of one molecule of the compound. Eg. H_2O has mass $(1 \times 2) + 16 = 18$.

Q3 Mention three gaseous element and write their molecular formulae

Ans Three gaseous Molecular Atom in
element Formula One molecule

Hydrogen

H_2

2

Oxygen

O_2

2

Chlorine

Cl_2

2

Q4 State the information obtained from the formula of a compound.

Ans A formula gives us the following information about a compound.

1. Types of elements present in the compound

2. Number of each kind of atoms in one molecule of the compound.

3. Mass of one molecule of the compound.

Q5. What is meant by

a) $2H$ and H_2

b) H_2O and $3H_2O$?

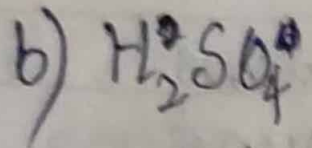
Ans a) $2H$ is two atoms of hydrogen. H_2 is one molecule of hydrogen gas.

b) H_2O represents one molecule of water. $3H_2O$ represent 3 molecules of water.

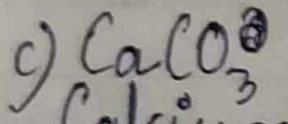
Q6 State the number of atoms of each kind, present in

a) $C_6H_{12}O_6$ has atoms of
Carbon 6 atoms in number
Hydrogen 12 atoms in number
Oxygen 6 atoms in number

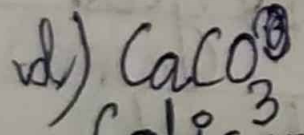
The name of the compound is Glucose.



Hydrogen 2 atoms in number.
 Sulphur 1 atoms in number.
 Oxygen 4 atoms in number.
 Nitric acid



Calcium 1 atoms in number
 Carbon 1 atoms in number
 Oxygen 3 atoms in number
 Calcium Carbonate

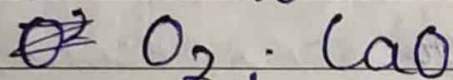
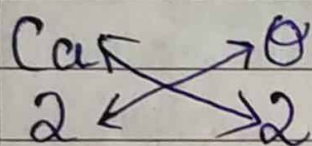


Calcium 1 atom in number
~~Carbon~~ Carbon 1 atom in number
 Oxygen 3 atoms in number

The name of the compound is calcium carbonate

Q7. Write the molecular formulae of compounds calcium oxide, hydrogen sulphide, carbon monoxide and sulphide.

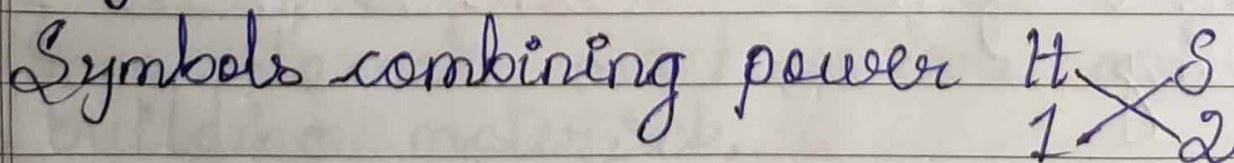
Ans Compound calcium oxide is formed of elements calcium (Ca) and oxygen (O)



Symbols combining power Here subscript number is same Ca₂ Formula of calcium oxide is CaO.

Compound Hydrogen Sulphide is formed of elements

Hydrogen (H), Sulphide (S)



Formula is H₂S

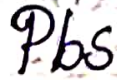
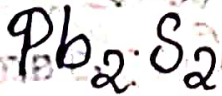
Compound Carbon monoxide is compound of elements carbon (C) and oxygen (O)

Formula of carbon monoxide is CO

Formula of carbon lead sulphide is PbS



Symbols combining power



Here the subscript number is same,

Exercise - III

Q1 Name

a) Three different forms of carbon

Ans Diamond, Coal, Graphite

b) A form of carbon used as a gem.

Ans ~~Graphite~~ Diamond is used as gem

c) Two substance used to make electric wires.

Ans ~~Coal~~ Copper, ~~Aluminium~~ Aluminium as these are

d) Two ^{good} substance used to make jewellery ^{conductors of electricity}

Ans Gold

Silver as these are shining lustrous and ductile

e) A substance used as an insulator

Ans Plastic is used as insulator as it is bad conductor of electricity

Q2 Give one use of each of the following substances:

a) Iron: To make machines tools and building material.

b) Brass: To make water taps and utensils.

c) Coals: Coals is used as fuel also used in thermal power plant to produce electricity.

Q3. Give Reasons:

a) A Frying pan is made up of steel but its handle is made up of wood.

b) Graphite is used to make lead of the pencils.

c) Argon is filled in electric bulbs,

Ans a) Steel is good conductor of heat to cook food, pan is made of steel where as wood is

b) Graphite leaves mark on the paper and make it black.

(c) Argon is inert gas and protect the element of bulb from oxidation and burning.

Q4 a) Why are copper and ~~at~~ aluminium used to make electric wires?

Ans Copper and aluminium are good conductor of heat and electricity. They can be drawn into wires and beaten into sheets. Therefore they are used to make electric wires.

b) What do you understand by the statement: 'metals are ductile and malleable'?

Ans Metals are ductile i.e. they can be drawn or stretched into thin wires. They are malleable i.e. they can be beaten into thin sheet.

Chhabilata shi