Elements. Compounds Symbols and Formulae

Exc-1

Q3. Difine 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 from water. How will you justify that water is a ~~co~~ compound?

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

Justification: Water has entirely different ~~pr~~ properties (ie is a liquid, exctinguishes fire) from the element it is ~~mad~~ made up of
(ii) Hydrogen a gas catches fire oxygen a gas supporter combustion.

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

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

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Q7. Give three difference between metals and non metals.

Ans Metals

1. Metals are ductile ie can be drown into wires.

2. Metals are malleable is can be beaten to form sheets

3. They are sonorous

Non Metals

1. Non metals are mostly soft solids cannot be drown into wires.

2. They are mostly gases and are not malleable.

3. They donot produce sound when stack.

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

Ans
Carbon: C
Chlorine is CI
Calcium is CA
Copper is Cu
Cobalt is CO
Argon is Ar

Periodic table ODM CONNECT

G: ↓	IA	IIA	IIIA	IVA	VA	VIA	VIIA	Zero
P→ 1	H							He
2	LI	BE	B	C	N	O	F	NE
3	Na	Mg	AI	SI	P	S	CI	AR
4	K	Ca						

Exercise 1

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Q1 Classify the following substance into elements and compounds.

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

Ans Mercury, sulphur, sugar, water, sand gold, coal, oxygen, alchol

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

Compound: Sugar, Water, sand, ~~al~~ alcohol

Q4 Define: (a) Element (b) ~~Como~~ 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 proportation by mass and has a defined set of properties. Compound is made up of only one kind of molecules.

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

Ans: Sodium is a metal that is stored in kerosense oil as it reacts very fast with air and water. Chlorine is a reactive greenish yellow gas which is poisonous. ~~When~~ When these two elements combine chemically they form common salt sodium chlorine 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 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 take 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, Sulpur

b) Lead and Sodium

c) Radium, Graphite

d) Mercury, Bromine

e) Helium, Neon

f) 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	Propotion of element
a) H_2O	H : O	1 : 8
b) CO_2	C : O	3 : 8
c) $CaCO_3$	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

Ex 2

Q1 a) Define 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 ~~existse~~ 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 elements 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 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 compound, Eg H_2O is made of two elements hydrogen and oxygen)
2. Number of each kind of 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 element	Molecular Formula	Atom in 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 molecules 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.

b) H_2SO_4

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

c) $CaCO_3$

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

d) $CaCO_3$

Calcium 1 atom in number
~~Carbon~~ Carbon 1 atom in number
Oxygen 3 atoms in number
The name of the compound is calium Carbonate

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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)

Ca ↖ ↗ O
2 ↙ ↘ 2

~~O~~ O_2 . CaO

Symbols combining power Here subscript number is same Ca_2 Formula of calcium oxide is CaO.

Compounds Hydrogen Sulphide is formed of elements

Hydrogen (H), Sulphide (S)

Symbols combining power H S
1 2

Formula is H_2S

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 combing power

Pb_2S_2 PbS

Here the subscript number is same.

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Excercise - II

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 as these are good conductors of electricity

d) Two substance used to make jewellery

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 Reason:

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 ~~ale~~ aluminion used to make electric wires?

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

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

Ans Metals are ductile ie they can be drawn or strected into thin wires. They are malleable ie they can be beaten into thin sheet

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