Class: 7th

Subject: Science & General Science

Home Assignment

Session: 2019-2020.

Lesson: Elements, Compounds And Chemical Equations:

QB. Complete the given analogies:- Page No:- 75

1) One molecule. 2). Triatomic 3). Trivalent
4) Compound.

QC.

Symbol	Valency
K	1
S	2

Molecular formulae

Symbol	K	S
Valency	1	2

Formulae $K_2S_1 = K_2S$

Molecular Formuale

Symbol	Cu	O
Valency	1	2

Formulae $Cu_2O_1 = Cu_2O$.

QD. Name of Compd.

		Name of Elements	No. of atoms	Total No. of Elements
Sugar	$C_{12}H_{22}O_{11}$	Carbon, Hydrogen Oxygen	C = 12 H = 22 O = 11	12+22+11= 45
Marble	$CaCo_3$	Calcium, Carbon Oxygen	Ca = 1 C = 1 O = 3	1+1+3 = 5
Methane	CH_4	Carbon, Hydrogen	C = 1 H = 4	1+4 = 5
Salt	NaCl	Sodium, Chloride	Na = 1 Cl = 1	1+1 = 2
Ammonia	NH_3	Nitrogen, Hydrogen	N = 1 H = 3	1+3 = 4

QE. 1). Atoms may not always exist independently. They combine with other atoms to form molecules. A molecule can exist independently. Molecules are made up of atoms that are held together.

2. Chemical formula provides following information about the compound

i) It may be an element or a molecule. If molecule whether it is monoatomic, diatomic, Triatomic or polyatomic.
ii) Name of each element or symbol of each element.
iii). Number of atoms of each element.
iv). Total number of atoms present in each compound.

v) Molecular mass of a compound.

Q3. a) Valency: it is the combining power of an element. It is also related to how many electrons are in the outer shell.

b) Radical: are group of atoms that have charge on them. e.g., OH^{1-}, SO_4^{2-}, CO_3^{2-} etc.

Q4. 1) Those substances which are made up of different types of atoms in a fixed number are known as Compounds. Compounds are pure substances that cannot be easily broken down by simple physical methods. Examples of Compds. are glucose, water, ammonia. For example. Water is made up of two kinds of atoms i.e., hydrogen and oxygen. Its formula is H_2O. Now, in a molecule of water there are 2 atoms of hydrogen and 1 atom of oxygen. The special property of a compound is that the ratio of different elements in a particular compound is always fixed. e.g. in water, hydrogen and oxygen are present in the ratio of 2:1. This ratio will not change, wherever we get water form. If the ratio is changed we will get a different substance.

Additional Question / Answers:

Q1. Ions:- During a chemical reaction reacting elements loose or gain electrons and form charged species called ions. It takes part in a chemical reaction. Ions can be of two types. i.e., positive ion and negative ions. Examples of positive ion are: Na^+, Mg^{++}, Al^{+++} and negative ions are Cl^-, O^{--} etc.

Q2. How To Write a Chemical Formulae:

To write a chemical formulae of a compound, following rules should kept in mind. They are as:

i) First, write the symbol of the elements that are combining.

ii) Write the valencies of the elements at the base or bottom of their symbols.

iii) Cross over the valencies of the elements.

iv) If the numbers written at the base or bottom are in multiples, then reduce them to a simple ratio.

v) Ignore subscript 1.

vii) The expression we obtain is the molecular formula of a compound.

Q Chemical Equations: Chemical changes in which electrons takes part are called chemical reactions. These reactions can be expressed in a special form, where the substances are represented in the form of their symbols and formulae. This representation of a chemical reaction using symbols and formulae of the substances is called Chemical Equation.

A chemical equation is written with the substances reacting on the left hand side and the product forming on the right hand side with an arrow in between them.

Reactant + Reactant ⟶ Products.

Q. Polyatomic molecules:

Those molecules which are formed by a large number of atoms are known as polyatomic molecule. e.g. Sulphur (S_8) and Phosphorus (P_4).

Lesson: 11 Heat Page no: 119

Q (I.) Very short - answer questions:

1. Celsius and Fahrenheit Scales are used to measure Temperature.
2. Sublimation is the process in which a solid directly changes into gas on heating.
3. Mercury is the liquid present which is present in a Clinical thermometer.
4. Gases expands most on the heating.
5. The Fahrenheit scale have 180 divisons.
6. Insulators is the substance which don't allow heat energy to pass Through it.
7. Black is a better absorber.

Q E. Short - answer questions.

1. a). Melting point: it is a fixed Temperature at which a solid gets converted to a liquid is the melting point of that solid.

b) Boiling point:- it is a fixed temperature at which a liquid gets converted to gas is the boiling point of that liquid.

(2) The lower fixed point is the temperature at which pure ice melts and the upper fixed point is the temperature at which pure water boils.

3) People wear White or light-Coloured Clothes in summer

to reflect the heat of the sun and stay cool.
4) Solar Cookers are painted with black from inside because black paint is the better absorber of heat.
5. Table mats are made from cones or plastic as plastic is a bad Conductor of heat or insulator.
6. Birds fluff up their feathers in winter to keep Warm because the air trapped inside the feathers acts as an insulator.
7. When a steel rod and a Wooden rod are at the same Temperature, then the ~~wood~~ ~~steel~~ wooden rod will feel Colder. because Wood is a bad Conductor of heat or insulator.
9. Yes, We can measure temperature of a hot tea with a Clinical thermometer.

When the bulb of the thermometer is ~~placed~~ put in a hot tea, the mercury inside the bulb expands due to heat of hot tea and rises in the capillary tube. The marking upto which the mercury rises gives the reading of the temperature.

QF. Long answer questions:-

Q1. Expansion due to heat is known as Thermal expansion. Some of the precautions to overcome thermal expansion are as:

a) Overhead Telegraph and electric wires are made to sag while fixing them. This is done to prevent them from snapping when they contract in winter and become taut.
b) Girders that support iron bridges are kept on rollers that are mounted on pillars. This is done because the girders expand on heating and contract on cooling. If they were fixed at both ends in the walls of the pillars, then during expansion in summer, they would break the pillars and the bridge would fall or collapse.
c). Small gaps are left between lengths of railways. This is done to allow room for expansion in summer. If they ~~are~~ were fixed end to end without gaps, then in summer they would bend due to expansion and cause accidents.

Q3. Conduction: It is the process of Transfer of heat from one particle to the next particle in a solid without the particles actually moving from their position.

Convection: It is the process of heat transfer in which the

Particles change their positions by constantly moving from the hotter region to the colder region, thus causing heat to flow. Heat travels through the liquids and gases by the process of convection.

Radiation: It is the process of heat transfer from a hot body to a colder body without heating the space between the two. Heat energy that flows from a hot body to a cold body without heating the space or medium in between is called thermal radiation or radiant heat. Black and dull surfaces are better absorbers of heat while as shining, polished or white surfaces are bad absorbers of heat.

Q5. Four main effects of heat are as:
i) Heat causes temperature of a body to rise, ii) Heat causes change of state of matter, iii). Heat causes expansion, iv) Heat causes combustion.

i) When a body absorbs heat, its molecules gain energy. As a result, the temperature of the body rises and the body becomes hot.

ii) When a substance is constantly heated, its temperature rises. After a certain point, the temperature stops rising any further and the substance takes up the heat to change its state. With the absorption of heat, a solid changes into liquid and a liquid into gas.

Q6. Ventilators are situated close to the ceilings and not near the floor because it helps in replacing of impure air by pure and fresh air from outside. The exhaled air is warm and lighter, so it rises and moves out of the ventilator.

Q7. NO, we can't use laboratory thermometer to measure our body temperature because the temperature will fall as soon as we remove the thermometer from the mouth and we will not be able to measure the correct temperature of the body. So, a kink is provided in the clinical thermometer which doesn't not allow the mercury to come down on its own and we can note the measured temperature even after some time.