Question:1

Write the symbols for the following.

1. Aluminium
2. Fluorine
3. Barium
4. Potassium
5. Iodine
6. Nickel
7. Helium
8. Hydrogen

Solution:

1. Al
2. F
3. Ba
4. K
5. I
6. Ni
7. He
8. H

Question:2

The smallest particle of a substance is called

(a) a molecule
(b) an atom
(c) an element
(d) a compound

Solution:

(b) an atom.
An atom is the smallest particle of a substance.

Question:3

Which one of the following is the symbol of an element?

(a) CO_2

(b) Ca
(c) H_2O
(d) HCI

Solution:

(b) Ca.

Ca is the symbol of the element calcium.

Question:4

Which one of these symbols is not that of an element?

(a) C
(b) Ca
(c) Cu
(d) CO_2

Solution:

(d) CO_2

CO_2 is the symbol of carbon dioxide, which is compound consisting of carbon and oxygen.

Question:5

Changes, in which new substances with different properties are formed, are called

(a) physical changes
(b) chemical changes
(c) irreversible changes
(d) reversible changes

Solution:

(b) Chemical changes.

The changes which produce new substance with different properties from that of the earlier substance is called a chemical change.

Question:6

The gas which turns lime water milky is

(a) oxygen
(b) carbon dioxide

(c) hydrogen
(d) nitrogen
Solution:

(b) Carbon dioxide.
When carbon dioxide gas is made to pass through the lime water, it turns milky.

Question:7
Differentiate between an atom and a molecule.
Solution:

Atom	Molecule
An atom is the smallest particle of a substance.	When two or more atoms are joined together, they form a molecule.
Atoms may or may not exist independently.	Molecules can exist independently.

Question:8
State major differences between a compound and a mixture.
Solution:

Compounds	Mixtures
These are the substances formed due to the chemical combination of two or more elements.	These are the substances that are formed when two or more elements are mixed together without undergoing any chemical change.
Properties of the compounds differ from its constituent elements.	Mixture retains the properties of its constituent elements.

Constituents of a compound cannot be separated by physical means.	Constituents of a mixture can be separated easily.

Question:9

What is valency? Give the valencies of the following: oxygen, hydrogen, sodium, magnesium, chlorine.

Solution:

Valency is the capacity of an atom to combine with the other atoms to form compounds. The valencies of the following atoms are:

i. Oxygen (O) : 2

ii. Hydrogen (H) : 1

iii. Sodium (Na) : 1

iv. Magnesium (Mg) : 2

v. Chlorine (Cl) : 1

Question:10

Classify the following as elements and compounds: water, nitrogen, carbon, hydrogen chloride, magnesium, aluminium oxide, calcium carbonate.

Solution:

Elements	Compounds
Nitrogen	Water
Carbon	Hydrogen chloride
Magnesium	Aluminium oxide
	Calcium carbonate

Question:11

What are the two essential conditions for rusting? How does oiling of iron objects prevent rusting?

Solution:

Rusting of iron involves the formation of a layer of iron oxide on the surface of iron objects in the presence of moisture. Thus, for rusting to occur, water and oxygen are essential.

Oiling the surface of the iron objects protects the surface from direct contact from the atmospheric oxygen and moisture and prevents from rusting.

Question:12

Why does the cut surface of brinjal turn brown?

Solution:

When the cut surface of brinjal, comes in contact with the air, the compounds present in brinjal undergo a chemical change with the oxygen present in the atmosphere. Due to this reaction, a brown substance called melanin is produced, which turns the cut surface to brown colour.

Question:13

What are crystals? How can the crystals of sodium chloride be prepared from common salt?

Solution:

Crystals are the purest solid forms of a substance, having a natural geometric shape.

To prepare the crystals of sodium chloride, a solution containing maximum amount of common salt is dissolved in boiling water, which is then filtered to remove the insoluble impurities. This filtered solution is allowed to sit for few hours, without disturbing it. The sodium chloride accumulate to form crystals with definite geometric shapes, leaving behind the impurities in the solution.

Question:14

Match the following.

Column A	*Column B*
Monoatomic	MgO
Diatomic	NaCl
Tetraatomic	H_2
Magnesium oxide	He
Sodium chloride	P_4

Solution:

Column A	**Column B**

Monoatomic	He
Diatomic	H_2
Tetra atomic	P_4
Magnesium Oxide	MgO
Sodium Chloride	NaCl

Question:15

What is the difference between 2O and O_2?

Solution:

The chemical symbol of oxygen is O. Here 2O simply represents that there are two oxygen atoms. O_2 means the combination of two oxygen atoms. Therefore, O_2 represents molecular oxygen.

Question:16

C is the symbol of carbon. What else does it represent?

Solution:

C not only represents the symbol of the carbon, but also tells the atomicity of the carbon element. Atomicity of carbon is the number of carbon atoms present in one molecule of carbon element depending on which the molecules are classified as monoatomic or diatomic or tetra atomic.

Question:17

Balance the following equations:

(a) $CH_4 + O_2 \rightarrow CO_2 + H_2O$

(b) $Na_2O + H_2O \rightarrow NaOH$

(c) $Ca(OH)_2 + HCl \rightarrow CaCl_2 + H_2O$

(d) $Na + H_2o \rightarrow NaOH + H_2$

(e) $Na + Cl_2 \rightarrow NaCl$

Solution:

1. $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
2. $Na_2O + H_2O \rightarrow 2NaOH$
3. $Ca(OH)_2 + 2HCl \rightarrow CaCl_2 + 2H_2O$
4. $2Na + 2H_2O \rightarrow 2NaOH + H_2$
5. $2Na + Cl_2 \rightarrow 2NaCl$

Question:18

Complete the following equations.

(a) Iron + Oxygen + Water → .....

(b) Vinegar + Baking soda → .....

(c) Carbon dioxide + Lime water → .....

(d) Copper sulphate + Iron → .....

Solution:

(a) Iron oxide.

(b) Carbon dioxide + Water + Other substances.

(c) Calcium carbonate + Water

(d) Iron sulphate + Copper