

SOLVED QUESTION

1. (i) Define an element.
 (ii) How many elements have been discovered by the chemists?
 How many of these are naturally occurring?
 (iii) What are
 (a) normal elements? (b) radioactive elements?

Ans. (i) Any pure substance which cannot be broken into two or more simpler substances by any chemical means is called an element.
 (ii) 117 elements have been discovered by the chemists. 92 elements occur naturally.
 (iii) The elements which do not give out harmful radiations are called normal elements. The elements which give out harmful radiations are called radioactive elements.

2. (i) Define the term metal.
 (ii) Give the names of any six metals along with their symbols.

Ans. (i) The elements which have lustre, are malleable, ductile and good conductors of heat and electricity are called metals.
 (ii) Six common metals and their symbols are:
 (a) Silver — Ag (b) Sodium — Na (c) Potassium — K
 (d) Magnesium — Mg (e) Aluminium — Al (f) Copper — Cu

3. (i) Define the term non-metal.
 (ii) Give the names and the symbols of
 (a) 3 non-metals which are solids.
 (b) 3 non-metals which are gases.
 (c) 1 non-metal which is a liquid.

Ans. (i) The elements which have no lustre, are not malleable, are nonductile, bad conductors of heat and electricity and brittle are called non-metals.
 (ii) (a) Iodine (I), Carbon (C), Sulphur (S)
 (b) Hydrogen (H), Nitrogen (N), Oxygen (O)
 (c) Bromine (Br)

4. (i) What are noble gases?
 (ii) Give names and symbols of four noble gases.

Ans. (i) The elements which are found in air in small traces in the gaseous state and do not react chemically with any other elements, are called noble gases.
 (ii) (a) Helium (He) (b) Neon (Ne) (c) Argon (Ar) (d) Krypton (Kr)

5. (i) Define (a) an atom (b) a molecule.
(ii) Give three examples of each molecule which has
(a) Similar kind of atoms (b) Different kinds of atom.

- Ans.** (i) (a) The smallest particle of an element which may or may not have independent existence, but always takes part in a chemical reaction, is called an atom.
(b) The smallest unit of a pure substance which always exists independently and can retain all the chemical and physical properties of that substance is called a molecule.
(ii) (a) (i) Ozone — (O₃) (ii) Nitrogen — (N₂)
(iii) Hydrogen (H₂) (b) (i) Carbon dioxide (CO₂)
(ii) Copper sulphate (CuSO₄) (iii) Sulphuric acid (H₂SO₄)

6. What do you understand by the term compound?

- Ans.** When the molecule of a pure substance contains two or more atoms of different elements combined together in a definite ratio, then it is said to be a molecule of a compound.

7. What does each of the following formulae represent?

- Ans.** (i) 2O → two atoms of oxygen
(ii) H₂ → 1 molecule of hydrogen
(iii) 10H₂O → 10 molecules of water
(iv) 4Cl → 4 atoms of chlorine
(v) 5CO₂ → 5 molecules of carbon dioxide
(vi) FeS → 1 molecule of iron sulphide.

8. Write the number of atoms of each element in the following.

- (i) H₂SO₄ (ii) FeSO₄ (iii) Pb(NO₃)₂

- Ans.** (i) 7 (ii) 6 (iii) 9

9. Write the chemical names of the following compounds.

- (i) H₂SO₄ (ii) NaOH (iii) Na₂CO₃

- Ans.** (i) Sulphuric acid (ii) Sodium hydroxide (iii) Sodium carbonate

10. Write the chemical formula of each of the following chemical compounds.

- (i) Hydrochloric acid (ii) Calcium oxide (iii) Ferrous sulphide

- Ans.** (i) HCl (ii) CaO (iii) FeS

11. (i) What do you understand by the term valency?

- (ii) What kind of valency do the metals generally have?

- (iii) Name three elements each, whose ions have valency +1, +2, and +3 respectively.

- Ans.** (i) The number of electrons donated or accepted by an atom of an element so as to have 8 electrons in its outermost orbit is called valency.

- (ii) Metals generally have positive valency.

- (iii) Sodium, potassium and lithium have +1 valency Magnesium, calcium and barium have +2 valency.

Chromium, aluminium and iron have +3 valency.

12. Write the names of the following compounds:

- (i) $(\text{NH}_4)_2\text{SO}_4$ (ii) FeS (iii) NH_4OH (iv) HgO (v) ZnS
(vi) $\text{Ca}(\text{NO}_3)_2$ (vii) Na_3PO_4 (viii) CuCO_3 (ix) ZnCl_2 (x) H_2S

Ans. (i) Ammonium sulphate (ii) Ferrous sulphide
(iii) Ammonium hydroxide (iv) Mercuric oxide
(v) Zinc sulphide (vi) Calcium nitrate
(vii) Sodium phosphate (viii) Copper carbonate
(ix) Zinc chloride (x) Hydrogen sulphide

13. What is the maximum number of electrons that can revolve around the nucleus in the (a) first orbit, (b) second orbit, (c) third orbit?

Ans. Maximum number of electrons that can revolve around the nucleus in the
(a) first orbit is 2, (b) second orbit, 8 and (c) third orbit, 18.

14. Elements A and B have 3 and 6 electrons in their outermost shells, respectively.

- (i) Which element will gain electrons and how many, while forming a chemical compound? What will be the electrical charge on the ion of that element?
(ii) Which element will lose electrons and how many, while forming a chemical compound? What will be the electrical charge on the ion of that element?

Ans. (i) Element B will gain 2 electrons while forming a chemical compound. There will be 2 unit negative electrical charge on the ion of that element.
(ii) Element A will lose 3 electrons while forming a chemical compound. The ion of A will get 3 units of positive charge.

15. (i) What do you mean by a physical change?
(ii) Give four common examples of a physical change.

Ans. A change which alters some specific property of matter without any change in the composition of its molecules is called a physical change.

For example,

- (1) Glowing of an electric bulb on the passage of electric current,
- (2) Production of sound when two metal pieces are hit,
- (3) Expansion and contraction of metals with the change in temperature,
- (4) Crystallization of salts from their solutions