Page No 151
Solution 04
(a) Anions are formed by the gain of electrons by atoms
(b) Cations are formed by the loss of electrons by atoms
Solution 05
(a) False
(b) True
Solution 06
(a) Calcium oxide - CaO
(b) Magnesium hydroxide - $Mg(OH)_2$
Solution 07
Valency of element Z = 3
Valency of oxygen = 2
So, formula of oxide of element = Z_2O_3
Solution 08
Its Na^+ , the sodium ion.
Solution 09
Its Cl^-, the chloride ion.
Solution 10
(a) Anion
(b) Cation
(c) Ion
(d) Electrons ; protons
(e) Protons ; electrons
Solution 11
Water is made up of Hydrogen and oxygen.
Valency of hydrogen is +1 ; Valency of oxygen is -2.
Chemical formula of water is H_2O.
Solution 12

Symbols :	H	N
Valencies :	+1	-3

So, chemical formula of ammonia is NH_3.
Solution 13

Symbols :	S	O
Valencies :	+4	-2

Chemical formula of sulphur dioxide is SO_2.
Solution 14
According to question-

Symbols :	C	S
Valencies :	+4	-2

Name and formula of the resulting compound is Carbon disulphide; CS_2.
Solution 15
As the valency of element X is 4 and that of Y is 1, so the resulting formula is XY_4.
Solution 16

When the valency shown by B is 4, then-

Symbols : B O

Valencies : +4 -2

The resulting compound is BO_2.

When the valency shown by B is 6, then-

Symbols : B O

Valencies : +6 -2

The resulting compound is BO_3.

Solution 17

Symbols : X Y

Valencies : 3 2

Thus, the resulting compound is X_2Y_3.

Solution 18

Symbols : Mg HCO_3

Valencies : +2 -1

Thus, the resulting compound is $Mg(HCO_3)_2$

Solution 19

(a) Bromide of element - As valency of bromine is -1 and that of element X is +2 so, the resulting compound is XBr_2.

(b) Oxide of element - As valency of oxygen is -2 and that of element is +2 so, the resulting compound is XO.

Solution 20

(a). Sodium oxide-

Symbols : Na O

Valencies : +1 -2

Thus, the formula of sodium oxide is Na_2O.

(b). Calcium carbonate-

Symbols : Ca CO_3

Valencies : +2 -2

Thus, the resulting compound is $CaCO_3$.

Solution 21

(a) Molecular mass of Na_2O = (2 x Na) + (1 x O) = (2 x 23) + (1 x 16) = 62 u

(b) Molecular Mass of Al_2O_3 = (2 x Al) + (3 x O) = (2 x 27) + (3 x 16) = 102 u

Solution 22

(a) $CuSO_4$: Copper sulphate; Cu^{+2} and SO_4^{-2}

(b) $(NH_4)_2SO_4$: Ammonium sulphate; NH_4+ and SO_4^{-2}.

(c) Na_2O : Sodium oxide; Na^+ and O^{-2}

(d) Na_2CO_3 : Sodium carbonate; Na^+ and CO_4^{-2}.

(e) $CaCl_2$: Calcium chloride; Ca^{+2} and Cl^-.

Solution 23

(a). CH_3COONa : Na^+ (cation) and CH_3COO^- (anion)

(b). NaCl : Na^+ (cation) and Cl^- (anion)

(c). H_2 : It is a covalent molecule. So, cation and anion are not present.

(d). NH_4NO_3 : NH_4^+ (cation) and NO^{3-} (anion)

Solution 24

(a). Element : Ca F

Valencies : +2 -1

Thus, the resulting compound is CaF_2.

(b). Element : H S

Valencies : +1 -2

Thus, the resulting compound is H_2S.

(c). Element : N H

Valencies : -3 +1

Thus, the resulting compound is NH_3.

(d). Element : C Cl

Valencies : +4 -1

Thus, the resulting compound is CCl_4.

(e). Element : Na O

Valencies : +1 -2

Thus, the resulting compound is Na_2O.

(f). Element : C O

Valencies : +4 -2

Thus, the resulting compound is CO_2.

Solution 25

i. Ionic compounds - The compounds which are formed by combination of metals and non-metals are called ionic compounds. For ex: $CaCl_2$ and $CaCO_3$.

ii. Molecular compounds - These compounds are formed by the combination between two non-metal elements. For ex. HCl and H_2S.

Page No 152

Solution 26

(a). An ion is a positively or negatively charged atom (or group of atoms). An ion is formed by the loss or gain of an electrons by an atom, so it contains an unequal number of protons and electrons.

EXAMPLE- (1). Sodium ion, Na^+, formed by loss of one electron.

(2). Chloride ion, Cl^-, formed by gain of one electron.

(b).

i. Sodium phosphate - Na_3PO_4

ii. Ammonium sulphate - $(NH_4)_2SO_4$

iii. Calcium Hydroxide - $Ca(OH)_2$

iv. Lead bromide - $PbBr_2$

Solution 27

(a) A cation is formed by the loss of one or more electrons by an atom. For ex. Magnesium loses 2 electron to form Mg^{+2}.

An anion is formed by the gain of one or more electrons by an atom. For Ex. Chlorine loses one electron to form Cl^-.

(b) (i) Na_2S

(ii) Cu $(NO_3)_2$

Solution 28

(i).

$$Na\ (11\ protons,\ 11\ electrons) \xrightarrow{-1\ electron} Na^+\ (11\ protons,\ 10\ electrons)$$

The reason for positive charge on sodium is the loss of electron.

(ii).

$$Cl\ (17\ protons,\ 17\ electrons) \xrightarrow{+1\ electron} Cl^-\ (17\ protons,\ 18\ electrons)$$

The reason for negative charge on chlorine is the gain of electron.

Solution 29

(a) Simple ions: Br^- and Na^+ ; Compound ions: NH^{4+} and Al^{+3}

(b) (i) YCl_4 (ii) YO_2 (iii) $Y(SO_4)_2$ (iv) $Y(CO_3)_2$ (v) $Y(NO_3)_4$

Solution 30

(a) The simplest combination of ions that produces an electrically neutral unit, is called 'formula unit' of the ionic compound.

Formula unit of sodium chloride - NaCl
Formula unit of magnesium chloride - $MgCl_2$
(b)
(i) Formula Mass of Calcium chloride ($CaCl_2$) = 1xCa + 2xCl = (40+71) u = 111 u
(ii) Formula Mass of Sodium carbonate (Na_2CO_3) = 2xNa + 1xC + 3xO= (2x23 + 1x12 + 3x16) u = 106 u

********** END **********