IONS

CLASS-IX

An atom or group of atoms having electrical charge is called 'ION'.

An atom contains three sub atomic particles positively charged protons, negatively charged electrons and neutral neutrons.

An atom contains equal number of electrons and protons which makes the atom electrically neutral.

When electron revolving in outer most shell is transfered from one atom to other atom, the number of electrons and protons becomes unequal and hence an atom becomes charged and is called ion.

It means ion is

is formed due to transfer of electrons.

* Ions are of two types -

(1) Positive ions (cations) -

The ions formed by the loss of one or more electrons by an atom is called positive ion or cation.

Na	$\xrightarrow{-1 \text{ electron}}$	Na^+
Protons = 11 (+)		11 (+)
Electrons = 11 (-)		10 (-)
Over all charge = 0		+1

All metal atoms can lose electrons to form cation.

*

Mg	$\xrightarrow{-2 \text{ electrons}}$	Mg^{+2}
Protons = 12 (+)		12 (+)
Electron = 12 (-)		10 (-)
Over all charge = 0		+2

* Al ——— −3 electrons ——→ Al^{+3}

Protons = 13 (+)	13 (+)
Electrons = 13 (−)	10 (−)
overall charge = 0	+3

② Negative ion (An ion) -:

The ion formed by the gain of 1 or more electrons is called negative ion or anion.

* Cl ——— +1 electron ——→

Protons = 17 (+)	17 (+)
Electrons = 17 (−)	18 (−)
overall charge = 0	−1

* O ——— +2 electrons ——→ O^{-2}

Protons = 8 (+)	8 (+)
Electrons = 8 (−)	10 (−)
overall charge = 0	−2

* N ——— +3 electrons ——→ N^{-3}

Protons = 5 (+)	5 (+)
Electrons = 5 (−)	8 (−)
overall charge = 0	−3

* SIMPLE IONS - The ions formed from one atom.

"U-called simple ion or
monoatomic ion.
Ex- Na^+, Cl^-, O^{-2}, Mg^{+2}

* Compound ion (Poly atomic ion)
The ions which are ~~fom~~
formed ~~fo~~ from groups of
joined atoms are called
compound ions or Poly-
atomic ions.
Ex- OH^-, SO_4^{-2}, NH_4^+

re given below:

Some Common Ions

Name of ion	Symbol (or Formula)	Name of ion	Symbol (or Formula)
. Sodium ion	Na^+	10. Chloride ion	Cl^-
. Potassium ion	K^+	11. Bromide ion	Br^-
3. Ammonium ion	NH_4^+	12. Hydroxide ion	OH^-
4. Magnesium ion	Mg^{2+}	13. Nitrate ion	NO_3^-
5. Calcium ion	Ca^{2+}	14. Oxide ion	O^{2-}
6. Copper (II) ion	Cu^{2+}	15. Sulphide ion	S^{2-}
7. Zinc ion	Zn^{2+}	16. Carbonate ion	CO_3^{2-}
8. Iron (II) ion	Fe^{2+}	17. Sulphate ion	SO_4^{2-}
9. Aluminium ion	Al^{3+}	18. Phosphate ion	PO_4^{3-}