

Chemistry Study Materials for Class 9 (NCERT Questions –Answers of Chapter -04)

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Structure of the Atom

MASS NUMBER OR ATOMIC MASS

Mass number of an atom is defined as the sum of the number of protons and number of neutrons. Mass number is nearly equal to the atomic mass of an atom. Since, protons and neutrons reside in the nucleus, thus they are also known as nucleons.

This means, Mass number of an atom = Number of protons + Number of neutrons

Example

(1) Atomic mass of aluminium is 27 u and atomic number is 13, find the number of protons and number of neutrons in aluminium.

Solution: Since,

Atomic number = 13, Therefore, number of proton = 13

We know that;

Atomic mass (Mass number) = Number of protons + Number of neutrons

Therefore, $27 \text{ u} = 13 + n$ Or, $n = 27 - 13 = 14$

Therefore, number of proton = 13 and number of neutron = 14

(2) The atomic number of carbon is 6 and number of neutron is equal to 6.

Find the atomic mass or mass number of carbon.

Solution: Since atomic number of carbon = 6 Therefore, number of proton = 6

Now, Atomic mass = number of proton + number of neutron

Or, Atomic mass or mass number = $6 + 6 = 12$ u

Thus, mass number or atomic mass of carbon = 12u

Arrangement of electrons in an atom: (Electronic Configuration)

The maximum number of electrons can be obtained by $2n^2$; where 'n' is the orbit number. Thus after knowing the maximum number of electrons for a particular shell, the arrangement of electrons in an atom can be identified.

It is called Bohr Bury Schemes.

Rules to write the electronic configuration of an atom

(a) Maximum number of electrons in an orbit is calculated by $2n^2$,

where 'n' is number of orbit and may be equal to 1, 2, 3,

(b) Electrons occupy the next orbit only after filling the inner orbit completely.

(c) The maximum number of electrons in outermost orbit will not be more than 8.

Electronic configuration of Hydrogen

Atomic number of hydrogen = 1

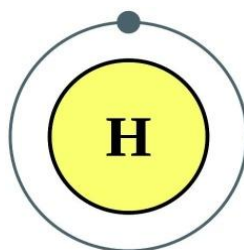
Therefore number of electrons = 1

Maximum number of electrons in 1st orbit = 2

Since, hydrogen has only one electron,

Therefore, it will reside in 1st orbit

Thus electronic configuration of hydrogen is



Number of orbit present in hydrogen = 1

Electronic configuration of Helium

Atomic number of helium = 2

Therefore number of electrons = 2

Therefore, electronic configuration of helium is



Number of orbit in helium atom = 1

Electronic configuration of Lithium

Atomic number of Lithium = 3

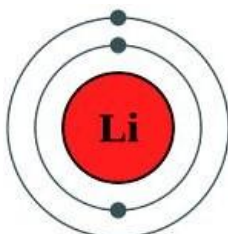
Therefore number of electrons = 3

Since the maximum number of electrons in 1st orbit is equal to 2,

Therefore, after accommodating 2 electrons in 1st orbit,

The third electron will go in 2nd orbit.

Thus, electronic configuration of lithium is



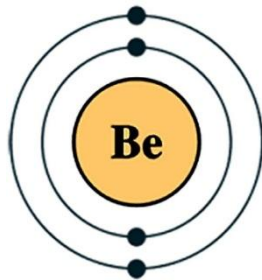
Number of orbit in Lithium atom = 3.

Electronic configuration of Beryllium

Atomic number of beryllium = 4.

Therefore number of electrons = 4.

Thus, electronic configuration of Beryllium is



Number of orbit in beryllium = 2

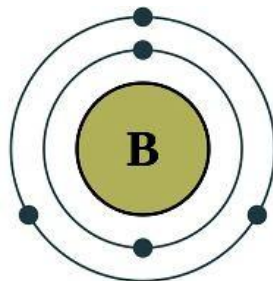
Electronic configuration of

Boron Atomic number of

boron = 5 Therefore number

of electrons = 5

Thus, electronic configuration of boron is



Number of orbit in boron = 2
