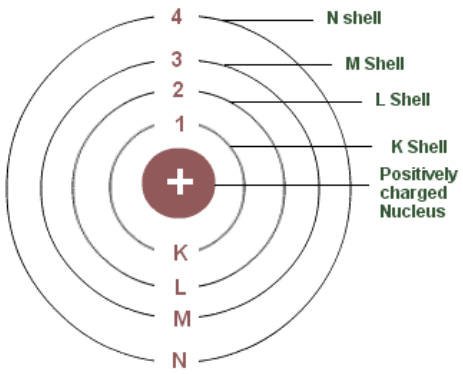
Bohr's Model of atom

Neil's Bohr put forth his model of the atom in the year 1915. This is the most widely used atomic model to describe the atomic structure of an element which is based on Planck's theory of quantization. His Postulates are:

- Electrons revolve around the nucleus in circular path. The circular path is called orbits or energy shells or energy level.
- An atom may have infinite number of orbits. Only few orbits contain electrons in them. These orbits are known as discrete orbits. Electrons present in discrete orbits have stable energies. Hence, electrons do not lose energy during the revolution due to which electron do not fall in nucleus. Hence, Bohr's model explains stability of atom.
- In Bohr's model, energy of electron is stable. But electron may undergo change in energy. If electron jumps from higher orbital to lower orbital or from lower orbital to higher orbital, in such case energy of electron changes.
- Orbits or shells are represented by alphabets K, L,M,N,….. Or by numbers n = 1,2,3, 4,…….



Distribution of Electrons in Orbit or Shell:

- Number of electrons in single orbit is $2\ n^2$, where, n shows energy level. Therefore, K shell is first shell i.e. n=1, therefore, K shell will have $2(1)^2 = 2$ electrons.
- Similarly, term duplet is allowed if shell has two electrons. Term octet is used of shell has 8 electrons.
- Electrons are filled in shells from inner shell towards the outer shell.

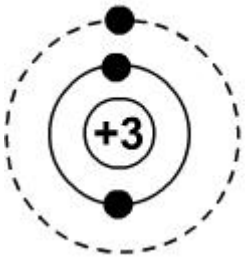
Orbit No.	Shell	Formulae	Total Number of Electrons
1	K	$2n^2 = 2 \times 1^2$	2
2	L	$2n^2 = 2 \times 2^2$	8
3	M	$2n^2 = 2 \times 3^2$	18
4	N	$2n^2 = 2 \times 4^2$	32

Bohr's Valency Diagram

Bohr diagrams show electrons orbiting the nucleus of an atom like planets orbit around the sun. In the Bohr model, electrons are pictured as traveling in circles at different shells, depending on which element you have.

Examples:

1. Lithium – It has three electrons
    - Two go to K shell and
    - The remaining one goes to the L shell.
    - Its electronic configuration is **K (2), L (1)**



2. Aluminium – It has 13 electrons
    - Two go to K shell
    - Eight go to L Shell, and
    - The remaining three go to M shell
    - Its electronic configuration is **K (2), L (8), M (3)**