Electron configuration of an atom

The electrons in an atom do not all have the same energy. They are distributed around the nucleus in correspondingly energetic **layers** (also called shells) and sublayers according to Klechkowski's rule.

KLECHKOWSKI'S RULE:

Energy layers are defined by the principal quantum number, n.
The lowest-energy layer corresponds to n = 1. This is the layer in which the electrons are closest to the nucleus.

The layer defined by n = 1 can hold maximum **2 electrons**.
The layer defined by n = 2 can hold maximum **8 electrons**.
The layer defined by n = 3 can hold maximum **18 electrons**.
The layers defined by n >3 can hold maximum **32 electrons**.

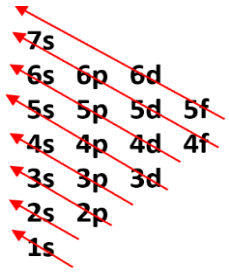
Each of the energy layers is made of several **sublayers.**
These sublayers are defined by letters: s, p, d, f.

Sublayer s can hold maximum **2 electrons**.
Sublayer p can hold maximum **6 electrons**.
Sublayer d can hold maximum **10 electrons**.
Sublayer f can hold maximum **14 electrons**.

Layer n = 1 is made of only 1 sublayer: 1s
Layer n = 2 is made of 2 sublayers: 2s 2p
Layer n = 3 is made of 3 sublayers: 3s 3p 3d
Layers n = 4 and n = 5 are made of 4 sublayers: 4s 4p 4d 4f and 5s 5p 5d 5f
Layer n = 6 is made of 3 sublayers: 6s 6p 6d
Layer n = 7 is made of 1 sublayer: 7s

The Z electrons are distributed around the nucleus in ascending order of energy, starting with the lowest-energy sublayer.

They progressively fill the layers and sublayers in the order indicated by the arrows (diagonals).



Notation:
$1s^2 2s^2 2p^6 3s^2$… until all Z electrons are positioned.

A layer is said to be **saturated** if it contains the maximum number of electrons it can accommodate.
The **outer** layer (or **valence** layer) is the last layer to be filled.
A layer is said to be **internal** when it is not the last layer filled.

Ex : Electron configuration (or structure) of sodium Na (Z = 11) : Na $1s^2\ 2s^2\ 2p^6\ 3s^1$
Following the example of sodium, give the electron configuration of the following atoms:
O (Z = 8), Ne (Z = 10), Si (Z = 14), Ar (Z = 18), Pu (Z = 94).