## SSLC -Chemistry -Class-05

## Periodic Table and Electronic Configuration

Subshells

$$
3 \mathbf{p}^{6}
$$

3- Shell number.
p- Subshell.
6- Number of electron in the subshell

## Filling of electrons in the subshell

## Electron filling takes place in the order of increasing energy

Sub shells and their energies.


## $1 s<2 s<2 p<3 s<3 p<4 s<3 d<4 p$



## The energy of 4s subshell is less than that of 3d

| Element | Atomic Number | Subshell electronic configuration |
| :---: | :---: | :--- |
| Be | 4 | $1 s^{2} 2 s^{2}$ |
| Ar | 18 | $1 \mathrm{~s}^{2} 2 \mathrm{~s}^{2} 2 \mathbf{p}^{6} 3 \mathrm{~s}^{2} 3 \mathbf{p}^{6}$ |
| K | 19 | $1 \mathrm{~s}^{2} 2 \mathrm{~s}^{2} 2 \mathbf{p}^{6} 3 \mathrm{~s}^{2} 3 \mathbf{p}^{6} 4 \mathrm{~s}^{1}$ |
| Sc | 21 | $1 \mathrm{~s}^{2} 2 \mathrm{~s}^{2} 2 \mathbf{p}^{6} 3 \mathrm{~s}^{2} 3 \mathbf{p}^{6} 3 \mathrm{~d}^{1} 4 \mathrm{~s}^{2}$ |

## Subshell electronic configuration (Short form)

| Element | Subshell electronic <br> configuration | Short form |
| :---: | :--- | :--- |
| Be | $1 \mathrm{~s}^{2} 2 \mathrm{~s}^{2}$ | $[\mathrm{He}] 2 \mathrm{~s}^{2}$ |


| $M g$ | $1 s^{2} 2 s^{2} 2 p^{6} 3 s^{2}$ | $[\mathrm{Ne}] 3 s^{2}$ |
| :---: | :--- | :--- |
| Sc | $1 s^{2} 2 s^{2} 2 p^{6} 3 s^{2} 3 \mathbf{p}^{6} 3 d^{1} 4 s^{2}$ | $[\mathrm{Ar}] 3 d^{1} 4 s^{2}$ |

## Questions

A. The subshell electronic configuration of an atom is $\mathbf{1 s}{ }^{2} \mathbf{2} s^{2} \mathbf{2 p} \mathbf{p}^{\mathbf{6}} \mathbf{3} s^{2}$.Write the answers of the following

1. What is the atomic number of the element?
2. How many shells are present in this atom?

## 3. Which is the common subshell seen in all the shells?

4. What is the total number of electrons in this atom?
5. Write the subshell electronic configuration in short form
