



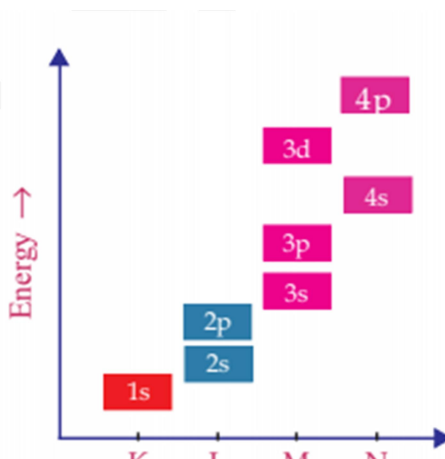
STD 10– FIRST BELL – CHEMISTRY – CLASS-05

Chapter – 1

PERIODIC TABLE AND ELECTRONIC CONFIGURATION

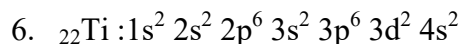
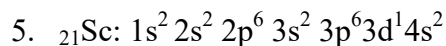
Filling of electrons in the subshell

- Electrons in an atom are distributed in subshells, they are filled in the increasing order of the energies of subshells.
- $1s < 2s < 2p < 3s < 3p < 4s < 3d < 4p$
(The energy of 4s is less than 3d)
-



$1s^2$: The number on the left side of the subshell denotes the shell number and the number on the top right side denotes the number of electrons. Eg:

1. ${}_{3}\text{Li} : 1s^2 2s^1$
 2. ${}_{13}\text{Al} : 1s^2 2s^2 2p^6 3s^2 3p^1$
 3. ${}_{17}\text{Cl} : 1s^2 2s^2 2p^6 3s^2 3p^5$
 4. ${}_{19}\text{K} : 1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$.
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Subshell Electronic configuration- Shortest form

- Subshell electronic configuration of Argon (${}_{18}\text{Ar}$) is $1s^2 2s^2 2p^6 3s^2 3p^6$
- Subshell electronic configuration of Neon is $1s^2 2s^2 2p^6$
- Subshell electronic configuration of Helium is $1s^2$.

Element	Sub Shell electronic configuration	Subshell electronic configuration - shortest form.
${}_{19}\text{K}$	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$	$[\text{Ar}]4s^1$
${}_{13}\text{Al}$	$1s 2s 2p 3s 3p$	$[\text{Ne}]3s 3p$
${}_{22}\text{Ti}$	$1s 2s 2p 3s 3p 3d 4s$	$[\text{Ar}]3d 4s$
${}_{3}\text{Li}$	$1s^2 2s^1$	$[\text{He}]2s^1$
${}_{17}\text{Cl}$	$1s 2s 2p 3s 3p$	$[\text{Ne}]3s 3p$

HOME WORK

1. The subshell electronic configuration of an atom is $1s^2 2s^2 2p^6 3s^2$
 - a) What is the atomic number of the element?
 - b) How many shells are present in this atom?
 - c) Which is the common subshell seen in all the shells?
 - d) What is the total number of electrons in the atom?
 - e) What is the total number of electrons present in the 's' subshell?
 - f) Write the subshell electronic configuration in shortest form?

2. Find out preceding noble gas with the help of periodic table and complete table

Elements	Subshell electronic configuration
${}_{21}\text{Sc}$	
${}_{20}\text{Ca}$	
${}_{12}\text{Mg}$	
${}_{27}\text{Co}$	
${}_{30}\text{Zn}$	

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