

Series N°5

**Exercise 1:**

We have the following elements  ${}_2A$ ,  ${}_{10}B$ ,  ${}_{18}C$ ,  ${}_{36}D$ ,  ${}_{54}E$ ,  ${}_{86}F$ :

- 1- Give the period and the group for each element.
- 2- Attribute each element to an ionization energy of the following values:  
15.7eV, 21.5eV, 12.13eV, 10.75eV, 24.58eV, 13.59eV
- 3- Rank these elements by decreasing atomic radius.
- 4- Using the *Klechkowski* rule, Arrange the following orbitals by increasing energy  
1S, 2S, 2P, 3S, 3P, 3d, 4S, 4P, 4d, 4f, 5S, 5P, 6S

**Exercise 2:**

1. Write the electronic distribution of the following elements:  ${}_{35}Br$ ,  ${}_{47}Ag$ ,  ${}_{38}Sr$ .
2. Among the previous elements, select the elements that are metal by *Sanderson* rule with proof.
3. Which element among the previous elements contains a single electron marked with the two quantitative numbers: ( $l = 2$ ,  $m = + 2$ )
4. And then which element contains a single electron marked with the two quantitative numbers: ( $l = 0$ ,  $m = 0$ )
5. Among the previous elements, what elements belong to the alkali earth metals family.

**Exercise 3:**

1. The element  ${}_ZX$  belong to the fourth period and the  $V_B$  group, calculate the atomic number of this element.
- 2- Select the elements that their electrons number less than 18 and own two single electrons in the fondamental state (ground state). Among these elements are what elements belong to the period of  $4Be$  and group of  ${}_{32}Ge$
- 3- The element  $Y$  has 6 electrons in the outer layer with the  $\psi_{51}$  wave function, write the electronic distribution of this element in the fondamental state, then conclude his atomic number  $Z$ .

**Exercise 4:**

Write the electronic distribution of the following elements:  ${}_{15}A$ ,  ${}_{84}B$ ,  ${}_{79}C$ ,  ${}_{64}D$ ,  ${}_{33}E$ ,  ${}_{81}F$ ,  ${}_{39}G$ .

- 1- Select the period and the groupe for these elements.
- 2- Compare between B, C and D elements in terms of atomic radius.
- 3- Compare between C and A in terms of  $E_i$  (first ionization energy).
- 4- Compare between A, E and F in terms of electronegativity  $E_n$ .
- 5- Compare between the two ions ( $G^{3+}$ ,  $E^{3-}$ ) in terms of atomic radius.