CHEMISTRY

3. PERIODIC CLASSIFICATION OF ELEMENTS

1. The most and the least electronegative element pairs among the following is

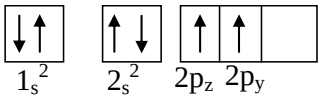
   a) Oxygen, Fluorine b) Fluorine, Oxygen

   c) Fluorine, Cesium d) Carbon, Fluorine

2. Which atom is bigger in size, Ne or Ar ? why ?

"O Group"
He
Ne
Ar
Kr
Xe
Rn

3. Observe the following electrons arrangement and answer the following questions.



   i) How many shells are there?
   ii) Name the element

4. How does metallic character change when we move

   i) Down a group? ii) Across a period?

5. Using the periodic table, predict the formula of compound formed between and element X of group 13 and another element Y of group 16.

6. An element X belongs to 3rd period and group 2 of the periodic table. State

   a) The no. of valence electrons b) The valency

   c) Whether it is metal or a non-metal.

7. Name two elements that you would expect to have chemical properties similar to Mg. What is the basis for your choice?

8. What are Lanthanides ?

9. What are Actinides?

10. What is a triad?

11. Which two elements of 3rd period will form a covalent compound?

12. Using the periodic table predict formula of compound formed between an element 'X' of group 2 and another element of group 17.

13. An element has atomic number 19. Where would you expect this element in the periodic table and why ?

14. We know that as we move from left to right ionization energy increases. But ionization energy Nitrogen is more than Oxygen. Why ?

15. Why does Boron have less ionization energy when compared with Beryllium ?

3. PERIODIC CLASSIFICATION OF ELEMENTS (KEY)

1. C
2. Argon is the bigger size because in a group from top to bottom atomic size increases
3. i) 2 ii) carbon
4. **Down a group :** When we move from top to bottom in a group, the metallic character increases.
   Across a period : When we move left to right in a period, the metallic character decreases.
5. The valency of 13th group elements is 3.
   The valency of 16th group elements is 2.
   The formula of compound is $X_2 Y_3$
6. a) The number of valence electrons are 2.
   b) The valency of element is + 2.
   c) It is a metal.
7. 1) The two elements which have chemical properties similar to Magnesium are Beryllium and Calcium.
   2) The basis for my expectation is that they belong to same group as we know elements belonging to same group have similar properties.
8. Elements acquiring same properties are called lanthanides, i.e. 4f elements. They are from $_{58}Ce$ (Cerium) to $_{71}Lu$ (Lutetium).
9. Elements acquiring different properties are called actinides, i.e. 5f elements. They are from $_{90}Th$ (Thorium) to $_{103}Lr$ (Lawrensium).
10. A group of three elements with similar properties in which atomic weight of middle element is average of other two elements.
11. The two elements are phosporous and chlorine.
12. 1) The element X belongs to group 2. So, the number of valence electrons are 2 and its valency is 2.
    2) The element Y belongs to group 17 or VII. So, the number of valence electrons-are 7 and its valency= 8 - 7 = 1.
    During formation compound elements exchange their valencies.
    The formula of compound is XY_2
13. The electronic configuration of element is $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$. So the element is in 4th period and I group.
14. 1) It is easier to remove an electron from Oxygen when compared to Nitrogen.
    2) This is because Nitrogen has stable $1s^2 2s^2 2p^3$ electronic configuration which contains half filled 2p orbitals whereas Oxygen has $1s^2 2s^2 2p^4$ configuration.
15. 1) The electronic configuration of Be and B are $1s^2 2s^2$ *and* $1s^2 2s^2 2p^1$
    2) The element Boron has less ionization energy due to less penetration power of 2p compared to 2s.