ASSIGNMENT

Lesson -3 Classification of Elements

Q1. Give the IUPAC name and the symbol of an element with Z=109.

Q2. Elements A and B have the atomic numbers 12 and 29 respectively. Write down their electronic configuration and predict (i) group (ii) period (iii) block to which they belong.

Q3. Which is largest in size Al +, Al 2+ and Al, why?

Q4. Among the elements with atomic number 9, 12 and 36. Identify the element which is a) highly electronegative b) an inert gas in nature c) highly electropositive in nature. Give reason for your answer.

Q5. Arrange the following in increasing order of the property indicated:

a) F, Cl , Br, I (Electron gain enthalpy) b) Mg2+, O2- , Na+, F- , N3- (Ionic size)

c) Mg, Al, Si, Na (Ionization enthalpy) d) C, N, O,F (Second Ionization enthalpy)

Q6. The increasing order of negative electron gain enthalpy of the electronic configurations

(i) $1s^2 2s^2 2p^6 3s^2 3p^5$ (ii) $1s^2 2s^2 2p^5$

(iii) $1s^2 2s^2 2p^3$ (iv) $1s^2 2s^2 2p6 3s^1$

(a) (iii), (iv), (ii), (i) (b) (i), (iii), (ii), (iv)

(c) (i), (ii), (iii), (iv) (d) (iv), (iii), (ii), (i)

Q7 The highest ionization energy is exhibited by

(a) Halogens (b) alkaline earth metals (c) transition metals (d) noble gases

Q8. Consider the following species : N^{-3}, O^{-2}, F^{-}, Na^{+}, Mg^{2+} and Al^{+3}

(i) What is common in them? (ii) Arrange them in increasing order of ionic radii. Give reason also.

Q9. Elements A and B have the atomic numbers 11 and 24 respectively. Write down their electronic configuration and predict (i) group (ii) period (iii) block to which they belong.

Q10. What is the IUPAC name and symbol of an element with atomic number 119? Also predict the electronic configuration

Q6. Name a species that will be isoelectronic with each of the following atoms or ions,

(a) Ar (b) Cl- (c) F- (d)

P Rb+ (e) Ca2+

Q7. Among the elements of the second period Li to Ne and pick out the element:

(i)with highest first ionization energy. (ii) that is most reactive non –metal

(iii) that is most reactive metal. (iv) with largest atomic radius

(v) with highest electronegativity

Q8. The first ionization enthalpy of B is less than that of C. On the other hand, the second ionization enthalpy of boron is very much higher than that of carbon. Explain.

Q9. What is the general electronic configuration of lanthanides and actinides? Why they are placed in separate rows at the bottom of periodic table?

Q10. (i) Arrange F, Cl, Br, I in increasing order of negative electron gain enthalpy. Also explain the reason of that arrangement.

(ii) Which is largest in size—Cu+, Cu2+, Cu and why?

(iii) Which element is more metallic - Mg or Al and why?

Q11. Account for the following:

(i) Mg has higher value of first ionization energy than Al atom.

(ii) The ionization energy of Na+ is higher than that of Ne although they have the same configuration. (iii) Electron gain enthalpy of O is less negative than that of S.

(iv) Mg+2 ion is smaller than O–2 ion although both have the same electronic structure.

Q12. Give reasons:

(i) Noble gases are less reactive.

(ii) First ionization energy of Mg is more than that of Na but second ionization energy of Mg is less than Na.

(iii) Ionization enthalpy of oxygen is less than N