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Page 1 of 1

General concept of elements and their properties

Q. What is meant by ionization energy? Why does it increase down the group?

A. What are the factors?

Ans. 1. Size of the atom increases down the group.

2. Attraction of nucleus decreases down the group.

3. Nuclear charge remains constant.

Ans. The general ratio of one half of the distance between nuclei of two covalently bonded atoms of the same element in a diatomic.

Q. Name the element having highest electron affinity.

A. Fluorine.

Q. Arrange F, Cl, Br and I in the order of increasing electron affinity.

Ans. I, Br, F, Cl.

Q. What is meant by electro negativity of an atom?

Ans. It is tendency of an atom or a molecule to attract the shared pair of electron to itself.

Q. Group the following species that are isoelectronic.

Ba^{2+} , F^- , Fe^{2+} , N^+ , He , S^{2-} , Ca^{2+} , Ar

Ans. $(\text{Ba}^{2+}, \text{Ar})$; $(\text{F}^-, \text{N}^+, \text{He})$; $(\text{Fe}^{2+}, \text{Ca}^{2+})$; $(\text{S}^{2-}, \text{Ar})$

Q. Which one has the larger size : P^{2-} or F^- ?

Ans. P^{2-} .

Q. State the modern periodic law.

Ans. Properties of elements are periodic functions of their atomic numbers.

Q. Name the element which is most electronegative, and the element which is least electronegative in the periodic chart.

Ans. Fluorine is the most electronegative ($\text{EN} = 4.0$) element.

Cesium is the least electronegative ($\text{EN} = 0.7$) element.

Q. Write the general outer electronic configurations of the following elements.

a) alkali metals b) alkaline earth metals

c) halogens d) noble gases

Ans. (a) alkali metals

$2s^2$

(b) alkaline earth metals

ns^2

(c) halogens

$ns^2 np^5$

(d) noble gases

$ns^2 np^6$