KUMAR ONLINE CLASS
CBSE(NCERT): CLASS X SCIENCE

CASE STUDY QUESTION 02

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CASE STUDY QUESTION 02

Read the following and answer any four questions from (i) to (v)

Metallic Character
The ability of an atom to donate electrons and form positive ion (cation) is known as electropositivity or metallic character. Down the group, metallic character increases due to increase in atomic size and across the period, from left to right electropositivity decreases due to decrease in atomic size.

Non-Metallic Character
The ability of an atom to accept electrons to form a negative ion (anion) is called non-metallic character or electronegativity. The elements having high electro-negativity have a higher tendency to gain electrons and form anion. Down the group, electronegativity decreases due to increase in atomic size and across the period, from left to right electronegativity increases due to decrease in atomic size.
(i) Which of the following correctly represents the decreasing order of metallic character of Alkali metals plotted in the graph?

(a) Cs > Rb > Li > Na > K
(b) K > Rb > Li > Na > Cs
(c) Cs > Rb > K > Na > Li
(d) Cs > K > Rb > Na > Li

As we move down the group atomic radius increases so the metallic character also increases. Hence the order is Li < Na < K < Rb < Cs.
(ii) Hydrogen is placed along with Alkali metals in the modern periodic table though it shows non-metallic character
(a) as Hydrogen has one electron & readily loses electron to form negative ion
(b) as Hydrogen can easily lose one electron like alkali metals to form positive ion
(c) as Hydrogen can gain one electron easily like Halogens to form negative ion
(d) as Hydrogen shows the properties of non-metals

(b) as Hydrogen can easily lose one electron like alkali metals to form positive ion
(iii) Which of the following has highest electronegativity?
(a) F  (b) Cl  (c) Br  (d) I

Electronegativity decreases down the group due to increase in atomic radius/tendency to gain electron decreases

(iv) Identify the reason for the gradual change in electronegativity in halogens down the group.
(a) Electronegativity increases down the group due to decrease in atomic size
(b) Electronegativity decreases down the group due to decrease in tendency to lose electrons
(c) Electronegativity decreases down the group due to increase in atomic radius/tendency to gain electron decreases
(d) Electronegativity increases down the group due to increase in forces of attractions between nucleus & valence electrons
(v) Which of the following reasons correctly justifies that “Fluorine (72pm) has a smaller atomic radius than Lithium (152pm)?”

(a) F and Li are in the same group. Atomic size increases down the group
(b) F and Li are in the same period. Atomic size increases across the period due to increase in number of shells
(c) F and Li are in the same group. Atomic size decreases down the group
(d) F and Li are in the same period and across the period atomic size/radius decreases from left to right.
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