Chemistry - 11th Class Chemistry Short Questions Chapter 6 Preparation

Q1. **The abnormality of bond length and bond strength in HI is less prominent than that of HCI. Give reason.**

Ans 1: Chlorine has higher electronegativity than iodine. So, the polarities of HCI and HI bonds are unequal. Therefore, abnormality of bond length and bond strength of HCI is more prominent than HI.

Q2.
Why the molecule of BF_3 is triangular planar?

Ans 1: 'B' has three electrons in the outermost orbitals. It promotes the electron from 2s orbital to one of the 2p orbitals. Boron undergoes sp^2' hybridization. Three sp^2 -hybridized orbitals lie in one plane and adjust themselves at angle of 120°. There F atom make three sigma bonds which lie in one plane. So, the molecule of BF_3 is planar.

Q3. **The bent structure of H_2O show that it should have a dipole moment.**

Ans 1:

Q4. **Why the ionization energies decrease down the group although the nuclear charges increase?**

Ans 1: When we go down the group, the number of shells increase and shielding effects also increase. These two factors decrease the force of attraction between the nucleus and the outermost electrons and is a cause of decreasing ionization energy.

Q5. **How shielding effect is thought to be one of the parameters for the variation of ionization potential in group and periods?**

Ans 1:

Greater the number of the inner electons, greater the shielding effect and lesser the I.E. values. In a period, the shielding effect remains the same from left to the right. So the I.E. value are not affected by this parameter. No doubt, other parameters affect it.

Q6. **Why CO_2 has linear structure?**

Ans 1: Carbon has four electros in the outermost orbitals. It makes two sigma and two pi-bonds with two oxygen atoms. It means that it has two double bonds. Caron has no lone pair in CO_2 is AB_2 type molecule having the linear structure.0=C=0.

Q7. **The melting points, boiling points, heat of vaporization and heat of sublimation of electrovalent compounds are higher as compared to those of covalent compounds. Why?**

Ans 1: Electrovalent or ionic compounds have high melting and boiling points due to the close packing of oppositely charged ions. The positively charged ions are surrounded by negatively charged ions and vice versa. That is why, they have very high melting points, boiling points, heat of

vaporizations and heats of sublimation.

Q8.

Why the atomic radii increase down the group?

Ans 1: The number of shells increase along with the increasing shielding effect down the group. These two factors are dominant in increasing the sizes. no doubt, the nuclear charges are increased, but this is not a dominant factor.

Q9.

Why the bond angles of H_2O and NH_3 are not 109.5° like that of CH_4, although O and N-atoms are sp^3 —hybridized?

Ans 1:

Like CH_4, the molecules of H_2O and NH_3 are also AB_4 type molecules. Carbon, oxygen and nitrogen atoms undergo sp^3 -hybridization. CH_4 is perfectly tetrahedral with the angle of 109.5°. In case of ammonia, there are three bond pairs and one lone pair. Lone pair-bond pair repulsion is greater than bond pair-bond pair repulsion. Due to this reason, angle reduces to 107.5° In case of H_2O, there are two lone pairs on oxygen. Due to this increased repulsion of two lone pairs, the angle further reduces to 104.5°

Q10. **Most of He elements of the periodic table attain the electronic configuration of inert gases during bond formation. Justify it.**

Ans 1: Inert gases are not reactive due to complete octet except He. Most of He s-and p-block elements may attain eight electrons in the outermost orbitals. They do so either by losing, gaining or sharing the electrons.
