

Chemistry - 11th Class Chemistry Short Questions Chapter 6 Preparation

Q1.

Solid sodium chloride does not conduct electricity, but, when electric current is passed through molten sodium chloride or its aqueous solution, electrolysis takes place. Give reason.

Ans 1: In solid, NaCI, the oppositely charged ions are fixed at their positions. So they do not conduct electricity in the solid state. In the molten state or solution state the ions are fixed at their positions.

Q2.

Why the molecule of BF3 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. How do you justify that all the bonds between I-A and II-A with VI-A and VII-A are not equally ionic?

Ans 1: The I.E. values of the I-A are less than II-A and the E.A. of VII-A are greater than VI-A. So, the bond between IA and VII-A should be ionic to a good extent. The bonds between II-A and VI-A should be poorly ionic. It means that all the above mentioned compounds are not equally ionic.

Q4. Dipole moment of CO₂ is zero but that of CO is 0.12 Debye. Why?

Ans 1: CO₂ is linear molecule and the two dipoles cancel the effect of each other. In CO there is a single dipole directed from carbon to oxygen and it not cancelled.

Q5.

Why the bond angles of H₂O and NH₃ are not 109.5° like that of CH₄, although O and N-atoms are sp³—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°

Q6. 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.
Q7. Why positively charged ions are mostly smaller in sizes than their neutral atoms?
Ans 1: By the removal of electrons the cloud of outermost orbitals becomes thin. In this way, the remaining electrons are accommodated in smaller space. The nuclei have better attractive forces for them, and so the size are decreased as compared to the neutral atoms.
Q8.
Ans 1:
Q9. How does the electronegativity difference decide the nature of ionic bond?
Ans 1: When the electronegativity difference between two bonded atoms is 1.7 or more than that, then the bond is said to be ionic, otherwise covalent. The % age of ionic character is more than 51% when the electronegativity difference is 1.7.
Q10. Why the electron affinities of II-A are less then those of I-A?
Ans 1: The elements of II-A have fulfilled outermost s-orbitals, so electron has to be accommodated in the higher orbitals. Their electron affinities are positive. The elements of I-A can accommodate incoming electron in partially filled s-orbital.