CBSE TEST PAPER-02

CLASS - XI CHEMISTRY (Chemical Bonding and Molecular Structure)

General Instruction:

- All questions are compulsory.
- Marks are given alongwith their questions.

1. Define an ionic bonding. [1]

2. What changes are observed in atoms undergoing ionic bonding? [2]

3. Mention the factors that influence the formation of an Ionic bond.[2]

4. Which one of the following has the highest bond order? N_2, N_2^+ or N_2^-. [1]

5. Define bond order. [1]

6. Give reason why H_2^+ ions are more stable than H_2^- though they have the same bond order. [2]

7. How would the bond lengths vary in the following species? C_2, C_2^- C_2^{2-}. [2]

8. What type of bond is formed when atoms have high difference of electronegativity?[1]

9. Out of covalent and hydrogen bonds, which is stronger. [2]

10. Define covalent radius. [2]

CBSE TEST PAPER-02

CLASS - XI CHEMISTRY (Chemical Bonding and Molecular Structure)

[Answer]

Ans1. An ionic bond (or electrovalent bond) is formed by a complete transfer of one or more of outer most electrons from the atom of a metal to that of a non – metal.

Ans2. Due to the electron transfer the following changes occurs –

i) Both the atoms acquire stable noble gas configuration.

ii) The atom that loses electrons becomes +vely charged called cation whereas that gains electrons becomes –vely charged called anion.

iii) Cation and anion are held together by the coulombic forces of attraction to form an ionic bond.

Ans3. Ionic bond formation mainly depends upon three factors –

i) Low ionization energy – elements with low ionization enthalpy have greater tendency to form an ionic bonds.

ii) High electron gain enthalpy – high negative value of electron gain enthalpy favours ionic bond.

iii) Lattice energy – high lattice energy value favours ionic bond formation.

Ans4. N_2 has the highest bond order.

Ans5. Bond order is defined as number of bonds between two atoms in a molecule.

Ans6. In H_2^- ion, one electron is present in anti bonding orbital due to which destabilizing effect is more and thus the stability is less than that of H_2^+ ion.

Ans7. The order of bond lengths in C_2 , C_2^- and C_2^{2-} is $C_2 > C_2^- > C_2^{2-}$.

Ans8. Electrovalent or ionic bond.

Ans9. Covalent bond.

Ans10. The covalent radius is measured approximately as the radius of an atom's core which is in contact with the core of an adjacent atom in a bonded situation.