

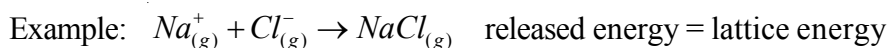
CLASS – X
PHYSICAL SCIENCE

1. Sugar and glucose, despite being covalent compounds, are soluble in water. Explain.

Ans. Covalent compounds like sugar and glucose, both contain several hydroxy groups. O-H bond in hydroxyl group is polar due to the difference in the electronegativities of O and H. On the other hand, water is a polar molecule. The negative, i.e., O end of the dipolar water molecule forms a weaker bond by electrostatic attraction with positive end, i.e., H end of O-H bond of the hydroxy group. As a result of this, solute-solvent interaction between sugar, or glucose with water occurs. This solute-solvent interaction leads to the solubility of sugar or glucose in water.

2. Ionic compounds usually show the tendency for lattice formation. Why?

Ans. Ionic compounds are formed by two different elements one of which is a metal and the other is a non-metal. Isolated ion pairs formed from isolated gaseous ions release less amount of energy, while more energy is released when billions of these ion pairs condense to form an ordered 3-dimensional array having definite geometrical shape in the crystal lattice. This energy released due to formation of lattice is called lattice energy. e.g.,



So, it is more stable than a system consisting of separate ion pairs in which there is only one cation-anion interaction in each pair. That is why ionic compounds show tendency for lattice formation.

3. Write down the differences between Ionic bond and Covalent bond.

Ans.

Ionic Bond	Covalent Bond
1. Formed by the transfer of one or more electron(s) from the valence shell of the metal to that of the non-metal.	1. Formed by two same or different elements by mutual sharing of electrons of their valence shells.
2. Non-directional in nature	2. Directional in nature
3. Formed by electrostatic force of attraction of oppositely charged ions, from all directions. Hence, it is not a true bond.	3. Formed by mutual sharing of electrons between two atoms of the same or different elements. Hence, it is a true bond.