Formation and function of molecules depending on chemical bonding

[FREQUENTLY ASKED QUESTIONS]

Subject	**:**	**Life Science**
Course	**:**	**B.Sc., 1st Year, Undergraduate**
Paper No. & Title	**:**	**Biology - I Chemical Content of Living System**
Topic No.	**:**	**4 (Four)**
Title	**:**	**Formation and Function of Molecules Depending on Chemical Bonding**

Credits

Subject Co-ordinator

Dr. M.V. Rao

Professor and Head,

Dept. of Zoology, Gujarat University,

Ahmedabad.

Subject Expert

Pooja Shah

Dhruvil Brahmbhatt

Dept. of Life Sciences,School of Sciences,

Gujarat University,Ahmedabad.

Presenter

Namrata Dave

Technical Assistant

Nandini joshi

Archna Patel

Video Editor

Akash Choudhary

Mukesh Soni

Multimedia

Gaurang Sondarva

Camera

Maqbool Chavda

Technician

Mukesh Soni

Floor Assistant

Hemant Upadhyay

Graphic Artist / Animator

Dilip Dave

Akash Choudhary

Helper

Govindsinh

Ishwar Maratha

Graphic Artists

Dilip Dave

Maulik N. Patel

Production Assistant & Editing Concept

Mukesh Soni

Producer

Dinesh Goswami

FREQUENTLY ASKED QUESTIONS

Q-1. What is a chemical bond? Name the different types of bonds.

A-1. The attractive forces which holds various constituents like atoms, ions, etc. together in different chemical species is called chemical bond. The different chemical bonds are: Ionic bond, Covalent bond, Co -ordinate covalent bond, Hydrogen bond and Van der Waals forces.

Q-2. What is a covalent bond? Give examples of compounds having a covalent bond.

A-2. A force which binds atoms of same or different elements by mutual sharing of electrons is called a covalent bond. E.g.: Phosphorous chloride (PCl_3) dichlorine (Cl_2), dioxygen (O_2), dinitrogen (N_2) molecules.

Q-3. What is a hydrogen bond?

A-3. Thus, hydrogen bond is defined as the electro static force of attraction which exists between the covalently bonded hydrogen of one molecule and the electro negative atom of the other molecule.

Q-4. What do you mean by dipole-induced dipole interactions?

A-4. When a permanent dipole induces a transient dipole in a nearby molecule by distorting its electron distribution it is known as dipole-induced dipole interactions.

Q-5. What do you mean by dipole moment?

A-5. Dipole moment can thus be defined as the product of magnitude of charge on any one of the atoms and the distance between them.

Q-6. Define the term electro negativity.

A-6. Electro negativity is defined as the tendency of an atom to attract the bonding or shared pair of electrons towards itself in a molecule.

Q-7. What are noble gases?

A-7. Any of the six gases: helium, neon, argon, krypton, xenon, and radon which belong to the 18^{th} group of the periodic tableare the noble gases. Because the outermost electron shell of atoms of these gases is full, they do not react chemically with other substances except under certain special conditions.

Q-8. What do you mean by a polar covalent bond?

A-8. When a covalent bond develops a partial ionic character as a result of the difference of electro negativities of the atoms comprising the bond, that bond is known as a polar covalent bond.

Q-9. Give any two properties of ionic compounds.

A-9. Ionic compounds generally have high melting and boiling points They are soluble in water and other polar solvents but they are insoluble in non-polar solvents.

Q-10. Sugar and honey are soluble in water. Give reason.

A-10. The molecules of sugar and honey can form H-bonds with water molecules and are hence soluble in water.

Q-11. How will you distinguish between an ionic bond and a covalent bond?

A-11. In ionic bond, the electrons are donated whereas in a covalent bond, sharing of electrons takes place.

Q-12. Why is an ionic bond more likely to form between a metal and a non-metal?

A-12. Ionic bond is formed by the transfer of one or more electrons from one atom to another. The metallic atom losses its valence electron while a non-metallic atom gains electrons, hence a bond forms between a metal and a non-metal.