

Chemical Bonding:

Summary:

- Chemical bonding is the attractive force which holds the atoms or ions together in a chemical species.
- Ion is an atom or group of atoms bounded to each other having positive or negative charge and can exist freely in solution. Molecule is an electrically neutral cluster of mutually bounded atoms.
- Cause of bounding is the tendency of the atoms of the various elements (1) to acquire the stable nearest noble gas configuration i.e., to complete their octet and (2) to acquire a state of minimum energy. Octet rule is the tendency of an atom of the elements to have eight electrons in its valence shell.
- Chemical bonds are mainly of three types: (a) Ionic or electrovalent bond (b)
- Ionic bond is the strong electrostatic forces of attraction between oppositely charged ions which hold them together. Electrovalence is the number of electrons lost or gained by an atom of the element during the formation of ionic bond. Ionic compounds are compounds which contain ionic bonds.
- Covalent bond: It is the bond formed by equal contribution and mutual sharing of electrons between two atoms. Covalency is the number of electrons contributed by an atom of the element for mutual sharing during the formation of a covalent bond. Covalent compounds are the compounds containing covalent bonds.
- Single, double and triple bonds are formed by mutual sharing of one, two and three electron pairs between two atoms. Bond pair of electrons is the pair of electrons shared between two atoms. Lone pair is the electron pair present on one atom which does not take part in sharing.
- Co-ordinate bond or dative bond: It is a special case of covalent bond formed between two atoms in which both the electrons are contributed

- (a) It loses electrons and is oxidised
- (b) it gains electrons and is reduced
- (c) it gains electrons and is oxidised
- (d) it loses electrons and is reduced

Ans. (1) B (2) A

26. Compare the compounds carbon tetrachloride and sodium chloride with regard to solubility in water and electrical conductivity.

Ans.	CCl_4	NaCl
• Solubility in water:	Insoluble in water	Soluble in water.
• Electrical conductivity:	Bad conductor of electricity.	Good conductor of Electricity in molten or aqueous state

27. Give suitable chemical term for the following :

A bond formed by a shared pair of electrons with both electrons coming from the same atom.

Ans. Coordinate bond.

28. Which of the following is not a typical property of an ionic compound?

- (a) High melting point
- (b) Conducts electricity in the molten and in the aqueous solution state.
- (c) They are insoluble in water.
- (d) They exist as oppositely charged ions even in the solid state.

Ans. c

29. Among the following compounds identify the compound that has all three bonds (ionic, covalent and coordinate bond).

- (a) Ammonia