Glossary

Chapter 4 Chemical bonding and Molecular structure

Chapter 6 Thermodynamics

Definitions:

Adiabatic Process is defined as the type of process in which there is no transfer of heat between the system and surroundings.

Bond Angle is defined as -the angle between the lines representing the orbitals containing the bonding electrons.

Bond Enthalpy is defined as the amount of energy required to break one mole of bonds of a particular type to separate them into gaseous atoms.

Bond length is defined as the equilibrium distance between the centres of the nuclei of the two bonded atoms.

Bond order is defined as the number of covalent bonds between two atoms in a molecule. It is also defined as the half difference between the number of electrons in bonding and antibonding molecular orbital.

Chemical Bond is defined as the force that holds different atoms in a molecule is called chemical bond.

Octet Rule is defined as the atoms of different elements take part in chemical combination in order to complete their octet or to attain the noble gas configuration.

Closed System is defined as the type of system in which no exchange of matter, but exchange of energy is possible between system and the surroundings.

Covalent bond is defined as the mutual contribution and sharing of electrons.

Dipole moment is defined as the product of magnitude of the positive or negative charge and the distance between the charges.

Enthalpy change ΔH is defined as the heat evolved or absorbed at constant pressure.

Enthalpy H is defined as total heat content of the system. It is equal to the sum of internal energy and pressure-volume work.

Entropy is defined as the maximum disorder in a system.

Extensive property is defined as the property whose value depends on the quantity or size of matter present in the system.

First Law of Thermodynamics is defined as the energy of an isolated system is constant and energy can neither be created nor be destroyed.

Formal Charge is defined as the charges can be assigned to individual atoms or ions and in polyatomic ions, the net charge is the charge on the ion as a whole and not by particular atom.

Free energy G is defined as the amount of energy available in a system that can be converted to useful work.

Hess's Law of Constant Heat Summation is defined as the enthalpy change of a chemical reaction is same in one step or several step.

Hybridisation is defined as the process of intermixing of atomic orbitals to form hybrid orbitals of equivalent energies and shape.

Hydrogen bond is defined as the partial positive charge develops on hydrogen atom which forms a bond with the other electronegative atom.

Intensive property is defined as the properties which do not depend upon the size of the matter or quantity of the matter present in the system.

Internal energy change ΔU is defined as the heat evolved or absorbed at constant volume.

Internal energy U is defined as the total energy in a system.

Ionic or Electrovalent bond is defined as the complete transfer of electrons from one atom to another.

Irreversible Process is defined as the type of process that cannot be reversed to return a system and its surrounding to their original state.

Isolated System is defined as the type of system in which no exchange of energy or matter between the system and the surroundings.

Lattice enthalpy of an ionic compound is defined as the enthalpy change which occurs when one mole of an ionic compound dissociates into its ions in gaseous state.

Non-spontaneous process is defined as the process which does not takes place itself or on its own but with the help of external agency.

Open System is defined as the type of system in which exchange of energy and matter between system and surroundings.

Pi (π bond) is defined as the sideways overlap of bonding orbitals perpendicular to the internuclear axis.

Reversible Process is defined as the type of process which proceeds infinitely slowly by a series of equilibrium states such that system and the surroundings are always in near equilibrium with each other.

Second Law of Thermodynamics is defined as the entropy of the universe increases for every spontaneous process,

Sigma bond (σ bond**)** is defined as the end-to-end overlap of bonding orbitals along the internuclear axis.

Spontaneous process is defined as the process in which natural tendency to occur without any external agency

Standard enthalpy of fusion $\Delta_{fus}H°$ is the enthalpy change that accompanies melting of one mole of a solid substance in standard state.

Standard enthalpy of sublimation $\Delta_{sub}H°$ is defined as the change in enthalpy when one mole of a solid substance sublimes at a constant temperature and under standard pressure (1bar).

Standard enthalpy of vaporization $\Delta_{vap}H°$ is defined as the amount of heat required to vaporize one mole of a liquid at constant temperature and under standard pressure (1bar).

Standard Molar Enthalpy of Formation $\Delta_fH°$ is the standard enthalpy change for the formation of one mole of a compound from its elements in their standard states.

Surrounding is defined as the everything else in the universe other than system.

S**ystem** in thermodynamics refers to that part of universe which is under observation.

Third Law of Thermodynamics is defined as the entropy of any pure crystalline substance approaches zero as the temperature approaches absolute zero.

Valence Shell Electron Pair Repulsion VSEPR Theory is defined as the simple theory based on repulsive character of electron pairs in the valence shell of the atoms. The exact shape of molecule depends upon the number of bond pairs and lone pairs around the central atoms.