

Department of Chemistry

Fundamental of Chemistry Certificate Course

Sr.No	Topic	Lectures (30L)
1.	States Of Matter: Gaseous state: Kinetic Theory of Gases, and deviation of kinetic gas equation, Deduction of gas laws such as Boyle's law, Charles's law, Graham's law of diffusion. Avogadro's principal, velocity of gas molecules, kinetic energy of translational motion. Dalton's law of partial pressure Liquid State- Properties of liquid, comparison between gaseous and solid state.	6L
2	Mole concept and oxidation – reduction: Determination of mole. Weight by gram molecular volume relationship ' Problems based on mole concept, normality, Molarity, Molality, Oxidation reduction –Definition to related terms, like oxidation, Reduction. Reducing agent, Oxidation number.	3L
3	Colligative properties: lowering of vapour pressure of solvent, elevation of boiling point, freezing point, lowering of solution , Osmosis and osmotic and vapour pressure, Van't Hoff equation for osmotic pressure . Electrolytes, Arrhenius theory for dissociation of electrolytes.	10L
4	Ionic equilibrium: Electrolytes conductance , Faraday's law of electrolysis, transference and transference number, Variation of conductance with concentration effect on infinite dilution and other factor on conductance, inter-ionic theory of conductance, conductometric titration, activity coefficient and their determination, Debye-Huckel theory of activity coefficients .ionization constants of weak acid s and bases. pH , buffer ,solubility products ,salt effect and solubility.	8L
5	Chemical Bonding:-Various theories, covalent, hydrogen bonding and other weak interactions Atomic chemistry-electromagnetism. Principles of oxidation-reduction	3L

Reference Books:

1. University General Chemistry, 1st edition (2000), C.N. Rao, Macmillan Publishers, India.
2. Principles Of Physical Chemistry, 4th edition (1965), S.H. Maron and C.F.pretton, Collier Macmillan Ltd
3. The element of Physical Chemistry, 5th edition (2009), AtkinP,de Paula j, W.H. Freeman Publication USA