

CHEM 101

General Chemistry

2cr.

No. of Lecture Hrs./Week: 3 + 1 (Contact Hour)

Total No. of Lecture Hrs.: 45

Mole Concept, Properties of solutions

Chemical Equilibrium: Introduction. Equilibrium constant. Factors affecting equilibrium. Le Chateliers' principle. Effect of change in temperature, pressure, concentration of the reactants and products, inter gas on some simple chemical reaction at equilibrium. Solubility product of sparingly soluble salts. Acids and bases, pH: Chemical equilibrium in acids and bases. Buffer solution. Acid-base titration and choice of suitable indicator.

Redox Reaction: Oxidation state, half reaction, Balancing the redox reaction. Redox titration.

Electrochemistry: Electromechanical equivalence Faradays law. Conductivity of electrolytes Arrhenius ionization theory; Dependence of conductivity upon the concentration and temperature. Activity and activity coefficient, Debye Hukel theory of ionic attraction, Application of conductivity measurements, Electrochemical cells. Reversible and irreversible cells, e.m.f. and its measurement, cell reaction and e.m.f. single electrode potential. Thermodynamics of electrode potential. Types of electrode and electrochemical cells (chemical cells and concentration cells)

Chemical Kinetics: Introduction, order and molecularity, rate constant, reactions of different orders, kinetics of parallel opposing and consecutive reactions, Kinetics and mechanics of some simple chemical reactions. Effect of temperature on reaction velocity, Qualitative approach to collision and activated state theory.

Catalysis: Homogeneous and heterogeneous catalysis. Mechanism of catalysis, Transition metals as catalysts. Enzymes catalysis, Catalytic poisoning.

Nuclear Chemistry: Natural radioactivity, Types of radioactivity, Rate of radioactive decay, Use of radioactive isotopes. Stability of nucleus binding energy. Nuclear reactions.

References: H. Mahan; University Chemistry by Narosa Publishing house.