

January 2024Inorganic Chem. — Acid & Bases, HSAB concept.

Aarhenius, Bronsted, Lowry, Lux Flood system &amp; Lewis concept, relative strength of Acid &amp; Bases

Organic Chem. — organic synthesis via Enolates.Acidity of  $\alpha$  hydrogens, alkylation of malonate and acetoacetate  
Claisen Condensation, keto-enol tautomerism in acetoacetatePhysical Chem. — Introduction to Statistical Mechanics

Need for statistical thermodynamics, probability, Maxwell Boltzmann distribution, Born Oppenheimer approximation, partition function its significance &amp; factorization of partition function

February 2024Inorganic Chem. — Organometallic chemistry — definition, nomenclature and classification, Preparation, properties, bonding of alkyls of Li, Hg & Sn, metal-ethylene complexes, carbonyl & nature of bonding in  $M(CO)_n$ Physical Chem. — Photochemistry — Interaction of radiation with matter, difference b/w thermal & chemical processes, Law of photochemistry, Jablonski diagram, quantum yield, photosensitized reaction, energy transfer processes, description of fluorescence, phosphorescence, internal conversion, ISC.Organic Chem. — Heterocyclic compounds — MO picture, characteristics of pyrrole, furan, thiophene, pyridine.



Classification of AA, isoelectric point, electrophoresis,

Preparation of  $\alpha$  amino acids

Structure & nomenclature of peptides & proteins -

classification, peptide structure, hydrolysis,

structure of proteins 1<sup>o</sup> & 2<sup>o</sup> st.

Physical Chem - solution, dilute sol<sup>n</sup> and colligative

properties - ideal & non ideal sol<sup>n</sup>, Raoult's

law, Colligative properties - relative lowering of VP

elevation in B.P., depression in freezing point,

Osmotic pressure, Thermodynamic relation b/w

amount of solute & elevation in B.P. & depression

in freezing point, Applications in calculating

molar mass of normal, dissociated and

associated solute in solutions.

May 2024

Revision work &  
numerical practice.

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