

Paper – I CHN-701(A) Analytical Chemistry

Unit :1

- A. Automated laboratory analysis, Continuous flow analysis & flow injection analysis, Sample conditioning, Automated process control.
- B. Spread sheet, its applications
- C. Basic concepts of electronics and computer. Analog and Digital signals counting and arithmetic operations with binary numbers - Basic digital circuit components, AC circuit, DC circuit- capacitors- semiconductors and semi conductor devices- Transistors- Transducers, Thermocouple-Transformed. Read out devices - Microprocessor and micro computers computer software - computer Network - Applications of computers in Analytical chemistry and their examples.

Unit :2

- A. Precipitation titrations : Introduction, feasibility of precipitation Titration, determination of end points in precipitation titrations Indicators for precipitation titrations involving silver, Mohr's method & Volhard method factors affecting the solubility of precipitations equilibria (solubility product) effect of acidity precipitates on solubility of precipitates post precipitation & coprecipitation.
- B. Complexometric titrations :- Introduction, formation constant or stability of complexes, Requirements of complexometric titrations, conditional stability constants Influence of pH on stability of complexes & basicity of Z - ion on complex formation. Titration curves Equilibria involved in EDTA titrations, Types of EDTA titrations, Indicators for EDTA titrations metal ion indicator - Applications of the complexometric titrations to analyte ores, drugs & foods..

Unit :3

Environmental Analysis :-

Hydrosphere :- Water resource, Physical chemistry of sea water, sea water modal.

Microorganism : The catalyst of aquatic chemical reactions.

Soil :- Composition of soil, water & air in soil. Organic & Inorganic J components in soil. Nitrogen & NPK in soil. Wastes & pollutants in soil.

Environmental toxicology & Toxic elements in water, pesticides in water, Impact of toxic chemicals on enzymes. Biochemical.

effect of pesticides. Instrumental techniques in Environmental chemical analysis.

Potable & sanitary water, Analytical

procedures for characterization of water, characterization & analyses of industrial waste water.

Unit :4

- A. Analysis of food :- General method for determination of water,Protein, total amino acids & fats, measurement of food contamination.
- B. Analysis of oil & Fat:- Acid value R.M value, P.V.value, saponification value,Iodine value, Ester value, Acetyl value, Titre value. Peroxide value, Ratio of saturated & unsaturated fatty acids, Thiocyanogen number, Detection of adulterants.
- C. Insecticide & Pesticide analyses : - ISI specifications & Analysis of BHC, DDT, Malathion.