

Paper – 1 CHN-601(A) Analytical Chemistry

Unit -1

Basic concepts of classical methods :

Scope of Analytical chemistry (Introduction, Application & its importance). Classical methods & Instrumental methods, methods of quantitative analyses & qualitative analyses. Analytical methodology (steps of total analyses process). Sampling, treatment of analytical data, sources of error, Deviation (average deviation & standard deviation), absolute error & accuracy. F test.

't' test, analysis of variation, rejection of a result 2D, 4D, Q test, linear least squares method, correlation coefficient.

Unit – 2

HPLC principles, instrumentation & applications. Super critical fluid chromatography.

Unit – 3

Non-aqueous acid – base titration : role of solvent in acid – base titration, properties of a solvent, autoprotolysis constant, dielectric constant, redox titrations, feasibility of redox titrations, redox indicators, Iodometric & Iodimetric determinations, Industrial applications of aqueous & Non-aqueous titrations.

Unit – 4

Environmental Chemistry :

Environment concept & scope of analytical chemistry. Environmental segments & the natural cycles. Atmosphere structure, particulate ions & radical in atmosphere, green house effect, ozone hole.

Industrial pollution : waste management, Methodologies, Techniques available & new approaches, Water analyses, collection of samples, Determination of hardness, alkalinity, DO, BOD, COD, chloride, sulfate and nitrate – nitrite.