

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B.PHARM SEMESTER-I

### PHARMACEUTICAL ANALYSIS-I

Subject code: 2210003

*Theory (4 Hours / Week; 4 Credits, 60 Hours)*

Sr. No.	Course Contents	Hours
1.	<b>Basics of drugs and formulation analysis :</b> Weights, balances, importance of analysis, quality control and quality assurance, analytical methods (classification, validation parameters), requirements – chemicals (types, purification, checking purity), glass wares (types, calibration, cleaning), sampling techniques, sampling error minimization. Units of concentrations. Errors science, errors minimization.	6
2.	<b>Volumetric analysis (Titrimetric analysis)</b>	
2.1	<b>Acid-base titrations:</b> Relative strength and its effect on titration, common ion effect, pH, Henderson-Hasselbach equation, buffers, neutralization curve, acid bas indicators, theory of indicators, back titrations, biphasic titrations, pharmacopoeial applications, hydrolysis of salts, ionic products of water and law of mass action.	15
2.2	<b>Redox titrations :</b> Theory of redox titrations, redox indicators, types of redox titrations, iodometry, cerrymetry, mercury metry, diazotization nitrite titrations, 2,6-dichlorophenol indophenol titrations, titration curve and calculations of potentials during course of titrations.	12
2.3	<b>Argentometric or precipitation titrations :</b> Mohrs, Fajans and Volhard methods	6
2.4	<b>Nonaqueous titrations :</b> Nonaqueous solvents, titrants and indicators. Differentiating and leveling solvents.	5
2.5	<b>Complexometric titrations :</b> Theory of the titrations, titrant, indicators and pharmacopoeial applications.	6
2.6	<b>Miscellaneous titrations :</b> Karl-Fischer titrations, Kjeldahl method.	3
3.	<b>Gravimetric analysis :</b> Stability, solubility products, types of precipitations, precipitation techniques, pharmacopoeial applications	7

**PHARMACEUTICAL ANALYSIS-I**  
**B.PHARM SEMESTER-I**  
**Subject code: 22100P3**  
*Practicals (3 hours/week, 3 credits, 45 hours)*

Sr. No.	Course Contents
1	Acid-base titrations Simple, back titrations, titrations of mixtures like NaOH+Na <sub>2</sub> CO <sub>3</sub> , borax + boric acid.
2	Redox titrations Simple, iodometry, cerimetry, 2,6-dichlorophenol-indophenol titrations, mixtures like Fe <sup>2+</sup> + Fe <sup>3+</sup> , oxalic acid + sodium oxalate
3	Complexometric titrations Replacement, back titrations
4	Nonaqueous titrations
5	Argentometric titrations
6	Gravimetric assay of one pharmacopoeial drug
7	Calibrations/cleaning of glasswares and checking precision and lower limit of quantitation of titrimetric methods.

**Books recommended:**

1. Pharmacopoeia: USP, B.P., I.P.
2. Practical Pharm. Chemistry, Vol. I – Backett, The athlone Press of University of London.
3. Fundamentals of Analytical Chemistry – Skoog, Harcourt College Publishers.
4. Quantitative chemical analysis – Vogel A. I., Pearson Education.
5. Text Book of Pharmaceutical Analysis – K. A. Connor, John Willey & Sons, New York.
6. Quantitative Chemical Analysis – Ayer by Harper & Row, New York.