

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Physical Chemistry)
Semester: III
Syllabus with Effect from: June - 2013

Paper Code: PS03ECHE05	Total Credit: 4
Title Of Paper: Separation Methods	

Unit	Description in detail	Weightage (%)
I	Adsorption & Partition Chromatography: History, Classification, Principles, Experimental, Factors affecting Column efficiency, Column Chromatography, Thin layer Chromatography, Liquid-liquid Chromatography, Reverse phase Chromatography, Paper Chromatography applications.	25%
II	Solvent Extraction: Principles, Mechanism of Extraction, Factors favoring solvent extraction, Quantitative treatment of Solvent Extraction, Equilibrium techniques of extraction, Advantages, Applications. Supercritical Fluid Chromatography and Extraction: Principle, Mechanism, Instrumentation of SFC and SFE, Applications.	25%
III	Gas Chromatography : Principle, Theory and Instrumentation, Solid/Liquid Stationary phases, Column types, Detectors, Zone-broadening, Van-Deemter equation, factors affecting on Column efficiency, Plate theory, Rate theory, Applications. High Performance Liquid Chromatography (HPLC): Principle, Instrumentation, Applications. Chiral Chromatography: Stationary phases, mobile phase and Column types, Applications	25%
IV	Ion Exchange Chromatography: Ion Exchangers, Ion-exchange mechanism, Applications. Size Exclusion Chromatography (GPC): Principle, Separation mechanism, Methods of Calibration, Applications. Electrophoresis: Principle, Reverse Osmosis, Electro dialysis, Zone Electrophoresis, Curtain Electrophoresis, Capillary Electrophoresis, Applications.	25%

Basic Text & Reference Books:-

- Principles of Instrumental Analysis, 6th Edition 2006, by Douglas A. Skoog, F. James Holler, Timothy A. Nieman.
- Instrumental Methods of Analysis, 6th Edition, by Willard, Merritt, Dean, Settle, CBS Publishers and Distributors.
- Contemporary Chemical Analysis, by J. F. Rubinson and K. A. Rubinson, Princtice-Hall International Inc. 1998.
- Introduction to Instrumental Analysis, by Robert D. Braun, McGraw-Hill Book company, New Delhi.
- Instrumental Methods of Chemical Analysis, 24th Edition 2005, by B. K. Sarma, Goel Publishing House, Meerut.
- Thinlayer Chromatography, A Laboratory Handbook, 1st Edition (2005), by Egon Stahl, Springer (India) Pvt. Ltd. New Delhi

