

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

<b>Paper Code: PS03ECHE05</b>	<b>Total Credit: 4</b>
<b>Title Of Paper: Separation Methods</b>	

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

**Basic Text & Reference Books:-**

- Principles of Instrumental Analysis, 6<sup>th</sup> Edition 2006, by Douglas A. Skoog, F. James Holler, Timothy A. Nieman.
- Instrumental Methods of Analysis, 6<sup>th</sup> 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, 24<sup>th</sup> Edition 2005, by B. K. Sarma, Goel Publishing House, Meerut.
- Thinlayer Chromatography, A Laboratory Handbook, 1<sup>st</sup> Edition (2005), by Egon Stahl, Springer (India) Pvt. Ltd. New Delhi

