

**M.Sc. Semester -IV**  
**Physical Chemistry (S.E)**  
**CHN-705(A)-P**  
**Paper-V**

**Unit: 1:** **50% (15 Hours)**

**(A) High performance (Pressure) liquid Chromatography**

Introduction, Principle, Instrumentation, Apparatus and Materials, Column efficiency and selectivity, Comparison of High-performance liquid chromatography and Gas Liquid chromatography, Applications, HPLC adsorption Chromatography, HPLC partition chromatography

**(B) Adsorption Chromatography**

Introduction, Theory, Adsorbents, Solvents, Procedure, Differences between Adsorption and gas liquid chromatography, Limitations, Applications of Adsorption chromatography

**Unit:2** **50% (15 Hours)**

**(A) Column Chromatography**

Introduction, Principle, Experimental details, Theory of development  
Column efficiency, Factors affecting column efficiency, Applications of Column chromatography

**(B) Gel Chromatography or Gel Permeation Chromatography**

Introduction, Principle, Materials, Gel preparation, Column packing and detectors, Applications, Advantage of Gel chromatography

**(C) Ion Exchange Chromatography**

Introduction, Definition, Principle, Cation exchangers, Anion exchangers, Regeneration, Ion exchange Column used in chromatographic separations, Selections of suitable systems, Ion exchange capacity, Ion exchange techniques, Application of ion exchangers

**Book:**

1. Instrumental Methods of Chemical Analysis by Gurdeep R Chatwal, Sham K Anand Himalaya Publishing House.