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

Paper Code: PS03CINC01	**Total Credit: 4**
Title Of Paper: Spectroscopy - I	

Unit	Description in detail	Weightage (%)
I	**Atomic Absorption/Atomic and Flame Emission Spectroscopy:** Absorption of radiation by atoms; equipment: radiation sources (Hollow cathode lamps and electrode less discharge lamps); atomizers (Flame and carbon); wavelength selector and detectors; interferences in atomic absorption spectroscopy; applications and problems: qualitative and quantitative analysis. Introduction to plasma, arc and spark emission spectroscopy; equipment: inductively coupled plasma spectrometer and flame photometer; applications and problems.	25%
II	**Molecular Luminescence Spectroscopy:** Introduction to molecular luminescence (fluorescence, phosphorescence and chemiluminescence); theory of luminescence; instruments for measuring fluorescence (fluorometer and spectrofluorometer); application and problems.	25%
III	**Electron Spectroscopy:** Introduction to electron spectroscopy (ESCA Auger and UPS); principle and theory of ESCA;instrumentation; chemical shifts, satellite peaks and spectral splitting; application and problems. Principle and electron transition of Auger electron spectroscopy; equipment; applications and problems.	25%
IV	**Microscopic Techniques:** Introduction to scanning electron microscopy (SEM), Scanning tunneling microscopy (STM) and atomic force microscopy (AFM); basic principles and theory; instrumentation and operating parameters and applications.	25%

Basic Text & Reference Books:-

- Principles of Instrumental Analysis, by Skoog, Holler and Neiman, Sunders College Publishers (USA).
- Undergraduate Instrumental Analysis, by James W. Robinson, Marcel Dekker, Inc. (Ny.)
- Introduction to Instrumental Analysis, by Robert D. Braun, Pharme Med Press Hyderabad- India.
- Instrumental Method of Analysis, Willard, Merritt, Jr., Dean and Settle Jr., CBS Publishers and distributors, New Delhi, India.
- Microscopic and Spectroscopic Imaging of the Chemical State, Michael D. Morris, Marcel Dekker, Inc. (NY.).
- Instrumental Methods of Chemical Analysis, 24th Edition 2005, by B. K. Sarma, Goel Publishing House, Meerut.