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

Paper Code: PS03CNST03	**Total Credit: 4**
Title Of Paper: Modern Characterisation Techniques	

Unit	Description in detail	Weightage (%)
I	Production and detection of X-rays, Bragg law, x-ray diffraction techniques, Methods of sample preparation and x-ray diffraction, low angle scattering, Applications of XRD for evaluation of structure of polycrystalline aggregates, grain size, particle size, crystal quality, crystal orientation, texture. X-ray spectroscopy, absorption and fluorescence, chemical analysis by x-ray spectrometry, spectrometers.	25%
II	Optical properties of nanomaterials	25%
III	Principle, Operation and Applications of SEM, TEM, HRTEM	25%
IV	Principle, Operation and Applications of STM and AFM DTA, TGA, DSC of materials, thermal expansion and thermal conductivity of nanomaterials	25%

Basic Text & Reference Books:-

- Elements of X-ray diffraction – B.D. Cullity.
- Materials Characterization – Volume 10, ASM Handbook –Ruth E. Whan
- Handbook of nanostructured Materials and Nanotechnology- H.S.Nalwa (Ed.)
- Academic Press.
- Modern physical techniques in materials technology – T. Mulvey and
- R.K. Webster.
- Characterization and Chemical Analysis by Sibilia John.