

Mother Teresa Women's University, Kodaikanal

Department of Physics

INSTRUMENTATION (Common Paper)

UNIT 1 ULTRAVIOLET AND VISIBLE SPECTROMETRY

Radiation Sources-Wavelength Selection-Cells and Sampling Devices-Detectors-Readout Modules-Instruments for Absorption Photometry

UNIT 2 X-RAY METHODS

Production Of X-Rays & X-Ray Spectra-Instrumentation-Direct X Ray Methods- X Ray Absorption Methods-X Ray Fluorescence Methods X Ray Diffraction.

UNIT 3 RAMAN AND INFRAFED SPECTROMETRY

Theory-Instrumentation-Sample Handling and Illumination-Structural Analysis-Polarization Measurements-Quantitative Analysis-Comparison of Raman and Infrared Spectroscopy.

UNIT 4 TRANSMISSION ELECTRON MICROSCOPY & SCANNING ELECTRON MICROSCOPY

Introduction-Background-Components-Imaging Methods-Sample Preparation-Modifications-Limitations-SEM Principles & Capacities, Scanning Process & Image Formation-Resolution of SEM-Environmental SEM

UNIT 5 ATOMIC FORCE MICROSCOPY

Basic Principles-Imaging Modes –Contact and Noncontact Mode-AFM Cantilever Deflection Measurements-Beam Deflection Measurements-Force Spectroscopy-Biological Applications-Identification of Individual Surface Atoms-Advantages & Disadvantages

UNIT – 5a.

Plagiarism – Definition – History of Plagiarism – Key to avoid Plagiarism – Different forms of Plagiarism – Intentional – Unintentional – Non – Attribution – accidental – Common Plagiarism Problems – Six ways to avoid plagiarism in Research Report – Paraphrase – cite – Quoting – Citing Quotes – Citing one's own material – Referencing – Plagiarism checker services – Softwares – write check – VAIIL Tutor Tool – Plagiarism Test – Pen and Paper plagiarism Knowledge Test – etc. UGC Public notice dated 01.09.2017

Book for study

1. Instrumental method of analysis – Willard, Dean, Merritt, Settle
2. Principles of instrumental analysis - Skoog, Holler, Niemann