

Syllabus for the Written Test under MFCP for the Post of

Technical Assistant (Instruments) A to B

(Division of Biophotonics and Imaging, Biomedical Technology wing, SCTIMST)

UV-VIS spectroscopy

Interaction of light with matter, Electromagnetic spectrum, Absorption, emission, and scattering of light, Elastic vs Inelastic scattering, Electromagnetic radiations and their interaction with the material, UV-VIS spectroscopy Principle and Instrumentation

Infrared Spectroscopy

Principle and Instrumentation of Fourier Transform Infrared Spectroscopy (FTIR), Sample Preparation and measurement, Interpretation of FTIR Spectra, Attenuated Total Reflectance (ATR-FTIR)

Fluorescence Spectroscopy

Types of luminescence, Basic principle of fluorescence, Absorption and emission processes, Fluorescence lifetime, Stokes shift, fluorescence spectrophotometer, Excitation and emission spectra, Interpretation of fluorescence spectra

Raman Spectroscopy

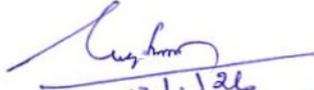
Basic principle of Raman scattering, Rayleigh scattering vs Raman scattering, Stokes and Anti-Stokes lines, Instrumentation of Raman Spectroscopy, Sample Preparation and Measurement Techniques.

Sensors

Difference between sensors and transducer, Classification of sensors, Biosensor, Nano sensors, Characteristics of sensors, Signal conditioning of a sensor, Data Acquisition Systems

Nano Materials

Introduction to Nanomaterials, Size scale in nanoscience, Properties of nanomaterials, Carbon-based nanomaterials, Metal nanoparticles, Characterization Techniques - Electron Microscopy and Spectroscopic techniques, Photodynamic (PDT) and Photothermal (PTT) therapy.


13/1/26
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