### DEPARTMENT OF CHEMISTRY

## PROPOSAL FOR CERTIFICATE COURSE

# Title of the Certificate Course : An introduction to Spectroscopy.

Course Co-ordinator: Dr. Bhavana D Patil

Faculty: Mrs. Manasi M. Barve

## Dr. Suman Tripathi

Duration of the Course : Ten weeks (Total No of Lectures 30 Lectures-30 hours)

Fee structure: Free for students.

Honorarium to be paid to Resource Persons - Bs 5 000

Syllabus :

#### Unit I

## Introduction to Spectroscopy :

Electromagnetic spectrum, units of wavelength and frequency, Types of Spectroscopy.

Vibration spectra, Rotation spectra, Interaction of electromagnetic radiation with matter.

Unit II

### UV - Visible spectroscopy:

Basic Principle of UV Visible spectroscopy,

Nature of UV-Visible spectrum,

Chromophore, Auxochrome, Chromophore-Chromophore and Chromophore-Auxochrome Interactions. Examples with spectral details

#### Unit III

#### Mass spectrometry:

Basic theory- Nature of mass spectrum

Dempsters Mass Spectrometer, Bainbridges Mass Spectrograph,

General rules of fragmentation

isotopic peaks, base peak, nitrogen rule, rule of 13 for determination of empirical formula and molecular formula.

Fragmentation of alkanes and aliphatic carbonyl compounds.

#### Unit IV

### Atomic Absorption Spectroscopy --

Basic Principle of Atomic Absorption Spectroscopy,

Instrumentation (Source, Chopper, Flame and Electrothermal Atomiser) Applications of AAS





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