



SPECTROSCOPY

UNIT 5



Spectroscopy



It deals with the study of interaction of electromagnetic radiation with the matter. During the interaction, the energy is absorbed or emitted by the matter. The measurement of this radiation frequency (absorbed or emitted) is the basis of spectroscopy.

TYPES OF SPECTROSCOPY

1. Atomic spectroscopy

It deals with the interaction of the electromagnetic radiation with atoms. During which the atoms absorb radiation and gets excited from the ground state electronic energy level to another.

2. Molecular spectroscopy

It deals with the interaction of electromagnetic radiation with molecules. This results in transition between rotational, vibration and electronic energy levels



ABSORPTION SPECTRUM & EMISSION SPECTRUM:

Absorption Spectrum

When a beam of electromagnetic radiation is allowed to fall on a molecule in the ground state, the molecule absorbs photon of energy $h\nu$ and undergoes a transition from the lower energy level to the higher energy level. The measurement of this decrease in the intensity of radiation transmitted is the basis of absorption spectroscopy. The spectrum thus obtained is called the absorption spectrum.

Emission spectrum

If the molecule comes down from the excited state to the ground state with the emission of photons of energy $h\nu$, the spectrum obtained is called emission spectrum.