

# Syllabus

## PANJAB UNIVERSITY, CHANDIGARH B.Sc. Part-II

### SEMESTER-IV

#### PAPER - C QUANTUM PHYSICS - II

#### UNIT-I

##### *One Electron Atomic Spectra :*

- (i) Interaction with radiation, transition probability, spontaneous transition, selection rules and life times.
- (ii) Spectrum of hydrogen atom, fine structure, normal Zeeman effect, electron spin, Stern-Gerlach experiment, spin orbit coupling electron magnetic moment, total angular momentum, Hyperfine structure examples of one electron system, Anomalous Zeeman effect, Lande-g factor (sodium D-lines). Stark effect.

#### UNIT - II

##### *Many Electron System Spectra :*

- (i) Exchange symmetry of wave functions, exclusion principle, shells, subshells in atoms, atomic spectra (Helium), LS coupling, JJ coupling, selection rules, regularities in atomic spectra.
- (ii) X-ray spectra, Moseley law, absorption spectra, Auger effect.
- (iii) Molecular bonding, molecular spectra, selection rules, symmetric structures, rotational, vibrational electronic level and spectra of molecules, magnetic resonance experiments, Raman spectra.