

Lesson Plan

Name of College : Government College for Women, Shahzadpur (Ambala)

Academic Session : April-July (2021-22)


Class : B.Sc. 6th Semester Non-Med (4-6) Days

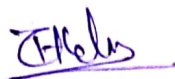
Paper : Atomic and Molecular Spectroscopy (PH-602)

Teacher's Name: Dr. Raj Kumari

Month	Dates	Topic to be covered	Academic/ Activity to be organized	Assignments/ Tests
April	1-2	Unit – I: Historical background of atomic spectroscopy Introduction of early observations, emission and absorption spectra		
	7-9	atomic spectra, wave number spectrum of Hydrogen atom in Balmer series		
	14-16	Bohr atomic model (Bohr's postulates), spectra of Hydrogen atom, explanation of spectral series in Hydrogen atom		
	21-23	un-quantized states and continuous spectra spectral series in absorption spectra, effect of nuclear motion on line spectra (correction of finite nuclear mass)		
	28-30	variation in Rydberg constant due to finite mass, shortcomings of Bohr's theory Wilson Sommerfeld quantization rule, de-Broglie interpretation of Bohr quantization law Bohr's corresponding principle, Sommerfeld's extension of Bohr's model		Assignment I
May	5-7	Sommerfeld relativistic correction, Shortcomings of Bohr-Sommerfeld theory Vector atom model; space quantization, electron spin, coupling of orbital and spin angular momentum, spectroscopic terms and their notation quantum numbers associated with vector atom model, transition probability and selection rules		
	12-14	Unit –II: Vector Atom Model (single valance electron) Orbital magnetic dipole moment (Bohr magneton), behavior of magnetic dipole in external magnetic field; Larmors' precession and theorem	Declamation Contest	

	19-21	Penetrating and Non-penetrating orbits, Penetrating orbits on the classical model Quantum defect, spin orbit interaction energy of the single valance electron, spin orbit interaction for penetrating and non-penetrating orbit		
	26-28	quantum mechanical relativity correction Hydrogen fine spectra, Main features of Alkali Spectra		Assignment II
June	2-4	Rydberg-Ritz combination principle, Absorption spectra of Alkali atoms observed doublet fine structure in the spectra of alkali metals and its Interpretation, Intensity rules for doublets, comparison of Alkali spectra and Hydrogen spectrum		Test I
	9-11	UNIT-III: Vector Atom model (two valance electrons) Essential features of spectra of Alkaline-earth elements Vector model for two valance electron atom: application of spectra		
	16-18	Coupling Schemes;LS or Russell – Saunders Coupling Scheme and JJ coupling scheme		
	23-25, 30	Two valance electron system-spectral terms of non-equivalent and equivalent electrons, comparison of spectral terms in L-S And J-J coupling		Test II
July	1-2	Hyperfine structure of spectral lines and its origin; isotope effect, nuclear spin	Seminar by students	
	7-9	Unit –IV: Atom in External Field Zeeman Effect (normal and Anomalous), Experimental set-up for studying Zeeman effect,		
	14-16	Explanation of normal Zeeman effect (classical and quantum mechanical)		
	21-23	Paschen-Back effect of a single valance electron system. Weak field Stark effect of Hydrogen atom,		
	28-30	Raman Spectra Doubts/Querries		Revision Test


Teacher's Sign


HOD
(Dr. Raj Kumar)

Principal