Lesson Plan

Name of the Asstt. Prof.:- Mrs. Nidhi Sharma
Class and Section:B.Sc. (6thsem)
Subject:-Physics(Atomic and Molecular Spectroscopy)

Jan2018

Week	Date	Day	Topics
1	4-Jan-18	Day 4	Introduction of **Unit-1**(historical background of atomic spectroscopy)
	5-Jan-18	Day 5	Emission and absorption spectra, wave number, spectrum of hydrogen atom in balmer series
	6-Jan-18	Day 6	Bohr's atomic model(bohr's postulates), spectra of hydrogen atom
2	11-Jan-18	Day 4	explanation of spectral series in Hydrogen atom, un-quantized states and continuous spectra, spectral series in absorption spectra.(numerical practice)
	12-Jan-18	Day 5	effect of nuclear motion on line spectra (correction of finite nuclear mass), variation in Rydberg constant due to finite mass,
	13-Jan-18	Day 6	short comings of Bohr's theory, Wilson sommerfeld quantization rule, de-Broglie interpretation of Bohr quantization law
3	18-Jan-18	Day 4	Bohr's corresponding principle, Sommerfeld's extension of Bohr's model, Sommerfeld relativistic correction
	19-Jan-18	Day 5	Short comings of Bohr-Sommerfeld theory, Vector atom model(V.A.M.)space quantization, electron spin,transition probability and selection rules.
	20-Jan-18	Day 6	coupling of orbital and spin angular momentum, spectroscopic terms and their notation, quantum numbers associated with V.A.M
4	25-Jan-18	Day 4	Doubts and problem class of unit-1, announcement of test
	26-Jan-18	Republic Day	holiday
	27-Jan-18	Day 6	Test of unit-1

Feb 2018

Week	Date	Day	Topics
1	1-Feb-18	Day 4	**Unit –II: Vector Atom Model (single valance electron)** Orbital magnetic dipole moment (Bohr magneton), behavior of magnetic dipole in external magnetic filed; Larmors' precession and theorem.
	2-Feb-18	Day 5	Penetrating and Non-penetrating orbits, Penetrating orbits on the classical model; Quantum defect
	3-Feb-18	Day 6	spin orbit interaction energy of the single valance electron, spin orbit interaction for penetrating and non-penetrating orbits.

2	8-Feb-18	Day 4	quantum mechanical relativity correction, Hydrogen fine spectra, Main features of Alkali Spectra and their theoretical interpretation, term series and limits
	9-Feb-18	Day 5	Absorption spectra of Alkali atoms. observed doublet fine structure in the spectra of alkali metals and its Interpretation
	10-Feb-18	Maharishi Dayanand Jayanti	holiday
3	15-Feb-18	Day 4	Rydeburg-Ritze combination principle, Intensity rules for doublets, comparison of Alkali spectra and Hydrogen spectrum .
	16-Feb-18	Day 5	Doubts and problems discussion class
	17-Feb-18	Day 6	Assignment of unit -2
4	22-Feb-18	Day 4	**UNIT-III: Vector Atom model (two valance electrons)** Essential features of spectra of Alkaline-earth elements, V.M. for two valance e- atom: application of spectra.
	23-Feb-18	Day 5	Coupling Schemes;LS or Russell – Saunders Coupling Scheme and JJ coupling scheme, Interaction energy in L-S coupling
	24-Feb-18	Day 6	Interaction energy in L-S coupling (sp, pd configuration), Lande interval rule

March 2018

Week	Date	Day	Topics
1	1-Mar-18	Guru Ravidas Birthday	holiday
	2-Mar-18	Holi	holiday
	3-Mar-18	holiday	holiday
2	8-Mar-18	Day 4	Pauli principal and periodic classification of the elements. Interaction energy in JJ Coupling
	9-Mar-18	Day 5	Interaction energy in JJ Coupling (sp, pd configuration)
	10-Mar-18	Day 6	equivalent and non-equivalent electrons, Two valance electron system-spectral terms of non-equivalent and equivalent electrons,
3	15-Mar-18	Day 4	comparison of spectral terms in L-S And J-J coupling. Hyperfine structure of spectral lines and its origin; isotope effect, nuclear spin
	16-Mar-18	Day 5	Doubts of unit-3
	17-Mar-18	Day 6	Test of unit-3

4	22-Mar-18	Day 4	**Unit –IV: Atom in External Field** Zeeman Effect (normal and Anomalous)
	23-Mar-18	ShaheediDiwas of Bhagat Singh, Rajguru& Sukhdev	holiday
	24-Mar-18	Day 6	Experimental set-up for studying Zeeman effect, Classical Explanation of normal Zeeman effect
5	29-Mar-18	Mahavir Jayanti	holiday
	30-Mar-18	Day 5	Q.M.Explanation of normal Zeeman effect, introduction of anomalous Zeeman effect
	31-Mar-18	Day 6	Explanation of anomalous Zeeman effect(Lande g-factor)

April 2018

Week	Date	Day	Topics
1	5-Apr-18	Day 4	Zeeman pattern of D1 and D2 lines of Naatom,Paschen-Back effect of a single valence electron system.
	6-Apr-18	Day 5	Weak field Stark effect of Hydrogen atom. **Molecular Physics** , introduction
	7-Apr-18	Day 6	General Considerations, Electronic States of Diatomic Molecules, Rotational Spectra
2	12-Apr-18	Day 4	Rotational model(IR and Microwave Region), Vibrational Spectra (IR Region)
	13-Apr-18	Day 5	Rotator Model of Diatomic Molecule, Raman Effect and electronic spectra
	14-Apr-18	Dr Ambedkar Jayanti / Vaisakhi	
3	19-Apr-18	Day 4	Raman Effect (classical and quantum explanation)
	20-Apr-18	Day 5	Electronic spectra(numerical practice)
	21-Apr-18	Day 6	Problems /revision related to unit-1
	26-Apr-18	Day 4	Problems /revision related to unit-2
	27-Apr-18	Day 5	Problems /revision related to unit-3

	28-Apr-18	Day 6	Problems /revision related to unit-4