Lesson Plan

Name of the Associate Professor- Ms Ankita
Subject- Physics

Lesson Plan- 17 Weeks (January-April 2018)

Week	Date	Class B.Sc.-III YR(Sec-E) Atomic and molecular physics	Class B.SC.-II YEAR (Sec-C) statistical physics
1.	1-Jan-18	Introduction of early observations, emission and absorption spectra, atomic spectra	
	2-Jan-18	Wave number, spectrum of Hydrogen atom in Balmer series, Bohr atomic model(Bohr's postulates	
	3-Jan-18	spectra of Hydrogen atom , explanation of spectral series in Hydrogen atom, un-quantized states and continuous spectra	
	4-Jan-18		Introduction to Statistical Physics
	5-Jan-18	Holiday	
	6-Jan-18		Microscopic and Macroscopic systems, events-mutually exclusive
	7-Jan-18	Sunday	
2.	8-Jan-18	spectral series in absorption spectra, effect of nuclear motion on line spectra (correction of finite nuclear mass)	
	9-Jan-18	variation in Rydberg constant due to finite mass, short comings of Bohr's theory	
	10-Jan-18	Wilson sommerfeld quantization rule, de-Broglie interpretation of Bohr quantization law, Bohr's corresponding principle	
	11-Jan-18		Dependent and independent. Probability, statistical probability
	12-Jan-18		A- priori Probability and relation between them, probability theorems
	13-Jan-18		Some probability considerations, combinations possessing maximum probability, combination possessing minimum probability
	14-Jan-18	Sunday	
3.	15-Jan-18	Sommerfeld's extension of Bohr's model, Sommerfeld relativistic correction, Short comings of Bohr-Sommerfeld theory	
	16-Jan-18	Vector atom model; space quantization, electron spin, coupling of orbital and spin angular momentum	
	17-Jan-18	spectroscopic terms and their notation, quantum numbers	

		associated with vector atom model,	
	18-Jan-18		Tossing of 2,3 and any number of Coins, Permutations and combinations
	19-Jan-18		Oral Test
	20-Jan-18		Distributions of N (for N= 2,3,4) distinguishable particles in two boxes of equal size
	21-Jan-18	Sunday	
4.	22-Jan-18	Vasant Panchami	
	23-Jan-18	spectroscopic terms and their notation, quantum numbers associated with vector atom model,	
	24-Jan-18	Sir Chotu Ram Jayanti	
	25-Jan-18		Distributions of N (for N= 2,3,4) indistinguishable particles in two boxes of equal size
	26-Jan-18	Republic Day	
	27-Jan-18		Micro and Macro states, Thermodynamical probability, Constraints and Accessible states
	28-Jan-18	Sunday	
5.	29-Jan-18	Sommerfeld's extension of Bohr's model	
	30-Jan-18	Orbital magnetic dipole moment (Bohr megnaton), behavior of magnetic dipole in external magnetic field;	
	31-Jan-18	Guru Ravi Das Birthday	
	1-Feb-18		Statistical fluctuations, general distribution of distinguishable particles in compartments of different sizes
	2-Feb-18		Condition of equilibrium between two systems in thermal contact-- β parameter, Entropy and Probability (Boltzman's relation
	3-Feb-18		Problem discussion on unit 1
	4-Feb-18	Sunday	
6.	5-Feb-18	Larmor's precession and theorem, Penetrating and Non- penetrating orbits	
	6-Feb-18	Penetrating orbits on the classical model; Quantum defect	
	7-Feb-18	Spin orbit interaction energy of the single valance electron, spin orbit interaction for penetrating and non-penetrating orbits	
	8-Feb-18		Revision of numericals of unit 1
	9-Feb-18		Unit 1- test
	10-Feb-18	Maharishi Dayanand Saraswati Jayanti	

	11-Feb-18	Sunday	
7.	12-Feb-18	quantum mechanical relativity correction, Hydrogen fine spectra	
	13-Feb-18	Maha Shivratri	
	14-Feb-18	Main features of Alkali Spectra and their theoretical interpretation, term series and limits, Rydeburg-Ritze combination principle Absorption spectra atoms of Alkali.	
	15-Feb-18		Postulates of statistical physics, Phase space
	16-Feb-18		Division of Phase space into cells, three kinds of statistics,
	17-Feb-18		Basic approach in three statistics
	18-Feb-18	Sunday	
8.	19-Feb-18	observed doublet fine structure in the spectra of alkali metals and its Interpretation, Intensity rules for doublets, comparison of Alkali spectra and Hydrogen spectrum	
	20-Feb-18	Essential features of spectra of Alkaline-earth elements	
	21-Feb-18	Vector model for two valance electron atom: application of spectra.	
	22-Feb-18		M. B. statistics applied to an ideal gas in equilibrium- energy distribution law (including evaluation of σ and β)
	23-Feb-18		Speed distribution law & velocity distribution law
	24-Feb-18		Expression for average speed, r.m.s. speed, average velocity, r. m. s. velocity
	25-Feb-18	Sunday	
9.	26-Feb-18	Coupling Schemes;LS or Russell – Saunders Coupling Scheme	
	27-Feb-18	JJ coupling scheme,Interaction energy in L-S coupling (sp, pd configuration	
	28-Feb-18	Holiday	
	1-Mar-18	Holiday	
	2-Mar-18	Holiday(HOLI)	
	3-Mar-18	Holiday	
	4-Mar-18	Sunday	
10.	5-Mar-18	Lande Interval rule, Pauli principal and periodic classification of the elements.	
	6-Mar-18	Interaction energy in JJ Coupling (sp, pd configuration),	
	7-Mar-18	equivalent and non-equivalent electrons	
	8-Mar-18		Most probable energy & mean energy for Maxwellian distribution
	9-Mar-18		Assignment on M. B. statistics applied to an ideal gas in equilibrium-

			energy distribution law (including evaluation of σ and β)
	10-Mar-18		Need for Quantum Statistics: Bose-Einstein energy distribution law
	11-Mar-18	Sunday	
11.	12-Mar-18	Two valance electron system-spectral terms of non-equivalent and equivalent electrons	
	13-Mar-18	Comparison of spectral terms in L-S And J-J coupling. Hyperfine structure of spectral lines and its origin	
	14-Mar-18	Isotope effect, nuclear spin	
	15-Mar-18		Application of B.E. statistics to Planck's radiation law B.E. gas
	16-Mar-18		Degeneracy and B.E. Condensation , Problem discussion of unit 2
	17-Mar-18		Unit 2 -test
	18-Mar-18	Sunday	
12.	19-Mar-18	Comparison of spectral terms in L-S And J-J coupling	
	20-Mar-18	Zeeman Effect (normal and Anomalous)	
	21-Mar-18	Experimental set-up for studying Zeeman effect	
	22-Mar-18		Fermi-Dirac energy distribution law, F.D. gas
	23-Mar-18	Shaheedi Diwas	
	24-Mar-18		F.D. Degeneracy, Fermi energy and Fermi temperature
	25-Mar-18	Sunday	
13.	26-Mar-18	Explanation of normal Zeeman effect(classical and quantum mechanical)	
	27-Mar-18	Explanation of anomalous Zeeman effect(Lande g-factor	
	28-Mar-18	Zeeman pattern of D1 and D2 lines of Na atom, Paschen-Back effect of a single valence electron system	
	29-Mar-18	Mahavir Jayanti	
	30-Mar-18		Fermi Dirac energy distribution law for electron gas in metals,
	31-Mar-18		Zero point energy, Zero point pressure
	1-Apr-18	Sunday	
14.	2-Apr-18	Weak field Stark effect of Hydrogen atom	
	3-Apr-18	General Considerations, Electronic States of Diatomic Molecules	
	4-Apr-18	General Considerations, Electronic States of Diatomic Molecules	
	5-Apr-18		Assignment on Fermi Dirac energy distribution law for electron gas in

			metals
	6-Apr-18		Average speed (at 0 K) of electron gas
	7-Apr-18		Specific heat anomaly of metals and its solution
	8-Apr-18	Sunday	
15.	9-Apr-18	Rotational Spectra in Microwave region	
	10-Apr-18	Vibrational Spectra (IR Region), Rotator Model of Diatomic Molecule	
	11-Apr-18	Raman Effect Introduction,classical theory of Raman effect	
	12-Apr-18		M.B. distribution as a limiting case of B.E. distributions,
	13-Apr-18		M.B. distribution as a limiting case of F.D. distributions Comparison of three statistics
	14-Apr-18	Dr. Ambedkar Jayanti / Vaisakhi	
	15-Apr-18	Sunday	
16.	16-Apr-18	Quantum mechanical treatment of Raman effect	
	17-Apr-18	Electronic spectra of Raman effect	
	18-Apr-18	Parashurama Jayanti	
	19-Apr-18		Introduction to Specific Heat of Solids
	20-Apr-18		Dulong and Petit law. Derivation of Dulong and Petit law from classical physics
	21-Apr-18		Derivation of Dulong and Petit law from classical physics
	22-Apr-18	Sunday	
17.	23-Apr-18	Unit 1-Test	
	24-Apr-18	Revision of unit 1&2nd	
	25-Apr-18	Revision of unit 2&3nd	
	26-Apr-18		Specific heat at low temperature, Einstein theory of specific heat, criticism of Einstein theory
	27-Apr-18		Debye model of specific heat of solids, Success and shortcomings of Debye theory
	28-Apr-18		Comparison of Einstein and Debye theories
	29-Apr-18	Sunday	