Lesson Plan

Name of the Associate Professor- Mr. Himanshu
Subject- Physics

Lesson Plan- 17 Weeks (January-April 2018)

Week	Date	Class B.SC.-IV semester (Sec-A) Statistical Physics	Class B.SC.-VI semester (Sec-E) SOLID STATE
1.	1-Jan-18	Introduction to Statistical Physics	
	2-Jan-18	Microscopic and Macroscopic systems, events-mutually exclusive	
	3-Jan-18	Dependent and independent. Probability, statistical probability	
	4-Jan-18		Crystalline and glassy forms
	5-Jan-18	Holiday	
	6-Jan-18		liquid crystals, crystal structure
	7-Jan-18	Sunday	
2.	8-Jan-18	A- priori Probability and relation between them, probability theorems	
	9-Jan-18	Some probability considerations, combinations possessing maximum probability, combination possessing minimum probability	
	10-Jan-18	Tossing of 2,3 and any number of Coins, Permutations and combinations	
	11-Jan-18		Periodicity, lattice and basis, crystal translational vectors and axes
	12-Jan-18		Unit cell and Primitive Cell
	13-Jan-18		Winger Seitz, primitive Cell,Symmetry operations for a two dimensional crystal
	14-Jan-18	Sunday	
3.	15-Jan-18	Oral Test	
	16-Jan-18	Distributions of N (for N= 2,3,4) distinguishable particles in two boxes of equal size	
	17-Jan-18	Distributions of N (for N= 2,3,4) indistinguishable particles in two boxes of equal size	
	18-Jan-18		Bravis lattices in two and three dimensions
	19-Jan-18		Crystal planes and Miller indices
	20-Jan-18		Interplaner spacing
	21-Jan-18	Sunday	
4.	22-Jan-18	Vasant Panchami	
	23-Jan-18	Micro and Macro states, Thermodynamical probability, Constraints and Accessible states	
	24-Jan-18	Sir Chotu Ram Jayanti	
	25-Jan-18		Crystal structures of Zinc Sulphide
	26-Jan-18	Republic Day	

	27-Jan-18		Sodium Chloride and Diamond
	28-Jan-18	Sunday	
5.	29-Jan-18	Statistical fluctuations, general distribution of distinguishable particles in compartments of different sizes	
	30-Jan-18	Condition of equilibrium between two systems in thermal contact-- β parameter, Entropy and Probability (Boltzman's relation	
	31-Jan-18	Guru Ravi Das Birthday	
	1-Feb-18		X-ray diffraction
	2-Feb-18		Bragg's Law
	3-Feb-18		Experimental X-ray diffraction methods
	4-Feb-18	Sunday	
6.	5-Feb-18	Problem discussion on unit 1	
	6-Feb-18	Revision of numericals of unit 1	
	7-Feb-18	Unit 1- test	
	8-Feb-18		K-space and reciprocal lattice and its physical significance
	9-Feb-18		Reciprocal lattice vectors
	10-Feb-18	Maharishi Dayanand Saraswati Jayanti	
	11-Feb-18	Sunday	
7.	12-Feb-18	Postulates of statistical physics, Phase space	
	13-Feb-18	Maha Shivratri	
	14-Feb-18	Division of Phase space into cells, three kinds of statistics,	
	15-Feb-18		Reciprocal lattice to a simple cubic lattice
	16-Feb-18		Reciprocal lattice to a simple cubic lattice
	17-Feb-18		Reciprocal lattice to a, b.c.c. and f.c.c
	18-Feb-18	Sunday	
8.	19-Feb-18	Basic approach in three statistics	
	20-Feb-18	M. B. statistics applied to an ideal gas in equilibrium- energy distribution law (including evaluation of σ and β)	
	21-Feb-18	Speed distribution law & velocity distribution law	
	22-Feb-18		Unit test-2
	23-Feb-18		Historical introduction, Survey of superconductivity
	24-Feb-18		Super conducting systems
	25-Feb-18	Sunday	
9.	26-Feb-18	Expression for average speed, r.m.s. speed, average velocity, r. m. s. velocity	
	27-Feb-18	Most probable energy & mean energy for Maxwellian distribution	
	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	Assignment on M. B. statistics applied to an ideal gas in equilibrium- energy distribution law (including evaluation of α and β)	
	6-Mar-18	Need for Quantum Statistics: Bose-Einstein energy distribution law	
	7-Mar-18	Application of B.E. statistics to Planck's radiation law B.E. gas	
	8-Mar-18		High Tc Super conductors, Isotopic Effect
	9-Mar-18		Critical Magnetic Field, Meissner Effect ,London Theory and Pippards' equation
	10-Mar-18		Classification of Superconductors (type I and Type II), BCS Theory of Superconductivity
	11-Mar-18	Sunday	
11.	12-Mar-18	Degeneracy and B.E. Condensation , Problem discussion of unit 2	
	13-Mar-18	Unit 2 -test	
	14-Mar-18	Fermi-Dirac energy distribution law, F.D. gas	
	15-Mar-18		Flux quantization, Josephson Effect (AC and DC)
	16-Mar-18		Practical Applications of superconductivity and their limitations
	17-Mar-18		Power application of superconductors
	18-Mar-18	Sunday	
12.	19-Mar-18	F.D. Degeneracy, Fermi energy and Fermi temperature	
	20-Mar-18	Fermi Dirac energy distribution law for electron gas in metals,	
	21-Mar-18	Zero point energy, Zero point pressure	
	22-Mar-18		Unit test-3
	23-Mar-18	Shaheedi Diwas	
	24-Mar-18		Definition and length scale, Introduction to nano-scale and technology
	25-Mar-18	Sunday	
13.	26-Mar-18	Assignment on Fermi Dirac energy distribution law for electron gas in metals	
	27-Mar-18	Average speed (at 0 K) of electron gas	
	28-Mar-18	Specific heat anomaly of metals and its solution	
	29-Mar-18	Mahavir Jayanti	
	30-Mar-18		History of Nanotechnology, Benefits and challenges in molecular

			manufacturing
	31-Mar-18		Molecular assembler concept,Understanding advanced capabilities
	1-Apr-18	Sunday	
14.	2-Apr-18	M.B. distribution as a limiting case of B.E. distributions,	
	3-Apr-18	M.B. distribution as a limiting case of F.D. distributions Comparison of three statistics	
	4-Apr-18	Introduction to Specific Heat of Solids	
	5-Apr-18		Vision and objective of Nano-technology
	6-Apr-18		Nanotechnology in different field, Automobile, Electronics
	7-Apr-18		Nano-biotechnology, Materials, Medicine
	8-Apr-18	Sunday	
15.	9-Apr-18	Dulong and Petit law. Derivation of Dulong and Petit law from classical physics	
	10-Apr-18	Derivation of Dulong and Petit law from classical physics	
	11-Apr-18	Specific heat at low temperature, Einstein theory of specific heat, criticism of Einstein theory	
	12-Apr-18		Nano-biotechnology, Materials, Medicine
	13-Apr-18		Group discussion on nano
	14-Apr-18	Dr. Ambedkar Jayanti / Vaisakhi	
	15-Apr-18	Sunday	
16.	16-Apr-18	Debye model of specific heat of solids, success and shortcomings of Debye theory	
	17-Apr-18	Comparison of Einstein and Debye theories	
	18-Apr-18	Parashurama Jayanti	
	19-Apr-18		Unit test-4
	20-Apr-18		Revision of unit-1
	21-Apr-18		Oral test of unit-1
	22-Apr-18	Sunday	
17.	23-Apr-18	Comparison of Einstein and Debye theories	
	24-Apr-18	Unit 3 -test	
	25-Apr-18	revision of numericals	
	26-Apr-18		Revision of unit-2
	27-Apr-18		Revision of unit-3
	28-Apr-18		Revision of unit-4
	29-Apr-18	Sunday	