**Name of Assistant Professor: Miss. Surbhi Gautam**

**Class and Section:…B.Sc 3rd year,6th …** Semester and Section-A

**Subject: …Physics….**

**Lesson Plan**: 18Weeks (from January 2018 to April 2018)

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| Week 1, **January 1 to January 7**  **Unit 1 Crystal Structure 1**  Chapter 1 Crystal Structure |
| Week 1, Day 1, January 1   * 1.1 Introduction * 1.2 Crystalline Solids |
| Week 1, Day 2, January 2   * 1.3 Amorphous * 1.4 Liquid Crystals |
| Week 1, Day 3, January 3   * 1.5 Crystal Translational vectors and crystal axis |
| Week 1, Day 4, January 4   * 1.6 Crystal Lattice and basis * 1.7 Periodicity in crystals * 1.8 Unit cell and primitive cell |
| Week 1, Day 5, January 5 **Holiday** |
| Week 1, Day 6, January 6   * 1.9 Wigner sietz primitive cell * 1.10 Brillouin zone * 1.11 Symmetry operation for a two dimentional crystal |
| Week 2, **January 8 to January14** |
| Week 2, Day 1, January 8   * 1.12 Bravais lattices in two dimentions * 1.13 Bravais lattices in three dimentions |
| Week 2, Day 2, January 9   * Discussion of conceptual questions |
| Week 2, Day 3, January 10   * Doing examples |
| Week 2, Day 4, January 11   * Class test of Chapter1 |
| Week 2, Day 5, January 12  Chapter 2 Miller Indices and Some Crystal Structures   * 2.1 Crystal Planes and Miller indices * 2.2 Important features of Miller indices |
| Week 2, Day 6, January 13   * 2.3 Interplanar spacing |
| Week 3, **January 15 to January 21** |
| Week 3, Day 1, January 15   * Powerpoint presentation |
| Week 3, Day 2, January 16   * 2.4 Cubic crystal |
| Week 3, Day 3, January 17   * 2.5 Packing of spheres in crystal (hcp) |
| Week 3, Day 4, January 18   * 2.6(a) Diamond structure |
| Week 3, Day 5, January 19   * 2.6 (b) Zinc blende structure |
| Week 3, Day 6, January 20   * 2.6 ( c) Sodium Chloride structure * 2.6 ( d) Cesium Chloride structure |
| Week 4, **January 22 to January 28** |
| Week 4, Day 1, January 22 **Holiday** |
| Week 4, Day 2, January 23   * Discussion of conceptual questions |
| Week 4, Day 3, January 24   * Doing examples from Unit1 |
| Week 4, Day 4, January 25   * Revision of topics from 1.1 to 1.7 |
| Week 4, Day 5, January 26 **Holiday** |
| Week 4, Day 6, January 27   * Revision of topics from 1.8 to 1.13 |
| Week 5, **January 29 to February4** |
| Week 5, Day 1, January 29   * Revision of topics from 2.1 to 2.6 |
| Week 5, Day2, January 30   * Class test Unit1 |
| Week 5, Day 3, January 31 **Holiday** |
| Week 5, Day 4, February 1  Unit 2 Crystal Structures 2  Chapter 3:- Crystal Diffraction   * 3.1 Diffraction of X-Ray * 3.2 The Bragg’s treatment |
| Week 5, Day 5, February 2   * 3.3 Characteristic features of bragg’s law * 3.4 Experimental X –Ray Diffraction Methods |
| Week 5, Day 6,February 3   * 3.5 Determination of crystal structure using bragg’s law * 3.6 K-Space |
| **Week 6, February 5to February 11**  Chapter 4 Reciprocal Lattice |
| Assignments :- Assignment 1st |
| Week 6, Day 1, February 5   * 4.1 K-Space aand reciprocal lattice |
| Week 6, Day 2, February 6   * 4.2 Need foe reciprocal lattice * 4.3 Reciprocal lattice vectors for Orthogonal crystal axis |
| Week 6, Day 3, February 7   * 4.4 Reciprocal Lattice vector for general crystal axis |
| Week 6, Day 4, February 8   * 4.5 Construction of reciprocal lattice |
| Week 6, Day 5, February 9   * 4.6 Physical Signification of Reciprocal lattice * 4.7 Properties of Reciprocal lattice |
| Week 6, Day 6, February 10 **Holiday** |
| Week 7, **February 12 to February 18** |
| Week 7, Day 1, February 12   * 4.8 Relation betweenCrystal lattice axis and Crystal Reciprocal lattice axis |
| Week 7, Day 2, February 13 **Holiday** |
| Week 7, Day 3, February 14   * 4.9 Volume of Unit cell of Reciprocal lattice |
| Week 7, Day 4, February 15   * Quiz competition |
| Week 7, Day 5, February 16   * 4.10 Reciprocal lattice to S.C. lattice |
| Week 7, Day 6, February 17   * 4.11 Reciprocal lattice of B.C.C.lattice |
| Week 8 **February 19 to February25** |
| Week 8, Day 1, February 19   * 4.12Reciprocal lattice of F.C.C. lattice |
| Week 8, Day 2, February 20   * Example :1,2,3 |
| Week 8, Day 3, February 21   * Discuss problems of Chapter 3 |
| Week 8, Day 4, February 22   * Disuss problems of Chapter 4 |
| Week 8, Day 5, February 23   * Discussion of conceptual questions |
| Week 8, Day 6, February 24   * Revision of topics 3.1 to 3.6 |
| Week 9, **February26 to March4** |
| Week 9, Day 1, February 26   * Revision of topics 4.1 to 4.12 |
| Week 9, Day 2, February 27   * Class test of Unit 2 |
| Week 9, Day 3, February 28 **Holiday** |
| Week 9, Day 4, March 1 **Holiday** |
| Week 9, Day 5, March 2 **Holiday** |
| Week 9, Day 6, March 3 **Holiday** |
| Week 10, **March 5 to March11**  Unit 3 Superconductivity |
| Chapter 5 Superconducity |
| Week 10, Day 1, March 5   * 5.1 Historical Introduction |
| Week 10, Day 2, March 6   * 5.2 A survey of superconducity |
| Week 10, Day 3, March 7   * 5.3 Super conducting systems |
| Week 10, Day 4, March   * 5.4 Critical magnetic field |
| Week 10, Day 5, March 9   * 5.5 Critical currents * 5.6 Flux exclusion : The Meissner effect |
| Week 10, Day 6, March10   * 5.7 Isotope effect |
| Week 11, **March 12 to March 18** |
| Week 11, Day 1, March 12   * 5.8 London theory and Pippard’s equation |
| Week 11, Day 2, March13   * 5.9 Flux Quantization |
| Week 11, Day 3, March 14   * 5.10 Classification of Superconducters |
| Week 11, Day 4, March 15   * 5.11 BCS Theory of superconductivity * 5.12 Josephson effect |
| Week 11, Day 5, March 16   * 5.13 High temperature superconductors |
| Week 11, Day 6, March 17   * 5.14 Practical application of superconductivity |
| Week 12, **March 19 to March25** |
| Week 12, Day 1, March 19   * Group discussion |
| Week 12, Day 2, March 20   * 5.15 Power applications of superconductors |
| Week 12, Day 3, March 21   * Doing examples |
| Week 12, Day 4, March 22   * Revision of topics 5.1 to 5.3 |
| Week 12, Day 5, March 23   * Revision of topics 5.4 to 5.7 |
| Week 12, Day 6, March 24   * Revision of topics 5.8 to 5.10 |
| Week 13, **March26to April** |
| Assignments :Assignment 2nd |
| Week 13, Day 1, March 26   * Revision of topics 5.11 to 5.13 |
| Week 13, Day 2, March 27   * Discussion of conceptual questions |
| Week 13, Day 3, March 28   * Revision of topics 5.14, 5.15 |
| Week 13, Day 4, March 29 **Holiday** |
| Week 13, Day 5, March 30   * Discuss previous year question |
| Week 13, Day 6, March 31   * Class test of Unit 3 |
| Week 14, **April 2 to April 8**  Unit 4  Chapter 6 Introduction to Nano physics |
| Week 14, Day 1, April 2   * 6.1 Introduction * 6.2 History of Nanotechnology * 6.3Definitions of Nanotechnology |
| Week 14, Day 2, April 3   * 6.4Length scale * 6.5 Nanoscale |
| Week 14, Day 3, April 4   * 6.6 Technologies |
| Week 14, Day 4, April 5   * 6.7The Molecular assembler concept |
| Week 14, Day 5, April 6   * 6.8 Molecular Manufacturing |
| Week 14, Day 6, April 7   * Chart /Poster making Competition ans exhibition |
| Week 15, **April 9 to April15** |
| Week15 , Day 1, April 9   * 6.9 Challenges of Molecular Manufacturing |
| Week 15, Day 2, April 10   * 6.10 Understanding the advanced capabilities |
| Week 15, Day 3, April 11   * 6.11 Vision and Objectives of Nanotechnology |
| Week 15, Day 4, April 12   * 6.12.1 Application in Autombile * 6.12.2Application in electronics |
| Week 15, Day 5, April 13   * 6.12.3 Nanoelectronics Application under development * 6.12.4 Application to Nano -biotechnology |
| Week 15, Day 6, April 14 **Holiday** |
| Week 16, **April 16 to April22** |
| Week 16, Day 1, April 16   * 6.15 Nanomaterials |
| Week 16, Day 2, April 17   * 6.16 Nanomedicine |
| Week 16, Day 3, April 18 **Holiday** |
| Week 16, Day 4, April 19   * Discussion of conceptual questions |
| Week 16, Day 5, April 20   * Class test of Unit 4 |
| Week 16, Day 6, April 21   * Revision of Unit 1 |
| Week17 **April 23 to April28** |
| Week17 , Day 1, April 23   * Revision of Unit 2 |
| Week 17, Day 2, April 24   * Revision of Unit 3 |
| Week 17, Day 3, April 25   * Revision of Unit 4 |
| Week 17, Day 4, April 26   * Discussion of Previous year question paper |
| Week 17, Day 5, April 27   * Discussion of previous year question paper |
| Week 17, Day 6, April 28   * Class test of full syllabus |
| Week 18 **April 30 to May 6** |
| Week18 , Day 1, April 30 **Holiday** |