



# Physics by fiziks

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"Discipline is the Bridge between Goal and Success"

## Study Plan of Condensed Matter Physics for Pre-recorded Batches

(For NET-JRF, GATE, JEST, TIFR Aspirant and M.Sc Students)

Days	Enter Your Dates	Topics
Day: 1		Lecture 1: Intorduction of Condensed Matter Physics
		Lecture 2: Space Lattice and Unit cell
Day: 2		Lecture 3: Basis and Bravais lattice
		Lecture 4: Line Indices
Day: 3		Lecture 5: Miller Indices Part-1
		Lecture 6: Miller Indices Part-2
Day: 4		Lecture 7: Problem on Miller Indices
		Lecture 8: Planar and Crystal Density
Day: 5		Lecture 9: Packing Fraction of SC & BCC
		Lecture 10: Packing fraction of HCP
Day: 6		Revision and Practice
Day: 7		Revision and Practice
Day: 8		Lecture 11: Packing Fraction of Diamond Cubic
		Lecture 12: NaCl and CsCl Structure
		<b>Solve Assignment No. 1: Crystal Structure (Lect-1 to Lect-12)</b>
Day: 9		Lecture 13: X-ray Diffraction
		Lecture 14: Crystal Structure Factor
Day: 10		Lecture 15: Braggs Law Part-1
		Lecture 16: Braggs Law Part-2
Day: 11		Lecture 17: Reciprocal Lattice Part-1
		Lecture 18: Reciprocal Lattice Part-2
		<b>Solve Assignment No. 2: XRD and Reciprocal Lattices (Lect-13 to Lect-18)</b>
Day: 12		Lecture 19: Density of state Part-1
		Lecture 20: Density of state Part-2
Day: 13		<b>Class Test 1: Crystal Structure (Lect-1 to Lect-12)</b>
Day: 14		<b>Class Test 2: XRD and Reciprocal Lattices (Lect-13 to Lect-18)</b>
Day: 15		Lecture 21: Lattice Vibration of 1D Monoatomic Lattice Part-1
		Lecture 22: Lattice Vibration of 1D Monoatomic Lattice Part-2
Day: 16		Lecture 23: Lattice Vibration of 1D Diatomic Lattice Part-1
		Lecture 24: Lattice Vibration of 1D Diatomic Lattice Part-2
		<b>Solve Assignment No. 3: Lattice Vibrations (Lect-19 to Lect-26)</b>
Day: 17		Lecture 25: Lattice Vibration Assignment-3 discussion
		Lecture 26: Modes of Vibration
Day: 18		Lecture 27: Concept of Specific Heat of Solid
		Lecture 28: Dulong and Petit Law
Day: 19		Lecture 29: Einstein Theory of Specific Heat
		Lecture 30: Debye Theory of Specific Heat
		<b>Solve Assignment No. 4: Specific Heat of Solid (Lect-27 to Lect-30)</b>
Day: 20		<b>Class Test 3: Lattice Vibrations (Lect-19 to Lect-26)</b>
Day: 21		<b>Class Test 4: Specific Heat of Solid (Lect-27 to Lect-30)</b>
Day: 22		Lecture 31: Free Electron Theory
		Lecture 32: Specific Heat of Metal
Day: 23		Lecture 33: Drude Model of Electrical Conductivity
		Lecture 34: Hall Effect
		<b>Solve Assignment No. 5: Free Electron Theory (Lect-31 to Lect-34)</b>
Day: 24		Lecture 35: Band Theory of Solid-Classification of Solids
		Lecture 36: Band Theory of Solid- Kronig Penny Model

<b>Day: 25</b>	Lecture 37: Band-Theory of Solid-Brillouin Zone
	Lecture 38: Band theory of solid-Effective Mass of Electron
<b>Day: 26</b>	Lecture 39: Band theory of solid-Tight Binding Method
	Lecture 40: Band theory of solid-question discussion
	<b>Solve Assignment No. 6: Band Theory of Solid</b>
<b>Day: 27</b>	<b>Class Test 5: Free Electron Theory (Lect-31 to Lect-34)</b>
<b>Day: 28</b>	<b>Class Test 6: Band Theory of Solid (Lect-35 to Lect-40)</b>
<b>Day: 29</b>	Lecture 41: Introduction to Semiconductor Physics
	Lecture 42: Semiconductor Physics-Direct and Indirect Band Gap
<b>Day: 30</b>	Lecture 43: Electron and Hole Concentration in Intrinsic Semiconductor
	Lecture 44: Donor Levels in Extrinsic Semiconductor
<b>Day: 31</b>	Lecture 45: Fermi Level in n-type Semiconductor
	Lecture 46: Conductivity of Extrinsic Semiconductor
<b>Day: 32</b>	Lecture 47: Problem Discussion of Semiconductor Physics
	Lecture 48: Superconductivity Part-1
	<b>Solve Assignment No. 8: Semiconductor Physics (Lect-41 to Lect-47)</b>
<b>Day: 33</b>	Lecture 49: Superconductivity Part-2
	Lecture 50: Superconductivity Part-3
	Lecture 51: Superconductivity Part-4
	<b>Solve Assignment No.7: Superconductors (Lect-48 to Lect-51)</b>
<b>Day: 34</b>	<b>Class Test 7: Semiconductor Physics (Lect-41 to Lect-47)</b>
<b>Day: 35</b>	<b>Class Test 8: Superconductor (Lect-48 to Lect-51)</b>