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Study Plan of Solid State Physics, Devices and Electronics for Pre-recorded Batches

(For IIT-JAM, JEST, TIFR and M.Sc Entrance and B.Sc Students)

Days	Enter Your Dates	Topics
		PART A: Solid State Physics
Day: 1		**Lecture 1:** Introduction of Solid Sate Physics
		Lecture 2: Concept of Space Lattice and Unit Cell
Day: 2		**Lecture 3:** Concept of Bravais Lattice and Unit Cell
		Lecture 4: Line Indices
Day: 3		**Lecture 5:** Miller Indices Part-1
		Lecture 6: Miller Indices Part-2
Day: 4		**Lecture 7:** Miller Indices Problems
		Lecture 8: Planar and Crystal Density
Day: 5		**Lecture 9:** Packing Fraction of SC and 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
		Solve Assignment No. 9: Crystal Structure (Lect-1 to Lect-12)
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
		Solve Assignment No. 10: XRD and Reciprocal Lattices (Lect-13 to Lect-18)
Day: 12		**Lecture 19:** Classification of Solids into Metal, Semicondcutor and Insulator
		Lecture 20: Introduction to Semiconductor Physics
Day: 13		**Class Test 1: Crystal structure (Lect-1 to Lect-12)**
Day: 14		**Class Test 2: XRD and Reciprocal Latice (Lect-13 to Lect-18)**
Day: 15		**Lecture 21:** Direct and Indirect Band Gap Semiconductor
		Lecture 22: Electron and Hole Concentration in Intrinsic Semiconductor
Day: 16		**Lecture 23:** Donor Levels in Extrinsic Semiconductor
		Lecture 24: Fermi Level in n-type Semiconductor
Day: 17		**Lecture 25:** Conducivity of Extrinsic Semiconductor
		Lecture 26: Dispersion Relation of Electron
Day: 18		**Lecture 27:** Effective Mass of Electron
		Lecture 28: Compensated Semiconductor
Day: 19		**Lecture 29:** Problem Discussion of Semiconductor Physics
		Solve Assignment No. 12: Semiconductor Physics (Lect-21 to Lect-29)
Day: 20		**Revision and Practice**
Day: 21		**Class Test 3: Semiconductor Physics (Lect-19 to Lect-29)**

PART B: Devices and Electronics		
Day: 22		**Lecture 30:** Introduction of Electronics and Experimental Methods
		Lecture 31: KVL-KCL Part -1
Day: 23		**Lecture 32:** KVL-KCL Part-2
		Lecture 33: Superposition Theorem
Day: 24		**Lecture 34:** Thevenins Theorem
		Lecture 35: Nortons Theorem
Day: 25		**Lecture 36:** Maximum Power Transfer Theorem
		Lecture 37: Miscellaneous Example on Network Analysis and Wheatstone Bridge
		Solve Assignment No. 1: Lect-30 to Lect-37
Day: 26		**Lecture 38:** Drift and Diffusion Current in Semiconductor
		Lecture 39: pn Junction at Equilibrium Condition
Day: 27		**Revision and Practice**
Day: 28		**Class Test 4: Lect-30 to Lect-37**
Day: 29		**Lecture 40:** Biased pn Junction Diode
		Lecture 41: DC Analysis of pn Junction Diode
Day: 30		**Lecture 42:** Rectifier Circuit
		Lecture 43: Series Clipper Circuit
		Solve Assignment No. 2: Lect-38 to Lect-42
Day: 31		**Lecture 44:** Parallel Clipper Circuit
		Lecture 45: Clamper Circuit
Day: 32		**Lecture 46:** Peak Detector and Voltage Doubler Circuit
		Lecture 47: Zener Diode Applications Part-1
Day: 33		**Lecture 48:** Zener Diode Applications Part-2
		Solve Assignment No. 3: Lect-43 to Lect-48
Day: 34		**Revision and Practice**
Day: 35		**Class Test 5: PN Junction diode (Lect- 38 to Lect-48)**
Day: 36		**Lecture 49:** Basics of Transitor
		Lecture 50: DC Biasing of Transistor Part-1 (Fixed Bias)
Day: 37		**Lecture 51:** DC Biasing of Transistor Part-2 (Emitter Stablished)
		Lecture 52: DC Biasing of Transistor Part-3 (Voltage Divider)
Day: 38		**Lecture 53:** Miscellaneous Example on DC Biasing
		Lecture 54: Biasing Stablisation of Q-point
		Solve Assignment No. 4 (Lect-49 to Lect-54)
Day: 39		**Lecture 55:** AC Analysis of CE Transistor-Part-1
		Lecture 56: AC Analysis of CE Transistor Part-2
Day: 40		**Lecture 57:** AC Analysis of CE Transistor Part-3
		Lecture 58: Miscellaneous Example on AC Analysis
		Solve Assignment No. 5: (Lect-26 to Lect-58)
Day: 41		**Revision and Practice**
Day: 42		**Class Test 6: Transistor (Lect-49 to Lect-58)**
Day: 43		**Lecture 59:** Basics of OP-AMP
		Lecture 60: Non Inverting OP-AMP with Feedback
Day: 44		**Lecture 61:** Inverting and differential mode with Feedback
		Lecture 62: Summing, Scaling, Averaging Amplifier (OP-AMP)
Day: 45		**Lecture 63:** Integrator Circuit (OP-AMP)
		Lecture 64: Differentiator Circuit (OP-AMP)
Day: 46		**Lecture 65:** OP-AMP Circuit with Diode
		Lecture 66: Filter Circuit (OP-AMP)
		Solve Assignment No. 6: Lect-59 to Lect-65
Day: 47		**Lecture 67:** Oscillator Circuit (OP-AMP)
		Lecture 68: Comparator and Voltage Limiter (OP-AMP)
		Solve Assignment No. 7: Lect-66 to Lect-68
Day: 48		**Revision and Practice**

Day: 49		**Class Test 7: OP-AMP (Lect-59 to Lect-68)**
Day: 50		**Lecture 69:** Number System (Digital Electronics)
		Lecture 70: Representation of Signed Binary Numbers (Digital Electronics)
Day: 51		**Lecture 71:** Binary Addition and Subtraction (Digital Electronics)
		Lecture 72: Basic Rules of Boolean Algebra (Digital Electronics)
Day: 52		**Lecture 73:** Cannonical form of Boolean Function (Digital Electronics)
		Lecture 74: Karnaugh Map (Digital Electronics)
Day: 53		**Lecture 75:** Basic Gates and Their Implementation (Digital Electronics)
		Lecture 76: Combinational Circuit (Digital Electronics)
Day: 54		**Lecture 77:** Miscellaneous Example on Combinational Circuit (Digital Electronics)
		Solve Assignment No. 8: Lect-69 to Lect-77
Day: 55		**Revision and Practice**
Day: 56		**Class Test 8: Digital Electronics (Lect-69 to Lect-77)**