

Module wise Study Plan

Module	Physics
	Average Velocity-Equal Displacements
	Kinematic Equations for Uniformly Accelerated Motion
	Free Fall Motion
	Dimensional Formulae and Dimensional Equations
	Position, Path Length and Displacement
	Velocity Time Graph
	Position Time Graph
	Shape of Curves
	Acceleration Time Graph
	Relative Velocity
	Significant Figures
	Accuracy, Precision of Instruments and Errors in Measurement
	Dimensional Analysis and its Applications
	Measurement of Length
	Module 1
	Unit Vector
	Position Vector
	Vector Addition - Analytical Method
	Vector Subtraction - Analytical method
	Relative velocity in One and Two Dimensions
	Resolution of Vectors
	Multiplication of Two Vectors
	Crossing River Problems
	Projectile Motion
	Expressions for Time of Flight, Range and Maximum Height
	Two Angles Giving The same Range and Connected Relations
	Equations of Trajectory
	Kinetic Energy And Angular Momentum of Projectiles
	Centripetal Acceleration And Centripetal Force
	Banking At Curves
	Vertical Circular Motion
	Scalars and Vectors
	Angular Displacement, Angular Velocity and Angular Acceleration
Uniform Circular Motion	
Module 2	
	Newton's Second Law of Motion
	Motion of Connected Systems And Bodies in Contact
	Newton's Third Law of Motion
	Equilibrium of Concurrent Forces
	Friction
	Newton's First Law of Motion
	Circular Motion
Module 3	Conservation of Momentum
Module 4	Cumulative test based on Module 1,2,3

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	Work
	Work Done by a Variable Force
	Special Cases of Work Done
	Power
	The Concept of Potential Energy
	The Concept of Kinetic Energy
	Kinetic Energy and Momentum
	The Work-Energy Theorem
	The Conservation of Energy
	The Potential Energy of a Spring
	Collisions
Module 5	Conservative and Non Conservative Forces
	Center of Mass
	Torque and Angular Momentum
	Equilibrium of Parallel Forces
	Moment of Inertia
	Theorems of Perpendicular and Parallel Axes
	Kinetic Energy, Torque and Angular Momentum of a Rotating Rigid Body
	Conservation of Angular Momentum
	Rolling Motion, Kinetic Energy Due to Translation and Rotation
Module 6	Kinematics of Rotational Motion about a Fixed Axis
	Kepler's Laws
	Universal Law of Gravitation
	Acceleration Due to Gravity of the Earth
	Variation of Acceleration Due to Gravity - Due to Shape, Altitude, Depth and Rotation of Earth
	Intensity and Potential in a Gravitational Field
	Orbital Velocity, Period of a Satellite and Energy of an Orbiting Satellite
	Gravitational Potential Energy of A System of Particles
	Escape Speed
Module 7	Geostationary and Polar Satellites
Module 8	Cumulative test based on Module 5,6,7
	Stress and Strain
	Elastic Moduli
	Pressure and Buoyancy
	Surface Tension
	Surface Energy, Excess of Pressure
	Capillarity
	Continuity Equation
	Reynolds Number
	Bernoulli's Principle
	Viscosity
	Stokes Formula and Terminal Velocity

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Module 9	Elastic Behaviour Of Solids
	Measurement of Temperature
	Thermal Expansion
	Specific Heat Capacity
	Change of State
	Heat Transfer - Conduction, Convection and Radiation
	Newton's Law of Cooling
	Calorimetry
Module 10	
	First Law of Thermodynamics
	Thermodynamic Processes
	Heat Engines
	Carnot Engine
	Refrigerators and Heat Pumps
	Behaviour of Gases and Gas Equations
	Kinetic Theory of an Ideal Gas and Expression for Pressure
	RMS Velocity
	Mean Free Path
	Thermal Equilibrium
	Zeroth Law of Thermodynamics
	Heat, Internal Energy and Work
Module 11	Specific Heat Capacity of Gases
Module 12	Cumulative Test based on Module 9,10,11
	Simple Harmonic Motion
	Velocity and Acceleration in Simple Harmonic Motion
	Energy in Simple Harmonic Motion
	Some Systems Executing Simple Harmonic Motion
	Simple Pendulum
	Damped Simple Harmonic Motion
	Transverse and Longitudinal Waves
	The Speed of a Travelling Wave
	Velocity of Sound in Air and Variation with Pressure, Temperature and Humidity
	Displacement Relation in a Progressive Wave
	Stationary Wave, Fundamental Frequency and Harmonics
	Vibrations of Stretched Strings
	Vibrations of Air Columns
	Beats
	Doppler Effect
Module 13	Reflection of Waves
	Basic Properties of Electric Charge
	Charging by Induction
	Coulomb's Law
	Forces Between Multiple Charges
	Electric Field - Intensity And Potential

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	Electric Flux
	Electric Dipole
	Dipole in a Uniform and Non-Uniform External Field
	Gauss's Law
	Applications of Gauss's Law
	Electrostatic Potential and Potential Difference
	Relation Between Intensity and Potential
	Work Done in Moving Charge in an Electric Field
	Potential Due to a Point Charge, Dipole and System of Charges
	Potential Due to a Spherical Shell
	Potential Energy of a System of Charges
	Dielectrics
	Capacitance and Capacitors
	Capacitance of Isolated Spherical Conductors and Parallel Plate Capacitor
	More About a Parallel Plate Capacitor
	Capacitance in Series
	Capacitors in Parallel
	Energy Of a Charged Capacitor
	Common Potential and Loss of Energy Due to Sharing
	Coalition of Charged Identical Drops
	Calculation of Equivalent Capacitance, Charge and Potential in Condensers in an Electrical Network
	Electric Charges
	Conductors and Insulators
	Electric Field Lines
	Equipotential Surface
	Effect of Changing the Capacitance With and Without Battery Connection
Module 14	Electric Current
	Electric Currents in Conductors
	Thermal velocity and Drift velocity
	Ohm's Law
	Resistivity of Various Materials
	Temperature Dependence of Resistivity
	Combination of Resistors-Series and Parallel
	Cells, Emf, Internal Resistance
	Cells in Series and in Parallel
	Kirchhoff 's Laws
	Wheatstone's Bridge
	Metre Bridge
	Potentiometer
	Electrical Energy and Power
	Resistance

Module wise Study Plan

	Limitations of Ohm's Law
Module 15	Current and Voltage Distribution in Electrical Circuits
Module 16	Cumulative Test based on Module 13, 14, 15
	Biot- Savart's Law
	Ampere's Circuital Law
	Magnetic Field Due to Straight Conductor, Circular Coil, Solenoid and Toroid
	Force on a Moving Charge in a Magnetic Field+
	Cyclotron
	Motion of Charged Particle in a Crossed Electric and Magnetic Field
	Force on a Current Carrying Conductor
	Force between Two Current Carrying Conductors
	Current Loop and Dipole Moment
	Torque on a Magnetic Dipole
	Moving Coil Galvanometer
	Conversion of Moving Coil Galvanometer to Ammeter and Voltmeter
	Magnetic Effect of Current
Module 17	Special Cases of Magnetic Field due to Current Carrying Conductors
	The Bar Magnet
	Magnetism and Magnetic Intensity
	Torque and P.E of a Magnet in a Magnetic Field
	The Earth's Magnetism
	Magnetic Properties of Materials
	Magnetic Field and Dipole Moment Due to Revolving Charge
	Permanent Magnets and Electromagnets
Module 18	Magnetism and Gauss's Laws
	Magnetic Flux
	Faraday's Law of Induction
	Lenz's law and Conservation of Energy
	Motional Electromotive Force
	Self Induction
	Mutual Induction
	Energy Stored in an Inductor
Module 19	Eddy Currents
Module 20	Cumulative Test based on Module 17, 18, 19
	AC Current and AC Voltage, Mean Value, RMS Value
	AC Voltage Applied to a Resistor
	AC Voltage Applied to an Inductor
	AC Voltage Applied to a Capacitor

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Module 21	AC Voltage Applied to a Series LCR Circuit
	Resonance in AC Circuits
	Power in AC circuit: The Power Factor
	Transformers
	AC Generator
	LC Oscillations
Module 22	Electromagnetic Waves
	Properties of Electromagnetic Waves
	Equations for Electric and Magnetic Vectors in an Electromagnetic Wave
	Displacement Current
	Coherent and Incoherent Addition of Waves
	Interference of Light Waves and Young's Experiment
	Diffraction
	Polarisation
	Electromagnetic Spectrum
	Huygens' Principle
Module 23	Reflection of Light by Spherical Mirrors
	Refraction
	Total Internal Reflection
	Refraction at Spherical Surfaces and Lenses
	Refraction Through a Prism
	Dispersion
	Scattering of Light, Blue Color of Sky and Rainbow
	Optical Instruments - Human Eye, Simple Magnifier, Compound Microscope, Telescope
	Power of a Lens
Module 24	Cumulative Test based on Module 21, 22, 23
	Particle Nature of Light: The Photon
	Photoelectric Effect
	Einstein's Photoelectric Equation
	Wave Nature of Matter and de Broglie Wavelength
	Alpha-Particle Scattering and Rutherford's Nuclear Model of Atom
	Bohr's Model of the Hydrogen Atom
	The Line Spectra of the Hydrogen atom
	Atomic Masses and Composition of Nucleus
	Size of the Nucleus
	Mass - Energy Relation and Nuclear Binding Energy
	Radioactivity
	Nuclear Force

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Module 25	Nuclear energy and Nuclear fission and fusion
	Classification of Metals, Conductors and Semiconductors
	Intrinsic Semiconductor
	Extrinsic Semiconductor
	Application of Junction Diode as a Rectifier
	Special Purpose p-n Junction Diodes
	Junction Transistors and Transistor Configuration and Current Amplification Factors
	Transistor as an Amplifier and Oscillator
	Digital Electronics and Logic Gates
	Propagation of Radio Waves
	Modulation and its Necessity
	Amplitude Modulation
	Elements of a Communication System
	Basic Terminology Used in Electronic Communication Systems
	Bandwidth of Signals
Module 26	p-n junction
Module 27	Cumulative Test based on Module 25, 26
Module 28	Revision Test 1
Module 29	Revision Test 2
Module 30	Revision Test 3
Module 31	Revision Test 4
Module 32	Revision Test 5
Module 33	Revision Test 6
Module 34	Revision Test 7
Module 35	Revision Test 8
Module 36	Revision Test 9
Module 37	Revision Test 10