

Module wise Study Plan

Module	Physics	Chemistry	Maths
Module 1	Average Velocity-Equal Displacements	Laws of Chemical Combinations	Cartesian Product of Sets
	Kinematic Equations for Uniformly Accelerated Motion	Mole Concept and Molar Masses	Relations
	Free Fall Motion	Percentage Composition	Functions
	Dimensional Formulae and Dimensional Equations	Stoichiometry and Stoichiometric Calculations	
	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 2	Unit Vector	Sub-atomic Particles	Types of Relations
	Position Vector	Developments Leading to the Bohr's Model of Atom - Part I	Types of Functions
	Vector Addition - Analytical Method	Developments Leading to the Bohr's Model of Atom - Part II	Composition of Functions and Invertible Function
	Vector Subtraction - Analytical method	Developments Leading to the Bohr's Model of Atom - Part III	Binary Operations
	Relative velocity in One and Two Dimensions	Bohr's Model for Hydrogen Atom	
	Resolution of Vectors	Towards Quantum Mechanical Model of the Atom	
	Multiplication of Two Vectors	Quantum Mechanical Model of the Atom	
	Crossing River Problems	Bond Parameters	
	Projectile Motion	The Valence Shell Electron Pair Repulsion(VSEPR) Theory	
	Expressions for Time of Flight, Range and Maximum Height	Valence Bond Theory	
	Two Angles Giving The same Range and Connected Relations	Hybridization	
	Equations of Trajectory	Molecular Orbital Theory	
	Kinetic Energy And Angular Momentum of Projectiles	Hydrogen Bonding	
	Centripetal Acceleration And Centripetal Force		
	Banking At Curves		
	Vertical Circular Motion		
	Scalars and Vectors		
	Angular Displacement, Angular Velocity and Angular Acceleration		
	Uniform Circular Motion		

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Module 3	Newton's Second Law of Motion	The Gas Laws	Permutations
	Motion of Connected Systems And Bodies in Contact	Ideal Gas Equation	Combinations
	Newton's Third Law of Motion	Kinetic Molecular Theory of Gases	
	Equilibrium of Concurrent Forces	Behavior of Real Gases: Deviation from Ideal Gas Behavior	
	Friction	Calculations Involving Unit Cell Dimensions	
	Newton's First Law of Motion	Imperfections in Solids	
	Circular Motion		
Module 4	Conservation of Momentum		
Module 4	Cumulative test based on Module 1,2,3	Cumulative test based on Module 1,2,3	Cumulative test based on Module 1,2,3
Module 5	Work	Expressing Concentration of Solutions	Binomial Theorem for Positive Integral Indices
	Work Done by a Variable Force	Solubility	General and Middle Terms
	Special Cases of Work Done	Vapour Pressure and Liquid Solutions	Arithmetic Progression (A.P)
	Power	Ideal and non Ideal Solutions	Geometric Progression (G.P)
	The Concept of Potential Energy	Colligative Properties and Determination of Molar Mass - Part I	Sum to n Terms of Special Series
	The Concept of Kinetic Energy	Colligative Properties and Determination of Molar Mass - Part II	
	Kinetic Energy and Momentum	Abnormal Molar Masses	
	The Work-Energy Theorem		
	The Conservation of Energy		
	The Potential Energy of a Spring		
	Collisions		
	Conservative and Non Conservative Forces		
Module 6	Center of Mass	Thermodynamics - Applications	Slope of a Line
	Torque and Angular Momentum	Measurement of Delta U & Delta H: Calorimetry	Various Forms of the Equation of a Line
	Equilibrium of Parallel Forces	Enthalpies for Different Types of Reactions	General Equation of a Line
	Moment of Inertia	Spontaneity	Distance of a Point from a Line
	Theorems of Perpendicular and Parallel Axes	Gibbs Energy Change and Equilibrium	Sections of a Cone
	Kinetic Energy, Torque and Angular Momentum of a Rotating Rigid Body		Circle
	Conservation of Angular Momentum		Parabola
	Rolling Motion, Kinetic Energy Due to Translation and Rotation		Ellipse
	Kinematics of Rotational Motion about a Fixed Axis		Hyperbola
Module 6	Kepler's Laws	Law of Chemical Equilibrium and Equilibrium Constant	Complex Numbers

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	Universal Law of Gravitation	Applications of Equilibrium Constant	Algebra of Complex Numbers
	Acceleration Due to Gravity of the Earth	Factors Affecting Equilibria	The Modulus and the Conjugate of a Complex Number
	Variation of Acceleration Due to Gravity - Due to Shape, Altitude, Depth and Rotation of Earth	Ionic Equilibrium in Solution	Argand Plane and Polar Representation
	Intensity and Potential in a Gravitational Field	Acids, bases and salts	Quadratic Equations
	Orbital Velocity, Period of a Satellite and Energy of an Orbiting Satellite	Ionization of acids and bases	
	Gravitational Potential Energy of A System of Particles	Solubility and Solubility Product	
	Escape Speed		
Module 7	Geostationary and Polar Satellites		
Module 8	Cumulative test based on Module 5,6,7	Cumulative test based on Module 5,6,7	Cumulative test based on Module 5,6,7
	Stress and Strain	Rate of a chemical reaction	Types of Matrices
	Elastic Moduli	Factors Influencing Rate of a Reaction	Operations on Matrices
	Pressure and Buoyancy	Integrated Rate Equations	Transpose of a Matrix
	Surface Tension	Temperature Dependence of the Rate of a Reaction	Symmetric and Skew Symmetric Matrices
	Surface Energy, Excess of Pressure	Collision Theory of Chemical Reactions	Invertible Matrices
	Capillarity		Determinant
	Continuity Equation		Properties of Determinants
	Reynolds Number		Area of a Triangle
	Bernoulli's Principle		Minors and Cofactors
	Viscosity		Adjoint and Inverse of a Matrix
	Stokes Formula and Terminal Velocity		Applications of Determinants and Matrices
Module 9	Elastic Behaviour Of Solids		
	Measurement of Temperature	Oxidation Number	Angles
	Thermal Expansion	Redox Reactions and Electrode Processes	Trigonometric Functions
	Specific Heat Capacity	Galvanic Cells	Trigonometric Functions of Sum and Difference of Two angles
	Change of State	Nernst Equation	Trigonometric Equations
	Heat Transfer - Conduction, Convection and Radiation	Conductance of Electrolytic Solutions	
	Newton's Law of Cooling	Electrolytic Cells and Electrolysis	
	Calorimetry	Fuel cells	
Module 10		Corrosion	
	First Law of Thermodynamics	Adsorption	Measures of Central tendency

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	Thermodynamic Processes	Catalysis	Measures of Dispersion - Range and Mean Deviation
	Heat Engines	Colloids	Measures of Dispersion - Variance and Standard Deviation
	Carnot Engine	Atmospheric pollution	Analysis of Frequency Distributions
	Refrigerators and Heat Pumps		Random Experiments
	Behaviour of Gases and Gas Equations		Events
	Kinetic Theory of an Ideal Gas and Expression for Pressure		Axiomatic Approach to Probability
	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	Cumulative Test based on Module 9,10,11	Cumulative Test based on Module 9,10,11
	Simple Harmonic Motion	Electronic Configurations and Types of Elements: s, p, d, f - Blocks	Conditional Probability
	Velocity and Acceleration in Simple Harmonic Motion	Periodic Trends in Properties of Elements	Multiplication Theorem on Probability and Independent events
	Energy in Simple Harmonic Motion	Occurrence of Metals	Random Variables and its Probability Distributions
	Some Systems Executing Simple Harmonic Motion	Concentration of Ores	Bernoulli Trials and Binomial Distribution
	Simple Pendulum	Extraction of Crude Metal from Concentrated Ore	
	Damped Simple Harmonic Motion	Thermodynamic Principles of Metallurgy	
	Transverse and Longitudinal Waves	Electrochemical Principles of Metallurgy	
	The Speed of a Travelling Wave	Oxidation- Reduction	
	Velocity of Sound in Air and Variation with Pressure, Temperature and Humidity	Refining	
	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	Occurrence and Isotopes of Hydrogen	Limits

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		Limits of Trigonometric Functions
Charging by Induction	Hydrogen - Preparation	
Coulomb's Law	Hydrogen - Properties	Derivatives
Forces Between Multiple Charges	Hydrides	
Electric Field - Intensity And Potential	Water	
Electric Flux	Hydrogen Peroxide	
Electric Dipole	Heavy Water	
Dipole in a Uniform and Non-Uniform External Field	Group 1 Elements: Alkali Metals	
Gauss's Law	Group 2 elements: Alkaline Earth Metals	
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	Group 13 elements: The Boron Family	Continuity
Electric Currents in Conductors	Group 14 elements: The Carbon family	Differentiability
Thermal velocity and Drift velocity	Group 15 Elements - The Nitrogen Family	Derivatives of Composite Functions
Ohm's Law	Group 15 Nitrogen And Its Compounds	Derivatives of Implicit Functions

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	Resistivity of Various Materials	Group 15 Phosphorus And Its Compounds	
	Temperature Dependence of Resistivity	Group 16 Elements - The Oxygen Family	
	Combination of Resistors-Series and Parallel	Group 16 Oxygen And Ozone	
	Cells, Emf, Internal Resistance	Group 16 Sulphur And Its Compounds	
	Cells in Series and in Parallel	Group 17 Elements - The Halogens	
	Kirchhoff 's Laws	Group 17 Chlorine, Oxoacids of Halogens And Interhalogen Compound	
	Wheatstone's Bridge	Group 18 Elements - The Noble Gases	
	Metre Bridge		
	Potentiometer		
	Electrical Energy and Power		
	Resistance		
	Limitations of Ohm's Law		
Module 15	Current and Voltage Distribution in Electrical Circuits		
Module 16	Cumulative Test based on Module 13, 14, 15	Cumulative Test based on Module 13, 14, 15	Cumulative Test based on Module 13, 14, 15
	Biot- Savart's Law	General Properties of the Transition Elements(d-block)- Part 1	Properties of Inverse Trigonometric Functions
	Ampere's Circuital Law	General Properties of the Transition Elements(d-block)- Part 2	
	Magnetic Field Due to Straight Conductor, Circular Coil, Solenoid and Toroid	Some Important Compounds of Transition Elements	
	Force on a Moving Charge in a Magnetic Field+	f-Block Elements(Lanthanoids and Actinoids)	
	Cyclotron	Definitions of Some Important Terms Pertaining to Coordination Compounds	
	Motion of Charged Particle in a Crossed Electric and Magnetic Field	Nomenclature of coordination compounds	
	Force on a Current Carrying Conductor	Isomerism in co-ordination compounds	
	Force between Two Current Carrying Conductors	Bonding in co-ordination compounds Part -1	
	Current Loop and Dipole Moment	Bonding in co-ordination compounds Part - 2	
	Torque on a Magnetic Dipole	Bonding in Metal Carbonyls	
	Moving Coil Galvanometer	Stability of Coordination Compounds	
	Conversion of Moving Coil Galvanometer to Ammeter and Voltmeter	Importance of coordination compounds	
	Magnetic Effect of Current	important inorganic structures	

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Module 17	Special Cases of Magnetic Field due to Current Carrying Conductors		
	The Bar Magnet	Structural representations of organic compounds	Derivatives of Inverse Trigonometric Function
	Magnetism and Magnetic Intensity	Classification of organic compounds	Exponential and Logarithmic Functions
	Torque and P.E of a Magnet in a Magnetic Field	Nomenclature of organic compounds	Logarithmic Differentiation
	The Earth's Magnetism	Isomerism in Organic Compounds	Derivatives of Functions in Parametric Forms
	Magnetic Properties of Materials	Methods of Purification of Organic Compounds	Second Order Derivative
	Magnetic Field and Dipole Moment Due to Revolving Charge	Qualitative and Quantitative Analysis of Organic Compounds	
	Permanent Magnets and Electromagnets	Fundamental Concepts in Organic Reaction Mechanism	
Module 18	Magnetism and Gauss's Laws		
	Magnetic Flux	Alkanes	Mean Value Theorem
	Faraday's Law of Induction	Alkenes	Rate of Change of Quantities
	Lenz's law and Conservation of Energy	Alkynes	Increasing and Decreasing Functions
	Motional Electromotive Force	Aromatic Hydrocarbons	Tangents and Normals
	Self Induction		Approximations
	Mutual Induction		Maxima and Minima
	Energy Stored in an Inductor		
Module 19	Eddy Currents		
Module 20	Cumulative Test based on Module 17, 18, 19	Cumulative Test based on Module 17, 18, 19	Cumulative Test based on Module 17, 18, 19
	AC Current and AC Voltage, Mean Value, RMS Value	Classification & Nomenclature of Haloalkanes and Haloarenes	Methods of Integration
	AC Voltage Applied to a Resistor	Nature of C-X bond	Integrals of Some Particular Functions
	AC Voltage Applied to an Inductor	Methods of Preparation of Haloalkanes and Haloarenes	Integration by Partial Fractions
	AC Voltage Applied to a Capacitor	Physical Properties of Haloalkanes and Haloarenes	Integration by Parts
	AC Voltage Applied to a Series LCR Circuit	Chemical Reactions of Haloalkanes and Haloarenes	
	Resonance in AC Circuits	Poly halogen compounds	
	Power in AC circuit: The Power Factor		
	Transformers		
	AC Generator		

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Module 21	LC Oscillations		
	Electromagnetic Waves	Classification & Nomenclature of Alcohols, Phenols and Ethers	Definite Integral
	Properties of Electromagnetic Waves	Structures of functional groups	Fundamental Theorem of Calculus
	Equations for Electric and Magnetic Vectors in an Electromagnetic Wave	Alcohols	Some Properties of Definite Integrals
	Displacement Current	Phenols	Area under Simple Curves
	Coherent and Incoherent Addition of Waves	Ethers	Area between Two Curves
	Interference of Light Waves and Young's Experiment		
	Diffraction		
	Polarisation		
	Electromagnetic Spectrum		
Module 22	Huygens' Principle		
	Reflection of Light by Spherical Mirrors	Nomenclature and Structure of Carbonyl Group	Differential Equations Basic Concepts
	Refraction	Preparation of Aldehydes and Ketones	General and Particular Solutions of a Differential Equation
	Total Internal Reflection	Physical Properties of Aldehydes and Ketones	Formation of a Differential Equation whose General Solution is Given
	Refraction at Spherical Surfaces and Lenses	Chemical Reactions of Aldehydes and Ketones	Methods of Solving First Order, First Degree Differential Equations
	Refraction Through a Prism	Uses of Aldehydes And Ketones	
	Dispersion	Nomenclature And Structure of Carboxylic Acids	
	Scattering of Light, Blue Color of Sky and Rainbow	Methods of Preparation of Carboxylic Acids	
	Optical Instruments - Human Eye, Simple Magnifier, Compound Microscope, Telescope	Physical Properties of Carboxylic Acids	
	Power of a Lens	Chemical Reactions of Carboxylic Acids	
Module 23		Uses of Carboxylic Acids	
Module 24	Cumulative Test based on Module 21, 22, 23	Cumulative Test based on Module 21, 22, 23	Cumulative Test based on Module 21, 22, 23
	Particle Nature of Light: The Photon	Classification of Amines	Types of Vectors
	Photoelectric Effect	Nomenclature of Amines	Addition of Vectors
	Einstein's Photoelectric Equation	Preparation of Amines	Multiplication of a Vector by a Scalar
	Wave Nature of Matter and de Broglie Wavelength	Physical Properties of Amines	Product of Two Vectors
	Alpha-Particle Scattering and Rutherford's Nuclear Model of Atom	Chemical Reactions of Amines	

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Module 25	Bohr's Model of the Hydrogen Atom	Diazonium Salts	
	The Line Spectra of the Hydrogen atom	Carbohydrates	
	Atomic Masses and Composition of Nucleus	Proteins	
	Size of the Nucleus	Enzymes	
	Mass - Energy Relation and Nuclear Binding Energy	Vitamins	
	Radioactivity	Nucleic Acids	
	Nuclear Force		
	Nuclear energy and Nuclear fission and fusion		
Module 26	Classification of Metals, Conductors and Semiconductors	Classification of polymers	Direction Cosines and Direction Ratios of a Line
	Intrinsic Semiconductor	Types of polymerization	Equation of a Line in Space
	Extrinsic Semiconductor	Bio Degradable Polymers	Angle between Two Lines
	Application of Junction Diode as a Rectifier	Drugs	Coplanarity of Two Lines
	Special Purpose p-n Junction Diodes	Chemicals in food	Plane
	Junction Transistors and Transistor Configuration and Current Amplification Factors	Cleansing agents	Angle between Two Planes
	Transistor as an Amplifier and Oscillator	Important organic named reactions	Distance of a Point from a Plane
	Digital Electronics and Logic Gates	Reaction Mechanisms	Angle between a Line and Plane
	Propagation of Radio Waves	Distinction Tests	
	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	Cumulative Test based on Module 25, 26	Cumulative Test based on Module 25, 26
Module 28	Revision Test 1	Revision Test 1	Revision Test 1
Module 29	Revision Test 2	Revision Test 2	Revision Test 2
Module 30	Revision Test 3	Revision Test 3	Revision Test 3
Module 31	Revision Test 4	Revision Test 4	Revision Test 4
Module 32	Revision Test 5	Revision Test 5	Revision Test 5
Module 33	Revision Test 6	Revision Test 6	Revision Test 6

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Module 34	Revision Test 7	Revision Test 7	Revision Test 7
Module 35	Revision Test 8	Revision Test 8	Revision Test 8
Module 36	Revision Test 9	Revision Test 9	Revision Test 9
Module 37	Revision Test 10	Revision Test 10	Revision Test 10