VMC Vidyamandir Classes SINCE 1986

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CHEMISTRY LECTURE PLAN - JEE 2028

PART - A

Module - 1A | Stoichiometry - I		
Class 1	Define terms Atoms, Molecules, Compounds, and Mixture with examples (Refer NCERT) Define Atomic Mass, Molecular Mass, Mole, Molar Mass, Equivalent Mass (Refer Module) Discuss Laws of chemical Combinations and Empirical Formula & Molecular formula (Refer NCERT)	**1 April - 4 May 2026 (Five Weeks) (One Class Extra)**
Class 2	Define Number of Moles of molecules and constituents of molecule, Percent composition, Define and explain concentration of solution and concentration terms	
Class 3	Explain Interrelation between various concentration terms, Discuss Sampling, Mixing and Dilution of solution, Effect of temperature on concentration terms	
Class 4	Concepts of Stoichiometric calculations using Mole concept, Discuss percent purity, Percent yield, Introduce concept of Limiting reagent and Excess reagent	
Class 5	Introduce Equivalent concept, Discuss Volumetric and gravimetric analysis, Primary and secondary standard solutions, Explain Simple titration (Acid Base Titration) and Back Titration with examples (Refer module)	
Class 6	Problem solving	
Class 7	Problem solving	
Module - 1A | Atomic Structure		
Class 1	Dalton's Theory of atoms, Discovery of cathode rays and positive rays, e/m ratio, Oil drop experiments, Thompson model, Rutherford model, Atomic number and mass number, Isotopes, Isotones and isobars, Drawbacks of Rutherford model	
Class 2	Development leading to Bohr's model, Electromagnetic spectrum, Continuous spectrum, Photoelectric effects, Spectrum of atom	
Class 3	Postulates of Bohr model, Derivation of radius of orbit, Velocity, Energy and ionization energy of electron	
Class 4	Types of spectra, Spectrum of H like species, Drawbacks of Bohr model	
Class 5	Dual nature of matter, De-Broglie wavelength, Uncertainty principle, Quantum numbers	**5 May - 1 June 2026 (Four Weeks) (One Class Extra)**
Class 6	Shapes of orbitals, Orientation of orbitals, Nodes, Plots of psi and psi^2	
Class 7	Filling of orbitals, Electronic configuration of atoms and ions, Magnetic moments, Orbital angular momentum	
Class 8	Problem solving	
Module - 1A | Periodic Properties		
Class 1	Earlier attempts of periodic classification of elements, Modern periodic table, Some other features of the periodic table, Groups and Periods	
Class 2	Block of the periodic table, Classification of elements based on their position in the periodic table, Penetration effect, Shielding effect	
Class 3	Periodic properties-Valence, Atomic radii, Ionization energy, Electron affinity	
Class 4	Electronegativity, Oxidation state, Inert pair effect, Metallic Character, Chemical reactivity, Magnetic effect	
Module - 1A | Chemical Bonding		
Class 1	Chemical Bond, Types of Bonds, Formation of Ionic Bond, Lewis, Theory (Lewis Structure)	**2 June - 29 June 2026 (Four Weeks) (Three Classes Extra)**
Class 2	Covalent bond and formation of Covalent bond and Coordinate bond, Lewis structure	
Class 3	Electron precise, Deficient and rich compounds, Expansion of octet, Terminology related to covalent bond	
Class 4	Dipole Moment, Percent ionic character, VSEPR Theory	
Class 5	VBT, Hybridization Theory	
Class 6	Orbital diagram, Factors affecting bond angles (Lone pair, Electronegativity etc.)	
Class 7	MOT, Linear combination of atomic orbitals, Atomic orbital interaction diagrams	
Class 8	Electronic configuration, Bond order, Stability, No. of sigma and Pi bonds, Ionization energies and magnetic properties of molecules	
Class 9	Intermolecular forces	
Class 10	Problem solving	
Module - 2A | Thermochemistry		
Class 1	Basics of Thermodynamics-systems, Surrounding, Types of systems, Thermodynamic Properties-Intensive and extensive, The state of the system-state functions, Internal energy, Work and heat	
Class 2	First law of Thermodynamics, Sign convention for work and heat, Internal Energy change, Enthalpy, Enthalpy change, Exothermic and Endothermic reactions, Heat capacity, Relation between enthalpy change and internal energy change	
Class 3	Standard conditions, Standard enthalpy change, Factors affecting enthalpy change - reactant, Product, physical state, Temperature, Hess law, Concept of calorimeter, Types of enthalpy change of reactions- standard enthalpy change of formation, Standard enthalpy change of combustion, Standard enthalpy change of phase change, Standard enthalpy change of atomization	**30 June - 3 August 2026 (Five Weeks) (Three Classes Extra)**
Class 4	Standard enthalpy change of bond dissociation - average bond dissociation enthalpy, Lattice enthalpy and hydration enthalpy, Enthalpy change of solution, Enthalpy change of dilution, Enthalpy change of neutralization, Enthalpy change of ionization of weak acid or base, Born Haber cycle, Enthalpy of polymerisation	
Module - 2A | Thermodynamics		
Class 1	Define system, surrounding and universe, Types of systems, States of system, State function and path function, Internal energy, Internal energy change, Pressure volume work, Types of processes, Reversible and irreversible processes	
Class 2	Heat capacity and Molar heat capacity at constant pressure and constant volume, Determination of w, q, DH and DU for a process and a reaction, First law of Thermodynamics, Work done, Heat exchanged and change in internal energy and enthalpy for Isothermal (Reversible and Irreversible), Adiabatic (Reversible and Irreversible), Isochoric and Isobaric process. PV diagram for reversible process	
Class 3	Spontaneity and Limitations of First law of thermodynamics, Second law of thermodynamics, Statements of second law of thermodynamics, Entropy – entropy as state function, Heat exchange and entropy change, Effect of temperature on entropy, Entropy change and temperature, Effect of volume, Mole on entropy, Entropy of different states of matter	
Class 4	Entropy changes for system, Surrounding and total entropy change, Entropy change at equilibrium, Total entropy change for spontaneous process, Entropy change for Isothermal process and Adiabatic process, Entropy change for reaction	
Class 5	Finding direction of spontaneity, Calculating entropy change in phase change, Entropy of a substance, Gibb's energy, Energy, which is not available to do useful work, Net energy available to do useful work, Free energy of reaction Gibb's energy change and spontaneity, Gibb's equation	
Class 6	Gibb's energy change and equilibrium, Standard Gibb's energy change and equilibrium constant, Effect of temperature on spontaneity of reaction, Variation of Gibb's energy and equilibrium constant	

Module - 2A | Chemical Equilibrium		
Class 1	Define equilibrium, Dynamic nature of equilibrium using rate of forward and reverse reaction, Classification of chemical equilibrium based on extent of reaction, Equilibrium in physical processes-phase transformation processes, Equilibrium involving dissolution of solid or gases, Features of physical equilibrium, General characteristics of equilibria involving physical processes	
Class 2	Equilibrium in Chemical Processes-Dynamic equilibrium, Law of chemical equilibrium and equilibrium constant, Equilibrium constant of reverse reaction, Relation between equilibrium constats for a general reaction and its multiples, Homogeneous equilibria	
Class 3	Equilibrium constant in gaseous systems, Relation between Kc and Kp, Kp for selected reactions, Heterogeneous equilibria, Units of Equilibrium constants, Applications of Equilibrium constants, Predicting the Extent of a reaction, Predicting the direction of the reaction (Reaction Quotient)	
Class 4	Calculating equilibrium concentration, Relationship between equilibrium constant K, Reaction quotient Q and Gibb's energy, Equilibrium constant using standard free energy change, Degree of dissociation and Vapour Density	
Class 5	Factors affecting equilibria-Le-Chatelier's Principle-Effect of concentration change, (Effect of concentration-An experiment), Effect of pressure change, Effect of Inert gas addition, Effect of temperature change, (Effect of temperature-An Experiment), Effect of catalyst	
Module - 2A | Ionic Equilibrium		
Class 1	Define chemical substance as electrolyte and non-electrolyte, Weak and strong electrolyte, Define ionic equilibrium, Water as universal solvent, Discuss characteristics of Acids, Bases, and salts, Distinguish dissociation and ionization, Factors affecting extent of ionization	
Class 2	Arrhenius concept of Acids and Bases-Limitation of Arrhenius concept, The Bronsted-Lowry Acids and Bases- concept of conjugate acid base pair, Relative strength of conjugate acid and base, Acid base chart, Limitation of Bronsted concept, Amphoteric nature of water, Lewis Acids and bases, Common stronger acids and bases, Typical weak acids	
Class 3	Self-ionization of water, Ionization constant(ka) of water, Hydronium and Hydroxyl ion, Ionic product (Kw) of water, Acidic, Neutral and basic aqueous solutions by the relative values of H+ and HO- concentration, activity of hydrogen ion, The pH scale, pH of some common substances, pH, pOH and relation between pH and pOH, Effect of temperature on ionization of water and pH scale	
Class 4	Ionization of weak acid and ionization constant of weak acids, step-wise approach to evaluate pH of the weak electrolyte. Ka of some selected weak acids. Ionization of weak bases, Kb of some selected weak bases, Relation between Ka and Kb, Ionization equilibrium and stepwise ionization constants of Polyacid bases and Polybasic acids	
Class 5	Common Ion effect, pH of mixture of strong acid and weak acid, Buffer solution-definition, Example and pH of acidic and basic buffer	
Class 6	Hydrolysis of salt and the pH of their solutions, Explain cationic hydrolysis and anionic hydrolysis pH of solution of salt made up of strong acid and strong base, pH of salt made up of strong base and weak acid, pH of salt made up of strong acid and weak base, pH of salt made of weak acid and weak base	**4 August - 7 September (Five Weeks) (Two Classes Extra)**
Class 7	Solubility equilibria of sparingly soluble salts-Classification of salt as soluble, Slightly soluble and sparingly soluble salt, Solubility product constant, Relation between solubility and Ksp, Determination of solubility of salt	
Class 8	Effect of common ion solubility of ionic salts, Effect of pH on solubility of salts of weak acids Precipitation of salt, Condition for precipitation of salt, Precipitation of salt using H_2S	
Module - 2A | Redox Reactions		
Class 1	Classical idea of redox reactions - oxidation and reduction reactions (refer NCERT) Redox reactions in terms of electron transfer reactions (refer NCERT) Competitive Electron Transfer reactions (refer NCERT) Oxidation Number and rules for determination of oxidation number, Stock Notation, Fractional oxidation state, Oxidation and Reduction in terms of oxidation number, Oxidising agent and reducing agent	
Class 2	Type of redox reactions-Combination, Decomposition, Displacement (all types), Disproportionation and comproportionation, Balancing of redox reactions, Oxidation state method classify reactant as oxidant, Reductant, Redox and spectator in balanced reaction, Ion – electron method.	
Class 3	Redox reactions as the basis for Titrations (using $KMnO_4$, $K_2Cr_2O_7$, $CuSO_4$ and KI) and indicators used in redox titrations, Bleaching action, Volume strength of hydrogen peroxide relation between volume strength and molarity, mass percent of H_2O_2 solution Stoichiometric calculations based on redox reactions using mole concept, Consider suitable example for discussion of concept of limiting and excess reagent, Sampling, dilution and use of volume strength of H_2O_2	
Class 4	Equivalent mass of oxidant, reductant, redox substance, and spectator, Discuss important oxidant and reductant used in stoichiometric calculations based on redox reactions such as $KMnO_4$, $K_2Cr_2O_7$, H_2O_2, $H_2C_2O_4$, KHC_2O_4 etc.	
Break for Half- Yearly School Exam (8th Sept. to 21st Sept.)		
Module - 3A | Introduction to Organic Chemistry		
Class 1	General Introduction, Shape of carbon compounds, Type of Carbon and Hydrogen atom, Condensed structure of Organic Compound (NCERT Examples only), Three dimensional (Wedge dash) representation of organic compounds, Classification of organic compounds, Functional Groups and Homologous series	**22 September - 2 November (Six Weeks) (Three Classes Extra)**
Class 2	IUPAC Nomenclature of hydrocarbons and parent chain-Alkyl, Alkenyl, IUPAC Nomenclature of saturated hydrocarbons	
Class 3	IUPAC Nomenclature of unsaturated hydrocarbons and Functional Groups (Use example of all chapters of NCERT only)	
Class 4	IUPAC nomenclature of functional groups (use example of all chapters of NCERT only), Trivial names of organic compounds, Bond line structure of organic compound, IUPAC Nomenclature of polyfunctional groups	
Class 5	Structural isomerism (From Notes of Bade Bhaiya), IUPAC Nomenclature of cyclic compounds and Benzene Derivatives (Using examples of these in structural isomerism)	
Class 6	Confirmational isomers (Ethane, Butane, Butan-2, 3-diol only)	

Class 7	Geometrical isomers of XYC = CXY, XYC = CXZ and XYC = CZW type, Compare melting point, Boiling point, Dipole moment, Solubility of Cis-Trans But-2-ene	
Class 8	Optical Isomers of compounds containing 1 and 2 chiral carbons (Use Example: 2-Chlorobutane; 2, 3-Dichloropentane; 2, 3-Dichlorobutane only)	
Class 9	Resonance	
Class 10	Resonance and Aromaticity	
Class 11	Electronic Effects	
Class 12	Type of Intermediates and Stability of Intermediates	
Class 13	Basics of organic reactions (Substrate, Reagents), Type of organic reactions and purification of organic compounds	
Class 14	Qualitative and Quantitative analysis	
Class 15	Qualitative and Quantitative analysis	
Module - 3A | Hydrocarbons		**3 November - 30 November (Four Weeks Including Diwali Break) (One Class Extra)**
Class 1	**Preparation of Alkanes** **1.** From unsaturated hydrocarbons **2.** From reduction of alkyl halide using Zn/HCl **3.** From Wurtz Reaction-Intermolecular and Intramolecular Wurtz reaction **4.** From soda lime decarboxylation **5.** From Kolbe's Electrolysis using mechanism **6.** From Grignard reagent and metal carbides **7.** From reduction of Alcohol, Aldehyde/ketone (Clemensen reduction), Carboxylic acid	
Class 2	**Physical Properties of Alkane:** Physical state, Solubility, Boiling point (Effect of Branching), Melting point, Stability of isomeric alkanes **Chemical Properties of Alkanes** **1.** Substitution reaction- halogenation, mechanism, regiochemistry, stereochemistry of reaction	
Class 3	**2.** Combustion, heat of combustion, incomplete combustion **3.** Controlled combustion and oxidation to alcohol **4.** Isomerization reaction **5.** Aromatization **6.** Reaction with steam **7.** Pyrolysis **Preparation of Alkenes** **1.** From alkyne **2.** From alkyl halide using alc KOH, $NaNH_2$, t-BuOK/t-BuOH (Saytzeff and non-Saytzeff product) **3.** From vicinal dihalides	
Class 4	**4.** From alcohol by acidic dehydration **Physical Properties of Alkenes:** Physical state, Boiling Point, Solubility, Melting Point and Density etc. **Chemical Properties of Alkenes** **1.** Addition of HX **2.** Addition of H+/H_2O **3.** Addition of cold concentrated H_2SO_4 **4.** Addition of HBr in presence of peroxide mechanism	
Class 5	**5.** Addition of X_2/CCl_4, X_2/H_2O **6.** Oxidation using dil cold aq $KMnO_4$ - balanced chemical reaction and example **7.** Oxidation using acidic $KMnO_4$ or acidic $K_2Cr_2O_7$ **8.** Ozonolysis of alkene- reductive and oxidative, detecting position of double bond in alkenes and other unsaturated compounds **9.** Free radical halogenation in propene, 2-butene, isobutene **10.** Polymerization of alkene **Chemical Test for Unsaturation in Organic Compounds- Br_2/Water and Baeyer Reagent Test**	
Class 6	**Preparation of Alkyne** **1.** From calcium carbide, magnesium carbide **2.** From vicinal dihalide using alc KOH, $NaNH_2$ **3.** Preparation of higher alkyne using lower terminal alkyne **Physical Properties of Alkyne** Physical state, Polar nature of alkyne, solubility in water, boiling point, melting point and density etc. **Chemical properties of Alkyne** **1.** Acidic nature of terminal alkyne, Explanation of acidic nature, Reactions due to acidic nature	
Class 7	**2.** Addition reactions- Addition of H_2 **3.** Partial hydrogenation of alkynes **4.** Addition of HX **5.** Addition of water- on ethyne, propyne, phenylethyne **6.** Addition of X_2/CCl_4 and X_2/H_2O **7.** Ozonolysis of alkyne **8.** Polymerization of alkyne-Linear polymerization and cyclic polymerization **9.** Chemical test for terminal alkyne **Addition Reaction of Alkadienes (1,2 and 1,4 Addition)**	

Class 8	**Preparation of Benzene** **1.** From ethyne **2.** From decarboxylation of aromatic acids **3.** From reduction of phenol **4.** From sulphonic acid **Chemical Properties of Benzene** **Addition Reactions of Benzene** **1.** Addition of H_2-reaction conditions **2.** Addition of Cl_2-reaction conditions **3.** Combustion reaction **4.** Ozonolysis of benzene, toluene **5.** Side chain oxidation **6.** Side chain Halogenation	**1 December - 4 January** **(Five Weeks)** **(Three Classes Extra)**
Class 9	**Electrophilic Substitution Reactions of Benzene** **1.** Nitration- Nitrating mixture, mechanism **2.** Halogenation- use of Lewis acid catalyst **3.** Sulphonation-use of oleum **4.** Friede Crafts reaction alkylation- Mechanism, Rearrangement **5.** Friedel Crafts acylation reaction-Mechanism- using acid halide and anhydride	
Class 10	**Electrophilic Substitution Reactions of Substituted Benzene** **1.** Reactivity order **2.** Directive influence of substituent in monosubstituted benzene **Carcinogenicity and Toxicity**	
Class 11	Problem solving and Doubts	
Part - B (Module 1 & 2 - 6 Classes)		
Part - B		
	States of Matter (Module 1 - Part B) : Class - 1 to 3	
	States of Matter (Module 1 - Part B) : Class - 4 & 5	**5 January - 8 February** **(Five Weeks)** **(Three Classes Extra)**
	Hydrogen (Module 3 - Part B) : 2 Classes	
	s-Block (Module 3 - Part B) : 3 Classes	
	p-Block (Module 3 - Part B) : 4 Classes	
	Environmental Chemistry (Module 3 - Part B) : 2 Classes	

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PHYSICS LECTURE PLAN - JEE 2028 Class - XI (Part-A & B)

Physics			Week
Chapter – 1A Vectors, Units & Dimensions	**Class-1**	Basics, Mutiplication of vector with scalar, Addition of vectors	6 April – 12 April
	Class-2	Problems on addition, Subtraction of vectors	
	Class-3	Components of vector, Addition & subtraction of vectors using components	13 April – 19 April
	Class-4	Forces in equilibrium, weight, Normal reaction	
	Class-5	Tension, Pulley problems	20 April – 26 April
	Class-6	Dot Product, Cross Product	
	Class-7	Units & Dimensions	27 April – 3 May
	Class-8	Application of Dimensional analysis, Significant figures	
Chapter – 0 Mathematical Tools for Physics	**Class-1**	Differentiation	4 May – 10 May
	Class-2	Integration	
NOTE:- Detailed video lectures of Mathematical Tools will be uploaded online and these classes are for Revision and Problem Solving			
Chapter – 2A Kinematics of a Particle	**Class-1**	Kinematical quantities, Uniform motion	11 May – 17 May
	Class-2	Uniformly accelerated motion	
	Class-3	Motion under gravity, Balloon problems	18 May – 24 May
	Class-4	Instantaneous velocity & acceleration, Graphs	
	Class-5	Motion with non-uniform acceleration	25 May – 31 May
	Class-6	Motion of two particles	
Chapter-1B Vectors, Units & Dimensions	**Class-1**	Problem Solving	Extra classes in summer vacation
Chapter-2B Kinematics of a Particle	**Class-1**	Problem Solving	
Chapter-3A Motion in Two Dimensions	**Class-1**	Ground to ground projectile	1 June – 7 June
	Class-2	Equation of trajectory, Height to ground projectile	
	Class-3	General 2D motion, Uniform circular motion	8 June – 14 June
	Class-4	Non uniform circular motion, motion with constant alpha	
	Class-5	Relative Motion basics, overtake, shortest distance problems	15 June – 21 June
	Class-6	Rain-man, River-swimmer problems	
Chapter-4A Dynamics of a Particle	**Class-1**	Newton's laws and their applications	22 June – 28 June
	Class-2	Weighing machine, Spring balance, Impulse	
	Class-3	Friction: Static and Kinetic	29 June – 5 July
	Class-4	Block over block system on smooth ground, Pseudo force	
	Class-5	Dynamics of circular motion	6 July – 12 July
	Class-6	Banking of roads, spring force	
Chapter-3B Motion in Two Dimensions	**Class-1**	Projectile Motion on Inclined Plane, Projectile thrown from moving vehicle	13 July – 19 July
	Class-2	Circular Motion, Radius of curvature, Relative Motion	
Chapter-5A Energy & Momentum	**Class-1**	Work	20 July – 26 July
	Class-2	Work energy theorem, Law of conservation of energy	
	Class-3	Motion in vertical circle	27 July – 2 August
	Class-4	Relation between U and F, Power due to a force	
	Class-5	Law of Conservation of Momentum	3 August – 9 August
	Class-6	Collisions	
	Class-7	Centre of Mass	10 August – 16 August
	Class-8	Displacement, velocity and acceleration of COM	
Chapter-6A Rotational Motion	**Class-1**	Introduction, Moment of Inertia	17 August – 23 August
	Class-2	Parallel axis and perpendicular axis theorem	
	Class-3	Torque, Equilibrium of rigid bodies, Fixed axis rotation	24 August – 30 August
	Class-4	Problems on fixed axis rotation (Including energy conservation)	
	Class-5	General Rigid Body Motion Kinematics	31 August – 6 september
	Class-6	General Rigid Body Motion Dynamics	
	Class-7	Rolling motion on inclined plane, Energy conservation	7 September – 13 September
	Class-8	Angular Momentum and its conservation	

Half Yearly Exam Break (2 weeks)			
Chapter-7A Gravitation	**Class-1**	Universal Law of Gravitation, Gravitational force problems, Acceleration due to gravity, variation in value of g with height, depth & latitutes	28 september – 4 October
	Class-2	Gravitational Field, Gravitational Potential Energy, Escape velocity	
	Class-3	Motion of satellite, Kepler's Laws	5 October – 11 October
Chapter-4B Dynamics of a Particle	**Class-1**	Problem Solving (After Shyam Mohan Bhaiya Class)	
Chapter-8A Liquids	**Class-1**	Pressure due to a liquid column, U-tube problems	12 October – 18 October
	Class-2	Barometer, Manometer, Pascal's Law, Force on Container Walls	
	Class-3	Buoyant force, Archimedes Principle, Floatation	19 October – 25 October
	Class-4	Fluid Dynamics: Equation of continuity, Bernoulli's equation	
	Class-5	Velocity of efflux, venturi-meter, pitot tube	26 October – 1 November
	Class-6	Force due to Surface tension, Excess pressure, Surface energy	
	Class-7	Angle of contact, Capillary rise	2 November – 8 November
	Class-8	Stoke's law, Terminal velocity, Viscous drag force on flat plate	
Diwali Break (1 week)			
Chapter-5B Energy and Momentum	**Class-1**	Problem Solving (After Shyam Mohan Bhaiya Class)	16 November – 22 November
Chapter-9A Properties of Matter	**Class-1**	Elasticity: Logitudinal stress and strain	
	Class-2	Elastic energy, Volume and shear stress and strain, Heat and Temperature	23 November – 29 November
	Class-3	Thermal Expansion, Thermal stress	
	Class-4	Calorimetry, Heat transfer: Introduction to three modes	30 November – 6 December
	Class-5	Conduction, Convection	
	Class-6	Radiation, Newton's Law of Cooling	7 December – 13 December
Chapter-10A Gaseous State and Thermodynamics	**Class-1**	Gas Laws, KTG, Mean free path, Law of equipartition of energy, Internal energy of a gas	
	Class-2	Zeroth Law & First Law, Molar Heat capacities: Cp, Cv, gamma for gases and gaseous mixture	14 December – 20 December
	Class-3	4 standard process: Isochoric, Isobaric, Isothermal, Adiabatic, Cyclic Process	
	Class-4	Second Law of Thermodynamics, Heat Engines and Refrigerators	21 December – 27 December
Chapter-6B Rotational Motion	**Class-1**	Problem Solving (After Shyam Mohan Bhaiya Class)	
Chapter-11A Simple Harmonic Motion	**Class-1**	Basics of SHM, Equations and Graphs: x-t, v-t, v-x, a-t, a-x, SHM as projection of uniform circular motion	28 December – 3 January
	Class-2	Energy in SHM, Superposition of SHMs in same direction & perpendicular directions,	
	Class-3	SHM of spring block system	4 January – 10 January
	Class-4	Angular SHM: Simple Pendulum, Physical pendulum	
Chapter-12A Wave Motion	**Class-1**	Wave motion basics, Speed of Wave, Equation of wave	11 January – 17 January
	Class-2	Intensity of Wave, Interference of Waves travelling in same direction	
	Class-3	Standing wave, Vibrations of string fixed at both ends, Vibrations of string fixed at one end and free at other end	18 January – 24 January
	Class-4	Standing wave in sound: open and closed organ pipes, Beats	
Chapter-7B Gravitation	**Class-1**	Problem Solving (After Shyam Mohan Bhaiya Class)	25 January – 31 January
Chapter-8B Liquids	**Class-1**	Pressure in Accelerating Liquid, Buoyancy	
	Class-2	Fluid Dynamics, Surface Tension, Viscosity	1 February – 7 February
Chapter-10B Gaseous State and Thermodynamics	**Class-1**	Problem Solving	

Annual Exam Break			
Chapter-9B **Properties of Matter**	**Class-1**	Elasticity, Thermal Expansion	8 March – 14 March
	Class-2	Clorimetry, Conduction, Radiation	
Chapter-11B **Simple Harmonic Motion**	**Class-1**	Linear SHM, Angular SHM	15 March – 21 March
	Class-2	Energy Method, Damped and Forced Oscillations	
Chapter-12B **Wave Motion**	**Class-1**	String Wave, Sound Wave	22 March - 28 march
	Class-2	Doppler Effect, Beats	
Part (B) of following chapters will be taken in online mode by Shyam Mohan Bhaiya followed by offline problem solving class by batch teachers as mentioned in the planner			
Chapter -4B - Dynamics of a Particle		September	
Chapter -5B - Energy and Momentum		October	
Chapter -6B - Rotational Motion		November	
Chapter -7B - Gravitation		December	

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MATHEMATICS LECTURE PLAN (PART A) – JEE 2028 | CLASS 11

1	Chapter – 1: Basics of Mathematics	Class-1	Linear Inequality, Componendo and Dividendo	6th April to 12th April
2		Class-2	Rational Inequality	
3		Class-3	Log Identities	13th April to 19th April
4		Class-4	Log Inequality	
5		Class-5	Modulus	20st April to 26th April
6		Class-6	Modulus Inequality	
7	Chapter – 2: Sets, Relation and Functions	Class-1	Sets, Representation of Sets, Types of Sets	27th April to 3rd May
8		Class-2	Subsets, Power set, Universal Set, Complement of Set	
9		Class-3	Union and Intersections of Sets, Venn diagrams	4th May to 10th May
10		Class-4	Cartesian Product of Sets, Relations	
11		Class-5	Functions, domain and Range	11th May to 17th May
12		Class-6	Polynomial Functions, Factor Theorem, Greatest Integer, Fractional Part, Signum Functions	
13	Chapter – 3: Quadratic Equations	Class-1	Properties of Roots / Formation of Quadratic Equation	18th May to 24th May
14		Class-2	Nature of Roots, Identity, Common Roots, Relation between roots & Coefficients of Cubic, Biquadratic	
15		Class-3	Equation Reducible to Quadratic Transformation of Equation, Finding roots by Observation	25th May to 31st May
16		Class-4	Graph of Quadratic Polynomial Completing the Square & its Range (Max./Min. Quadratic)	
17		Class-5	Quadratic Inequation Based on $f(x) > 0, \geq 0, \leq 0, < 0, \forall\ x \in R$	1st June to 7th June
18		Class-6	Rational Expression range	
19	Chapter-4: Trigonometry	Class-1	L and R Relation, Sign of Trigonometric function	8th June to 14th June
20		Class-2	Trigonometric Identities Part-1 (Compound Angles)	
21		Class-3	Multiple Angle / Submultiple Angle	15th June to 21st June
22		Class-4	$\sin(60)\sin(60-\theta)\sin(60+\theta)$ – – – based problems + Conditional Identities	
23		Class-5	Basic Graph / Domain / Range	22nd June to 28th June
24		Class-6	Basic Trigonometric Equations & Inequations	
25		Class-7	Problem Solving	**1st Extra Class between 15th June to 28th June**

26	**Chapter-5: Complex Numbers (Class XI NCERT)**	**Class-1**	Basic, Algebra of Complex Numbers, Properties of $'i'$, Representation of complex Numbers on argand plane, Modulus, Argument, Conjugate definition	29th June to 5th July
27		**Class-2**	Modulus, Argument, Conjugate Properties, Polar form	
28		**Class-3**	Problem Solving	6th July to 12th July
29	**Chapter-6: Sequence & Series**	**Class-1**	AP + Properties + AM	
30		**Class-2**	G.P. + Properties + GM and infinite G.P.	13th July to 19th July
31		**Class-3**	H.P. + HM + Basic (AM, GM Inequalities)	
32		**Class-4**	Mixed Topic AP, G.P., H.P. + AGP	20th July to 26th July
33		**Class-5**	Special Series based on $\Sigma r, \Sigma r^2, \Sigma r^3$	
34		**Class-6**	Method of Difference	27th July to 2nd August
35	**Chapter-7: P & C**	**Class-1**	Number Formation	
36		**Class-2**	${}^nP_r, {}^nC_r$	3rd August to 9th August
37		**Class-3**	Selection with constraint: TPC – (1-7)	
38		**Class-4**	TPC – (8, 9, 10)	10th August to 16th August
39		**Class-5**	Rank of Word, Geometrical (Points of Intersection), Sum of Numbers, Derangements	
40		**Class-6**	Circular Permutation + Problem Solving	17th August to 23rd August **2nd Extra Class between 10th Aug. to 23th Aug.**
41		**Class-7**	Problem Solving	
42	**Chapter – 8: Binomial Theorem**	**Class-1**	Properties based on ${}^nC_r$ + General term-based question	
43		**Class-2**	Find coefficient, Term independent of *x* Numerically greatest term	24th August to 30st August
44		**Class-3**	Series basic ${}^nC_r$, $r.{}^nC_r$, $r^2\,{}^nC_r$, $\frac{{}^nC_r}{r+1}$	
45		**Class-4**	Remainder, I + F type, Multinomial	31st Aug. to 6th Sept. **3rd Extra Class between 24th Aug. to 6th Sept.**
46		**Class-5**	Problem Solving	
47	**Chapter-9: Straight Line**	**Class-1**	Coordinate Plane, Distance Formula, Section Formula, Area, Slope of Lines and Angles between Two Lines	
		SCHOOL EXAM BREAK (7th Sept. to 20th Sept.)		
48		**Class-2**	Center of Triangles (Special Points: Centroid, Orthocenter, Circumcenter, Incenter)	21st Sept. to 27th Sept.
49		**Class-3**	Various forms of Line (Except Parametric form of Line)	
50		**Class-4**	Parametric form (Distance of a Points from Lines + Distance between Two Lines)	28th Sept. to 4th Oct.
51		**Class-5**	Position of Points + Locus Part-1	
52		**Class-6**	Locus Part-2, Family of lines	5th Oct. to 11th Oct.
53		**Class-1**	General Equation of Circles + Various forms of Circles	

54	**Chapter-10: Circles**	**Class-2**	Position of Point w.r.t Circles, Intercepts of Circles + Line and Circles (Condition of Tangency)	12^{th} Oct. to 18^{th} Oct.
55		**Class-3**	Equation of Tangent/Normal in different forms	
56		**Class-4**	Intersection of Circles + Common Tangents	19^{th} Oct. to 25^{th} Oct.
57		**Class-5**	Equation of Chord of Contact, $T = S_1$, Families of Circles	
58		**Class-6**	Locus based on Point of Intersection of Two Tangents + Mid-Point of Chord, and Chord of Contact	26^{th} Oct. to 1^{st} Nov. **4^{th} Extra Class between 26^{th} Oct. to 1^{st} Nov.**
59		**Class-7**	Problem Solving	
60	**Chapter-11: Conic Sections**	**Class-1**	General Conic Definition, Standard Parabola Elements, Parametric form	
61		**Class-2**	Shifted Origin, Elements	2^{nd} Nov. to 8^{th} Nov.
62		**Class-3**	Tangents and Normals to the Parabola, Chord of Contact, $T=S_1$	
		DIWALI BREAK (1 week.**)**		
63		**Class-4**	Standard Ellipse Elements, Parametric form	16^{th} Nov. to 22^{nd} Nov.
64		**Class-5**	Equations of Tangents and Normals, Chord of Contact, $T = S_1$, Director Circles	
65		**Class-6**	Problem Solving	23^{rd} Nov. to 29^{th} Nov.
66		**Class-7**	Hyperbola Elements, Parametric form	
67		**Class-8**	Equation of Tangent and Normals, Chord of Contact, $T=S_1$	30^{th} Nov. to 6^{th} Dec.
68		**Class-9**	Rectangular Hyperbola, Problem Solving	
69	**Chapter-12: Complex Numbers**	**Class-1**	De Moivre's theorem, Square Root of Complex Number, Argument, Conjugate Properties	7^{th} Dec. to 13^{th} Dec.
70		**Class-2**	Cube of root of Complex Number and their Properties, Nth roots of Unity	
71		**Class-3**	Problem Solving, Problems based on Modulus and Argument	14^{th} Dec. to 20^{th} Dec.
72		**Class-4**	Solving of Complex Equation + Basic Locus Problems	
73		**Class-5**	Triangle Law Inequalities, Distance Formula, Section Formula, Angle between Two Rays, Rotation Theorem	21^{st} Dec. to 27^{th} Dec.
74		**Class-6**	Standard Locus + Problem Solving	
75		**Class-7**	C + *iS*, Mixed problems	28^{th} Dec. to 3^{rd} Jan.

	Chapter-13: Statistics (Online)	**Class-1**	Measures of Central Tendency, Central Dispersion	
		Class-2	Variance & Standard Deviation, Mean Deviation	
76	**Chapter-16: Differential Calculus - I**	**Class-1**	Introduction of Limits, LHL, RHL	28th Dec. to 3rd Jan.
77		**Class-2**	Standard Templates of Limits : Algebraic, Trigonometry	4th Jan. to 10th Jan.
78		**Class-3**	Differentiation First Principle, Rules (Products, Quotient, Chain)	

MATHEMATICS LECTURE PLAN (PART B) – JEE 2028 | CLASS 11

79	**Quadratic Equations**	**Class-1**	Position of roots, Range involving parameter	11th Jan. to 17th Jan.
80		**Class-2**	Problem Solving	
81	**Trigonometry**	**Class-1**	Series, Simultaneous equations	18th Jan. to 24th Jan.
82		**Class-2**	Conditional identities	
83	**Sequence and Series**	**Class-1**	Log Series, Telescopic	25th Jan. to 31st Jan.
84		**Class-2**	Problem Solving	
85	**Permutation and Combination**	**Class-1**	Integral Equation	1st Feb. to 7th Feb.
86		**Class-2**	Div/Distribution, Subsets	
87	**Binomial Theorem**	**Class-1**	${}^nC_r \cdot {}^nC_s$, Double summation (Disconnected)	8th Mar. to 14th Mar.
88		**Class-2**	Problem Solving	
89	**Straight Lines**	**Class-1**	Angle Bisector, Pair of lines (Just results), Homogenization	15th Mar. to 21st Mar.
90	**Circles**	**Class-1**	Radical axis	
91	**Conic Sections**	**Class-1**	Co-normal properties, Reflection type results	22nd Mar. to 28th Mar.
92		**Class-2**	Rectangular hyperbola, Asymptotes	

NOTE: From Module – 2 onwards one problem solving class, mentioned as four extra classes can be taken in online mode by the teacher, if offline scheduling is not possible.