

## PHYSICS LECTURE PLAN - JEE 2027

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

Half Yearly Exam Break			
Chapter-1B Units, Dimensions and Vectors	Class-1	Problem Solving	22 September – 28 September
Chapter-2B Kinematics of a Particle	Class-1	Problem Solving	
Chapter-3B Motion in Two Dimensions	Class-1	Projectile Motion on Inclined Plane, Projectile thrown from moving vehicle	29 September – 5 October
	Class-2	Circular Motion, Radius of curvature, Relative Motion	
Chapter-7A Gravitation	Class-1	Universal Law of Gravitation, Gravitational force problems, Acceleration due to gravity, variation in value of g with height, depth & latitudes	6 October – 12 October
	Class-2	Gravitational Field, Gravitational Potential Energy, Escape velocity	
	Class-3	Motion of satellite, Kepler's Laws	13 October – 19 October
Chapter-4B Dynamics of a Particle	Class-1	Problem Solving (After Shyam Mohan Bhaiya Class)	13 October – 19 October
Diwali Break			
Chapter-8A Liquids	Class-1	Pressure due to a liquid column, U-tube problems	27 October – 2 November
	Class-2	Barometer, Manometer, Pascal's Law, Force on Container Walls	
	Class-3	Buoyant force, Archimedes Principle, Floatation	3 November – 9 November
	Class-4	Fluid Dynamics: Equation of continuity, Bernoulli's equation	
	Class-5	Velocity of efflux, venturi-meter, pitot tube	10 November – 16 November
	Class-6	Force due to Surface tension, Excess pressure, Surface energy	
	Class-7	Angle of contact, Capillary rise	17 November – 23 November
	Class-8	Stoke's law, Terminal velocity, Viscous drag force on flat plate	
Chapter-5B Energy and Momentum	Class-1	Problem Solving (After Shyam Mohan Bhaiya Class)	24 November – 30 November
Chapter-9A Properties of Matter	Class-1	Elasticity: Logitudinal stress and strain	1 December – 7 December
	Class-2	Elastic energy, Volume and shear stress and strain, Heat and Temperature	
	Class-3	Thermal Expansion, Thermal stress	8 December – 14 December
	Class-4	Calorimetry, Heat transfer: Introduction to three modes	
	Class-5	Conduction, Convection	15 December – 21 December
	Class-6	Radiation, Newton's Law of Cooling	
Chapter-10A Gaseous State and Thermodynamics	Class-1	Gas Laws, KTG, Mean free path, Law of equipartition of energy, Internal energy of a gas	15 December – 21 December
	Class-2	Zeroh Law & First Law, Molar Heat capacities: Cp, Cv, gamma for gases and gaseous mixture	22 December – 28 December <b>(1 extra class)</b>
	Class-3	4 standard process: Isochoric, Isobaric, Isothermal, Adiabatic, Cyclic Process	
	Class-4	Second Law of Thermodynamics, Heat Engines and Refrigerators	
Chapter-6B Rotational Motion	Class-1	Problem Solving (After Shyam Mohan Bhaiya Class)	29 December – 4 January
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	5 January – 11 January
	Class-2	Energy in SHM, Superposition of SHMs in same direction & perpendicular directions,	
	Class-3	SHM of spring block system	12 January – 18 January
	Class-4	Angular SHM: Simple Pendulum, Physical pendulum	
Chapter-12A Wave Motion	Class-1	Wave motion basics, Speed of Wave, Equation of wave	19 January – 25 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	26 Jan – 1 Feb
	Class-4	Standing wave in sound: open and closed organ pipes, Beats	
Chapter-7B Gravitation	Class-1	Problem Solving (After Shyam Mohan Bhaiya Class)	26 Jan – 1 Feb
Chapter-8B Liquids	Class-1	Pressure in Accelerating Liquid, Buoyancy	2 Feb – 8 Feb
	Class-2	Fluid Dynamics, Surface Tension, Viscosity	

Annual Exam Break			
Chapter-9B Properties of Matter	Class-1	Elasticity, Thermal Expansion	9 March – 15 March
	Class-2	Chromimetry, Conduction, Radiation	
Chapter-10B Gaseous State and Thermodynamics	Class-1	Problem Solving	16 March – 22 March (1 extra class)
	Class-2	Energy Method, Damped and Forced Oscillations	
Chapter-11B Simple Harmonic Motion	Class-1	Linear SHM, Angular SHM	23 March - 29 March
	Class-2	Doppler Effect, Beats	
Chapter-12B Wave Motion	Class-1	String Wave, Sound Wave	
	Class-2	Doppler Effect, Beats	
<b>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</b>			
Chapter -4B - Dynamics of a Particle			October
Chapter -5B - Energy and Momentum			November
Chapter -6B - Rotational Motion			December
Chapter -7B - Gravitation			January

**CHEMISTRY LECTURE PLAN - JEE 2027**

**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 to 6 April
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	7 April to 13 April
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)	14 April to 20 April
Class 6	Problem solving	21 April to 27 April
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	21 April to 27 April
Class 2	Development leading to Bohr's model, Electromagnetic spectrum, Continuous spectrum, Photoelectric effects, Spectrum of atom	28 April to 4 May
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	5 May to 1 June
Class 5	Dual nature of matter, De-Broglie wavelength, Uncertainty principle, Quantum numbers	
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	5 May to 1 June
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)	5 May to 1 June
Class 2	Covalent bond and formation of Covalent bond and Coordinate bond, Lewis structure	2 June to 29 June
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	2 June to 29 June
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	
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	30 June to 3 August

**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	30 June to 3 August
Class 2	Heat capacity and Molar heat capacity at constant pressure and constant volume, Determination of $w$ , $q$ , $\Delta H$ and $\Delta U$ 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	
<b>Module - 2A   Chemical Equilibrium</b>		
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	30 June to 3 August
Class 2	Equilibrium in Chemical Processes-Dynamic equilibrium, Law of chemical equilibrium and equilibrium constant, Equilibrium constant of reverse reaction, Relation between equilibrium constants for a general reaction and its multiples, Homogeneous equilibria	
Class 3	Equilibrium constant in gaseous systems, Relation between $K_c$ and $K_p$ , $K_p$ 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	4 Aug to 31 Aug
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	
<b>Module - 2A   Ionic Equilibrium</b>		
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	4 Aug to 31 Aug
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( $K_a$ ) of water, Hydronium and Hydroxyl ion, Ionic product ( $K_w$ ) 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. $K_a$ of some selected weak acids. Ionization of weak bases, $K_b$ of some selected weak bases, Relation between $K_a$ and $K_b$ , 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	
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 $K_{sp}$ , 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 $H_2S$	
<b>Module - 2A   Redox Reactions</b>		
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	1 Sept to 7 Sept
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.	
<b>Break for Half- Yearly School Exam (8th Sept. to 21st Sept.)</b>		
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 $H_2O_2$	22 Sept to 28 Sept
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, Redox reactions and electrode processes	
<b>Module - 3A   Introduction to Organic Chemistry</b>		
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 Sept to 28 Sept
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)	29 Sept to 5 Oct

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)	6 Oct to 12 Oct
Class 6	Conformational 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	13 Oct to 19 Oct
Class 8	Optical Isomers of compounds containing 1 and 2 chiral carbons (Use Example: 2-Chlorobutane; 2, 3-Dichloropentane; 2, 3-Dichlorobutane only)	
<b>Diwali Break (20th Oct. to 26th Oct.)</b>		
Class 9	Resonance	27 Oct to 2 Nov
Class 10	Resonance and Aromaticity	
Class 11	Electronic Effects	3 Nov to 9 Nov
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	10 Nov to 16 Nov
Class 14	Qualitative and Quantitative analysis	
Class 15	Qualitative and Quantitative analysis	17 Nov to 23 Nov
<b>Module - 3A   Hydrocarbons</b>		
Class 1	<b>Preparation of Alkanes</b> 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	17 Nov to 23 Nov
Class 2	<b>Physical Properties of Alkane:</b> Physical state, Solubility, Boiling point (Effect of Branching), Melting point, Stability of isomeric alkanes <b>Chemical Properties of Alkanes</b> 1. Substitution reaction- halogenation, mechanism, regiochemistry, stereochemistry of reaction	24 Nov to 30 Nov
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 <b>Preparation of Alkenes</b> 1. From alkyne 2. From alkyl halide using alc KOH, NaNH <sub>2</sub> , t-BuOK/t-BuOH (Saytzeff and non-Saytzeff product) 3. From vicinal dihalides	
Class 4	4. From alcohol by acidic dehydration <b>Physical Properties of Alkenes:</b> Physical state, Boiling Point, Solubility, Melting Point and Density etc. <b>Chemical Properties of Alkenes</b> 1. Addition of HX 2. Addition of H <sup>+</sup> /H <sub>2</sub> O 3. Addition of cold concentrated H <sub>2</sub> SO <sub>4</sub> 4. Addition of HBr in presence of peroxide mechanism	1 Dec to 7 Dec
Class 5	5. Addition of X <sub>2</sub> /CCl <sub>4</sub> , X <sub>2</sub> /H <sub>2</sub> O 6. Oxidation using dil cold aq KMnO <sub>4</sub> - balanced chemical reaction and example 7. Oxidation using acidic KMnO <sub>4</sub> or acidic K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> 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 <b>Chemical Test for Unsaturation in Organic Compounds- Br<sub>2</sub>/Water and Baeyer Reagent Test</b>	
Class 6	<b>Preparation of Alkyne</b> 1. From calcium carbide, magnesium carbide 2. From vicinal dihalide using alc KOH, NaNH <sub>2</sub> 3. Preparation of higher alkyne using lower terminal alkyne <b>Physical Properties of Alkyne</b> Physical state, Polar nature of alkyne, solubility in water, boiling point, melting point and density etc. <b>Chemical properties of Alkyne</b> 1. Acidic nature of terminal alkyne, Explanation of acidic nature, Reactions due to acidic nature	8 Dec to 14 Dec
Class 7	2. Addition reactions- Addition of H <sub>2</sub> 3. Partial hydrogenation of alkynes 4. Addition of HX 5. Addition of water- on ethyne, propyne, phenylethyne 6. Addition of X <sub>2</sub> /CCl <sub>4</sub> and X <sub>2</sub> /H <sub>2</sub> O 7. Ozonolysis of alkyne 8. Polymerization of alkyne-Linear polymerization and cyclic polymerization 9. Chemical test for terminal alkyne <b>Addition Reaction of Alkadienes (1,2 and 1,4 Addition)</b>	

Class 8	<b>Preparation of Benzene</b> 1. From ethyne 2. From decarboxylation of aromatic acids 3. From reduction of phenol 4. From sulphonic acid <b>Chemical Properties of Benzene</b> <b>Addition Reactions of Benzene</b> 1. Addition of H <sub>2</sub> -reaction conditions 2. Addition of Cl <sub>2</sub> -reaction conditions 3. Combustion reaction 4. Ozonolysis of benzene, toluene 5. Side chain oxidation 6. Side chain Halogenation	15 Dec to 21 Dec
Class 9	<b>Electrophilic Substitution Reactions of Benzene</b> 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	<b>Electrophilic Substitution Reactions of Substituted Benzene</b> 1. Reactivity order 2. Directive influence of substituent in monosubstituted benzene <b>Carcinogenicity and Toxicity</b>	22 Dec to 28 Dec
Class 11	Problem solving and Doubts	
<b>Part - B (Module 1 &amp; 2 - 8 Classes)</b>		29 Dec to 18 Jan
	States of Matter (Module 1 - Part B) : 5 Classes	19 Jan to 8 Feb
	Hydrogen (Module 3 - Part B) : 3 Classes	
	s-Block (Module 3 - Part B) : 3 Classes	9 March to 29 March
	p-Block (Module 3 - Part B) : 4 Classes	

**MATHEMATICS LECTURE PLAN (PART A) – JEE 2027**

1	<b>Chapter – 1: Basics of Mathematics</b>	<b>Class-1</b>	Linear Inequality, Componendo and Dividendo	7 <sup>th</sup> to 13 <sup>th</sup> April
2		<b>Class-2</b>	Rational Inequality	7 <sup>th</sup> to 13 <sup>th</sup> April
3		<b>Class-3</b>	Log Identities	14 <sup>th</sup> to 20 <sup>th</sup> April
4		<b>Class-4</b>	Log Inequality	14 <sup>th</sup> to 20 <sup>th</sup> April
5		<b>Class-5</b>	Modulus	21 <sup>st</sup> to 27 <sup>th</sup> April
6		<b>Class-6</b>	Modulus Inequality	21 <sup>st</sup> to 27 <sup>th</sup> April
7	<b>Chapter – 2: Sets, Relation and Functions</b>	<b>Class-1</b>	Sets, Representation of Sets, Types of Sets	28 <sup>th</sup> April to 4 <sup>th</sup> May
8		<b>Class-2</b>	Subsets, Power set, Universal Set, Complement of Set	28 <sup>th</sup> April to 4 <sup>th</sup> May
9		<b>Class-3</b>	Union and Intersections of Sets, Venn diagrams	5 <sup>th</sup> May to 11 <sup>th</sup> May
10		<b>Class-4</b>	Cartesian Product of Sets, Relations	5 <sup>th</sup> May to 11 <sup>th</sup> May
11		<b>Class-5</b>	Functions, domain and Range	12 <sup>th</sup> May to 18 <sup>th</sup> May
12		<b>Class-6</b>	Polynomial Functions, Factor Theorem, Greatest Integer, Fractional Part, Signum Functions	12 <sup>th</sup> May to 18 <sup>th</sup> May
13	<b>Chapter – 3: Quadratic Equations</b>	<b>Class-1</b>	Properties of Roots / Formation of Quadratic Equation	19 <sup>th</sup> May to 25 <sup>th</sup> May
14		<b>Class-2</b>	Nature of Roots, Identity, Common Roots, Relation between roots & Coefficients of Cubic, Biquadratic	19 <sup>th</sup> May to 25 <sup>th</sup> May
15		<b>Class-3</b>	Equation Reducible to Quadratic Transformation of Equation, Finding roots by Observation	26 <sup>th</sup> May to 1 <sup>st</sup> June
16		<b>Class-4</b>	Graph of Quadratic Polynomial Completing the Square & its Range (Max./Min. Quadratic)	26 <sup>th</sup> May to 1 <sup>st</sup> June
17		<b>Class-5</b>	Quadratic Inequation Based on $f(x) > 0, \geq 0, \leq 0, < 0, \forall x \in R$	2 <sup>nd</sup> June to 8 <sup>th</sup> June
18		<b>Class-6</b>	Rational Expression range	2 <sup>nd</sup> June to 8 <sup>th</sup> June
19	<b>Chapter-4: Trigonometry</b>	<b>Class-1</b>	L and R Relation, Sign of Trigonometric function	9 <sup>th</sup> June to 15 <sup>th</sup> June
20		<b>Class-2</b>	Trigonometric Identities Part-1 (Compound Angles)	9 <sup>th</sup> June to 15 <sup>th</sup> June
21		<b>Class-3</b>	Multiple Angle / Submultiple Angle	16 <sup>th</sup> June to 22 <sup>nd</sup> June
22		<b>Class-4</b>	$\sin(60)\sin(60 - \theta)\sin(60 + \theta) - \dots$ based problems + Conditional Identities	16 <sup>th</sup> June to 22 <sup>nd</sup> June
23		<b>Class-5</b>	Basic Graph / Domain / Range	23 <sup>rd</sup> June to 29 <sup>th</sup> June
24		<b>Class-6</b>	Basic Trigonometric Equations & Inequations	23 <sup>rd</sup> June to 29 <sup>th</sup> June
25		<b>Class-7</b>	Problem Solving	<b>1<sup>st</sup> Extra Class between 16<sup>th</sup> June to 29<sup>th</sup> June</b>
26		<b>Class-1</b>	Basic, Algebra of Complex Numbers, Properties of 'i', Representation of complex	30 <sup>th</sup> June to 6 <sup>th</sup> July



## Vidyamandir Classes

	<b>Chapter-5: Complex Numbers (Class XI NCERT)</b>		Numbers on argand plane, Modulus, Argument, Conjugate definition	
27		<b>Class-2</b>	Modulus, Argument, Conjugate Properties, Polar form	30 <sup>th</sup> June to 6 <sup>th</sup> July
28		<b>Class-3</b>	Problem Solving	7 <sup>th</sup> July to 13 <sup>th</sup> July
29	<b>Chapter-6: Sequence &amp; Series</b>	<b>Class-1</b>	AP + Properties + AM	7 <sup>th</sup> July to 13 <sup>th</sup> July
30		<b>Class-2</b>	G.P. + Properties + GM and infinite G.P.	14 <sup>th</sup> July to 20 <sup>th</sup> July
31		<b>Class-3</b>	H.P. + HM + Basic (AM, GM Inequalities)	14 <sup>th</sup> July to 20 <sup>th</sup> July
32		<b>Class-4</b>	Mixed Topic AP, G.P., H.P. + AGP	21 <sup>st</sup> July to 27 <sup>th</sup> July
33		<b>Class-5</b>	Special Series based on $\sum r, \sum r^2, \sum r^3$	21 <sup>st</sup> July to 27 <sup>th</sup> July
34		<b>Class-6</b>	Method of Difference	28 <sup>th</sup> July to 3 <sup>rd</sup> August
35	<b>Chapter-7: P &amp; C</b>	<b>Class-1</b>	Number Formation	28 <sup>th</sup> July to 3 <sup>rd</sup> August
36		<b>Class-2</b>	${}^n P_r, {}^n C_r$	4 <sup>th</sup> August to 10 <sup>th</sup> August
37		<b>Class-3</b>	Selection with constraint: TPC – (1-7)	4 <sup>th</sup> August to 10 <sup>th</sup> August
38		<b>Class-4</b>	TPC – (8, 9, 10)	11 <sup>th</sup> August to 17 <sup>th</sup> August
39		<b>Class-5</b>	Rank of Word, Geometrical (Points of Intersection), Sum of Numbers, Derangements	11 <sup>th</sup> August to 17 <sup>th</sup> August
40		<b>Class-6</b>	Circular Permutation + Problem Solving	18 <sup>th</sup> August to 24 <sup>th</sup> August
41		<b>Class-7</b>	Problem Solving	<b>2<sup>nd</sup> Extra Class between 11<sup>th</sup> Aug. to 24<sup>th</sup> Aug.</b>
42	<b>Chapter – 8: Binomial Theorem</b>	<b>Class-1</b>	Properties based on ${}^n C_r$ + General term-based question	18 <sup>th</sup> August to 24 <sup>th</sup> August
43		<b>Class-2</b>	Find coefficient, Term independent of x Numerically greatest term	25 <sup>th</sup> August to 31 <sup>st</sup> August
44		<b>Class-3</b>	Series basic ${}^n C_r, r \cdot {}^n C_r, r^2 \cdot {}^n C_r, \frac{{}^n C_r}{r+1}$	25 <sup>th</sup> August to 31 <sup>st</sup> August
45		<b>Class-4</b>	Remainder, I + F type, Multinomial	1 <sup>st</sup> Sept. to 7 <sup>th</sup> Sept.
46		<b>Class-5</b>	Problem Solving	<b>3<sup>rd</sup> Extra Class between 25<sup>th</sup> Aug. to 7<sup>th</sup> Sept.</b>
47	<b>Chapter-9: Straight Line</b>	<b>Class-1</b>	Coordinate Plane, Distance Formula, Section Formula, Area, Slope of Lines and Angles between Two Lines	1 <sup>st</sup> Sept. to 7 <sup>th</sup> Sept.
		<b>SCHOOL EXAM BREAK (8<sup>th</sup> Sept. to 21<sup>st</sup> Sept.)</b>		
48		<b>Class-2</b>	Center of Triangles (Special Points: Centroid, Orthocenter, Circumcenter, Incenter)	22 <sup>nd</sup> Sept. to 28 <sup>th</sup> Sept.
49		<b>Class-3</b>	Various forms of Line (Except Parametric form of Line)	22 <sup>nd</sup> Sept. to 28 <sup>th</sup> Sept.
50		<b>Class-4</b>	Parametric form (Distance of a Points from Lines + Distance between Two Lines)	29 <sup>th</sup> Sept. to 5 <sup>th</sup> Oct.
51		<b>Class-5</b>	Position of Points + Locus Part-1	29 <sup>th</sup> Sept. to 5 <sup>th</sup> Oct.
52		<b>Class-6</b>	Locus Part-2, Family of lines	6 <sup>th</sup> Oct. to 12 <sup>th</sup> Oct.

### Vidyamandir Classes

53	<b>Chapter-10: Circles</b>	<b>Class-1</b>	General Equation of Circles + Various forms of Circles	6 <sup>th</sup> Oct. to 12 <sup>th</sup> Oct.	
54		<b>Class-2</b>	Position of Point w.r.t Circles, Intercepts of Circles + Line and Circles (Condition of Tangency)	13 <sup>th</sup> Oct. to 19 <sup>th</sup> Oct.	
55		<b>Class-3</b>	Equation of Tangent/Normal in different forms	13 <sup>th</sup> Oct. to 19 <sup>th</sup> Oct.	
		<b>DIWALI BREAK (20<sup>th</sup> Oct. to 26<sup>th</sup> Oct.)</b>			
56		<b>Class-4</b>	Intersection of Circles + Common Tangents	27 <sup>th</sup> Oct. to 2 <sup>nd</sup> Nov.	
57		<b>Class-5</b>	Equation of Chord of Contact, $T = S_1$ , Families of Circles	27 <sup>th</sup> Oct. to 2 <sup>nd</sup> Nov.	
58		<b>Class-6</b>	Locus based on Point of Intersection of Two Tangents + Mid-Point of Chord, and Chord of Contact	3 <sup>rd</sup> Nov. to 9 <sup>th</sup> Nov.	
59		<b>Class-7</b>	Problem Solving	<b>4<sup>th</sup> Extra Class between 27<sup>th</sup> Oct. to 9<sup>th</sup> Nov.</b>	
60	<b>Chapter-11: Conic Sections</b>	<b>Class-1</b>	General Conic Definition, Standard Parabola Elements, Parametric form	3 <sup>rd</sup> Nov. to 9 <sup>th</sup> Nov.	
61		<b>Class-2</b>	Shifted Origin, Elements	10 <sup>th</sup> Nov. to 16 <sup>th</sup> Nov.	
62		<b>Class-3</b>	Tangents and Normals to the Parabola, Chord of Contact, $T = S_1$	10 <sup>th</sup> Nov. to 16 <sup>th</sup> Nov.	
63		<b>Class-4</b>	Standard Ellipse Elements, Parametric form	17 <sup>th</sup> Nov. to 23 <sup>rd</sup> Nov.	
64		<b>Class-5</b>	Equations of Tangents and Normals, Chord of Contact, $T = S_1$ , Director Circles	17 <sup>th</sup> Nov. to 23 <sup>rd</sup> Nov.	
65		<b>Class-6</b>	Problem Solving	24 <sup>th</sup> Nov. to 30 <sup>th</sup> Nov.	
66		<b>Class-7</b>	Hyperbola Elements, Parametric form	24 <sup>th</sup> Nov. to 30 <sup>th</sup> Nov.	
67		<b>Class-8</b>	Equation of Tangent and Normals, Chord of Contact, $T = S_1$	1 <sup>st</sup> Dec. to 7 <sup>th</sup> Dec.	
68		<b>Class-9</b>	Rectangular Hyperbola, Problem Solving	1 <sup>st</sup> Dec. to 7 <sup>th</sup> Dec.	
69	<b>Chapter-12: Complex Numbers</b>	<b>Class-1</b>	De Moivre's theorem, Square Root of Complex Number, Argument, Conjugate Properties	8 <sup>th</sup> Dec. to 14 <sup>th</sup> Dec.	
70		<b>Class-2</b>	Cube of root of Complex Number and their Properties, Nth roots of Unity	8 <sup>th</sup> Dec. to 14 <sup>th</sup> Dec.	
71		<b>Class-3</b>	Problem Solving, Problems based on Modulus and Argument	15 <sup>th</sup> Dec. to 21 <sup>st</sup> Dec.	
72		<b>Class-4</b>	Solving of Complex Equation + Basic Locus Problems	15 <sup>th</sup> Dec. to 21 <sup>st</sup> Dec.	
73		<b>Class-5</b>	Triangle Law Inequalities, Distance Formula, Section Formula, Angle between Two Rays, Rotation Theorem	22 <sup>nd</sup> Dec. to 28 <sup>th</sup> Dec.	
74		<b>Class-6</b>	Standard Locus + Problem Solving	22 <sup>nd</sup> Dec. to 28 <sup>th</sup> Dec.	
75		<b>Class-7</b>	$C + iS$ , Mixed problems	29 <sup>th</sup> Dec. to 4 <sup>th</sup> Jan.	

## Vidyamandir Classes

	<b>Chapter-13: Statistics (Online)</b>	<b>Class-1</b>	Measures of Central Tendency, Central Dispersion	
		<b>Class-2</b>	Variance & Standard Deviation, Mean Deviation	

76	<b>Chapter-16: Differential Calculus - I</b>	<b>Class-1</b>	Introduction of Limits, LHL, RHL	29 <sup>th</sup> Dec. to 4 <sup>th</sup> Jan.
77		<b>Class-2</b>	Standard Templates of Limits : Algebraic, Trigonometry	5 <sup>th</sup> Jan. to 11 <sup>th</sup> Jan.
78		<b>Class-3</b>	Differentiation First Principle, Rules (Products, Quotient, Chain)	5 <sup>th</sup> Jan. to 11 <sup>th</sup> Jan.

### MATHEMATICS LECTURE PLAN (PART B) – JEE 2027

79	<b>Quadratic Equations</b>	<b>Class-1</b>	Position of roots, Range involving parameter	12 <sup>th</sup> Jan. to 18 <sup>th</sup> Jan.
80		<b>Class-2</b>	Problem Solving	12 <sup>th</sup> Jan. to 18 <sup>th</sup> Jan.
81	<b>Trigonometry</b>	<b>Class-1</b>	Series, Simultaneous equations	19 <sup>th</sup> Jan. to 26 <sup>th</sup> Jan.
82		<b>Class-2</b>	Conditional identities	19 <sup>th</sup> Jan. to 26 <sup>th</sup> Jan.
83	<b>Sequence and Series</b>	<b>Class-1</b>	Log Series, Telescopic	27 <sup>th</sup> Jan. to 2 <sup>nd</sup> Feb.
84		<b>Class-2</b>	Problem Solving	27 <sup>th</sup> Jan. to 2 <sup>nd</sup> Feb.
85	<b>Permutation and Combination</b>	<b>Class-1</b>	Integral Equation	3 <sup>rd</sup> Feb. to 10 <sup>th</sup> Feb.
86		<b>Class-2</b>	Div/Distribution, Subsets	3 <sup>rd</sup> Feb. to 10 <sup>th</sup> Feb.
87	<b>Binomial Theorem</b>	<b>Class-1</b>	${}^nC_r \cdot {}^nC_s$ , Double summation (Disconnected)	9 <sup>th</sup> Mar. to 15 <sup>th</sup> Mar.
88		<b>Class-2</b>	Problem Solving	9 <sup>th</sup> Mar. to 15 <sup>th</sup> Mar.
89	<b>Straight Lines</b>	<b>Class-1</b>	Angle Bisector, Pair of lines (Just results), Homogenization	16 <sup>th</sup> Mar. to 22 <sup>nd</sup> Mar.
90	<b>Circles</b>	<b>Class-1</b>	Radical axis	16 <sup>th</sup> Mar. to 22 <sup>nd</sup> Mar.
91	<b>Conic Sections</b>	<b>Class-1</b>	Co-normal properties, Reflection type results	23 <sup>rd</sup> Mar. to 29 <sup>th</sup> Mar.
92		<b>Class-2</b>	Rectangular hyperbola, Asymptotes	23 <sup>rd</sup> Mar. to 29 <sup>th</sup> Mar.

**NOTE: From Module – 2 onwards 1 class each for every chapter is to be taken online by the teacher.**