Lecture Hour : 1.30 Hr. per Class / Lecture	Safalta.com	Academic Planner Class-XI (Maths) 2020
CHAPTER	No. Of Lectures	DESCRIPTION
MAT Mathematical Aptitude Tool	2	Concepts of bracket,Concept of inequalities involving logarithmic function modulus function & unsolved Example GIF, and other function,Define wavy- curve method.
Sets, Relations and Function	2	Sets and their representations, various type of set, venn daigram, Opretion of a set, practical problem on venn daigram &
	2	Intersection of two sets, cartesian product of section, concept of relation, Introduction of Function,domain,co-domain, range
	2	Type of function and their graph like Polynomial,constant,Identity,Quadratic,reciprocal ,modulus,signum, greatest integer, least integer,fractional part,
	2	exponential function,logarithmic function,even and odd function, periodic fucntion, Inverse function, composite function . Question Problem/ Doubts from Exemplar & Takshila Study material
Trigonometric	2	Positive & Negative angle and its conversion. Relation between length or arc and radius of a circle, Definition of trigonometric function with help of unit circle and their value at different angle .Sing of trigonometric function, Domain & Range of trigonometric function and their graph and its shifts,Sum and difference formula with proof. Identities related to sin 2x, cos2x, tan 2x,
	2	sin3x, cos 3x, tan3x, C & D Formula and N.C.E.R.T Exercise 3.3,Greatest and Least value, sum of sine and cosine series with angles are in A.P. and cosine formula for product when angles are in G.P. value of etc, Conditional Identities
	2	Principle and general solution & Trigonometric inequlities with the concept of A. M. & G. M, Question Problem/ Doubts from Exemplar & Takshila Study material
	2	Height & Distance,Simple application of sine and cosine formula projection rule, half angle formula & area Triangle & polygon, Question Problem/ Doubts from Exemplar & Takshila Study material
PMI	2	Process of the proof by induction, The Principle of Mathematical Induction
Complex numbers- Level-I	2	Need for complex numbers, Imaginery number , integral powers of iota, Algebra of complex numbers. The modules & conjugate of a complex number (NCERT Exercise 5.1), Argument of a complex number representation of a complex number in various form,
	2	triangle inequality,Demoiver's Theorem. Power & root of a complex number (square cube etc.) Rotation theorem and its application with example. square root of a complex,Solution of Quadratic Equation in complex number system,Question Problem/ Doubts from Exemplar & Takshila Study material
Permutation & Combination	2	Functional principle of counting, factorial exponent prime P in nl (NCERT Ex. 7. 1 & 7.2) & Permutation (n p r) (linear & circular arrangement), Rank of a ward, permutation when all object are not distance objects (Ex. 7.3)
	2	Combination (n c r) and its properties, Division into groups, Dearrangement,
	2	number of divisors,sum of divisors,integer solution of linear eq. Question Problem/ Doubts from Exemplar & Takshila Study material
Binomial Theorem	2	Binomial theorem for positive integral indices. Pascal's triangle (NCERT 8.1) & the nth term of the expansion of & General & middle terms integral & rotational term. Term independent of variable. Coefficient of variable.
	2	Properties of Binomial coefficient & simple application greatest term. & Binomial theorem for any index multinational theorem & unsolved exercise, Question Problem/ Doubts from Exemplar & Takshila Study material
	2	Multinational theorem & its application in no of integral solution of linear equation, & Unsolved exercise, Question Problem/ Doubts from Exemplar & Takshila Study material
Sequence & series	2	Sequence & series, Arithmetic progressions (A. P) Arithmetic Mean (A.M), Geometric Progression, (G.P.) General term of G.P.
	2	sum of n terms of a G. P,Special series, Arithmetic Geometric Series Infinite G.P. & its sum Geometric mean (G.M) Harmonic
	2	Progression sum to n-terms of the special. Series Relation between A.M., G.M. & H. M Method of difference, Recurring decimal arithmetic mean of mth power, problem based on maximam and minimam Solved all exercise,Question Problem/ Doubts from Exemplar & Takshila Study
Quadratic equation	2	Quadratic equation with real coefficient, Basic Result, Formation of equation with given roots. Relations between roots & coefficients. Symmetric functions of roots. Condition for common roots,
	2	Graph of quadratic equation, Maximum & Minimum value of quadratic expression & location of roots. Unsolved all Exercise. location of roots,basic of rolle"s and MVT theorems,Question Problem/ Doubts from Exemplar & Takshila Study material
Co-ordinates System, Straight line and Pair of Straight line	2	Rectangular co-ordinates in a plane (in-cartesion & polar form) Distance formula, section formula, concept of centre of a Triangle, Locus,shifted of origin, Translation of axes. Slope of a line condition for parallel & particular lines. Angle between two lines, Collinearity of three points.
	2	Various forms of equation of line. Condition for concurrency of three lines.& Distance of a point from a line, Distance between two parallel line, point of intersection of two lines.
	2	Position of two points with respect to a line. Foot of perpendicular, image of point with respect to a line, Area of parallogram Equation of family of lines.
	2	General equation of 2nd degree, pair of straight lines & homogensation, Question Problem/ Doubts from Exemplar & Takshila Study material
Circle	2	Definition of circle, Equation of circle in various form, parametric equation of circle, intersection of a ine & circle, position of point with respect to circle.
	2	Equation of tangent & normal Equation of common chord , chord of contact Chord with a given middle point, Length of common chod.Common tangent to two circles, pair of tangent lengths of tangent,
	2	Director circle, Radical axis & radical centre. & Family of circle,Angle between two intersection circle & unsolved exercise., Question Problem/ Doubts from Exemplar & Takshila Study material
Parabola	2	Definition of parabola, Various mathematical terms of a parabola, parametric term, position of a point with respect to a parabola equation of tangent & normal
	2	Equation of pair of tangent & normal, double coordinate concept of focal chord No of Normal , Co-normal points, director circle, of contact diameter., Question Problem/ Doubts from Exemplar & Takshila Study material
Ellipse	2	Definition of ellipse, equation in standard form, position of a point with respect o ellipse, parametric form. Equation of tangent & normal in point slope, parametric from, intersection of a line & Ellipse combined equation of pair of tangent,Director circle, auxiliary circle ,equation of diameter. Equation of chord of contact, Equation of chord when middle is given., Question
Hyperbola	2	Definition of Hyperbola, Equation in standard form, position of a point with respect to Hyperbola, Parametric form, Equation of tangent & normal in point, slope parametric form, intersection of a line & Hyperbola combined equation of pair of tangents, Director circle Auxiliary circle equation of diameter.Equation of chord of contact, equation of chord when middle is given, Concept of Asymptotes & Rectangular , Hyperbola & Unsolved Exercise. Question Problem/ Doubts from Exemplar & Takshila Study material
Complex numbers- Level-II	2	Geometrical represention of algebric oprations on complex numbers, Important geometrical results,some standard loci & Question Problem/ Doubts from Exemplar & Takshila Study material
Limits	2	Existance of Limit (L.J.L & R. H. L),Limits of trigonometric function, Exponential & Logarithmic function. Limit of rational function & factor form., factorisation, Rationilisation, Substitution, Using standard limits,Question Problem/ Doubts from Exemplar & Takshila Study material
	2	Indeterminate forms, fundamental theorem no limits, Limit at infinity. L'Hospital's Rule. Limits, Expansion method, sand wich theorem.Newton - Leibnitz's formula for Differentiation, Limit of a sum by definite integral Unsolved exercise.
Derivative	2	Definition of Derivative, Relate it to slope of tangent to the curve, (Using first Principle). Derivative of sum, Difference, Product quotient of polynomial, Trigonometric function & Chain rule, Question Problem/ Doubts from Exemplar & Takshila Study material.
3D and Probability	2	Introduction of 3D,Random experiments outcomes, Sample space/set representation Events Occurrence of events "not end" & "or" events exhaustive events & mutually exclusive events. (Ex. 16.1, 16.2), Axiomatic approach to probability, Probability of an event, Probability of event "A" & "B" probability of event no A. (Ex. 16.3) & Use of Permutation & combination in probability & probability in Algebra. Question Problem/ Doubts from Exemplar & Takshila Study
Statistics	2	Measures of dispersion, Mean deviation, Variance & standard deviation of ungrounded/ ground data. & Analysis of frequency distributions with equal means but different variances, Question Problem/ Doubts from Exemplar & Takshila Study material

Lecture Hour : 1.30 Hr. per Class / Lecture	Safalta.com	Academic Planner Class-XII (Maths) 2020
CHAPTER	No Of Lecture	DESCRIPTION
Relation & Function	2	Relation, types of relations : empty universal; symmetric, Transitive & equivalence relation.Definition of Function, Domain & Range,
	2	Types of function:One one, onto and one-ne-onto function ,Modules function, Signum function Logarithmic Function, Exponential function, Trigonometric Function,Inverse Function.
	2	Composite function, Inverse of a function ,Even or Odd Function, Periodic Function , Graphical Tranformation Functional Equation + Unsolved Exercise, Question Problem/ Doubts from Exemplar & Takshila Study material
Inverse Trigonometry	2	Definition of inverse trigonometric functions, Potential value, Graph of inverse trigonometric functions, properties of inverse trigonometric functionsQuestion Problem/ Doubts from Exemplar & Takshila Study material
	2	Additional properties of inverse trigonometric Question Problem/ Doubts from Exemplar & Takshila Study material.
Matrices & Determinant	2	Matrices, Type of matries ,Algebra of matrices:additon,subtractions and multiplication, Transpose of a matrix ,symmetric & skew symmetric matrix,
	2	Concept of elementary row and column operation Determinant of a matrices, Orthogonal matrix,Singular matrix,Rank of matrix,Product of Determinant,Differentiation of Determinants
	2	Definition of Minors & Cofaactors,adjoint & Inverse of a square matrix Consistency & inconsistency of system of equation of 2 or 3 variables(Non Homogeneous and Homogeneneous) by inverse of a matrix, Cramer's rule
	2	Evaluation of a determinant by Expansion & using properties,Apllication of determinant Question Problem/ Doubts from Exemplar & Takshila Study material
Continuity & Differentiability	2	Basic of LHL and RHL,Continuity for two function, Continuity of composite function, Some continuous and Discontinuous functions,Type of Discontinuity
	2	Differentiability (RHD & LHD), Differentiability in open & Closed interval.,
	2	Mixed Question Problem On LCD , Doubts from Exemplar & Takshila Study material
Differentiation of determinants.	2	Derivative of composite function, chain rule, derivatives of inverse trigonometric function, derivatives of implicit function
	2	derivatives of exponatial,and logarathmic function derivatives of function in paramatric form,Second order derivatives, Differentiation of determinants., Roll's & Language, Mean value theorem & their application, Question Problem/ Doubts from Exemplar & Takshila Study material
AOD	2	Critical points, Monotomic Increasing & Decreasing Method of testing monotonicity,Error & Approximation, Question Problem/ Doubts from Exemplar & Takshila Study material
	2	Derivative at Rate of Change. Slope of the tangent and Normal, Equitation of tangent and Normal Angle of intersection of two curve Length of perpendicular from origin to then tangent, length of the tangent, length of subtangent, length of the normal, length of the subnormal,Question Problem/ Doubts from Exemplar & Takshila Study material
	2	Definition of local Maxima/ Minima,First & Second Derivative test with words Problem, Point of inflection
	2	Greatest and least value of function using the apllication of derivative , Question Problem/ Doubts from Exemplar & Takshila Study material
Indefinite Integration	2	Integration of a function, Basic theorem on integration & standard integrals. Integration by substitution,
	2	Integration of Irrational function, Integration of Trigonometric Functions and Integration of Reduction formula,
	2	Integration by Partial frictions,Integration by parts ,
	2	Integration of some particular Integrals, Question Problem/ Doubts from Exemplar & Takshila Study materialn
Definite integral	2	Fundamental Theorem on Calculus, Basic Properties of Definite integral & evaluation of definite integrals, Definite integral as a limit of a sum, Periodic Property Absolute value of Integral.
	2	Newton-Leibnitz's formula for definite integral, Maxima/ Minima value of definite integral., Definite integral dependent on parameter. Gamame & Reduction formula, Question Problem/ Doubts from Exemplar & Takshila Study materia
AOI	2	Simple tracing of curves like, lines circles, parabola, Ellipse , Cubic Trigonometric, Inverse, Trigonometric curves , Exponential & Logarithmic curves, Concept of are abounded by y = f (x) from x=a to x = b or x = f (y) from y = c to y = b , Area between two curves, Question Problem/ Doubts from Exemplar & Takshila Study material
Differential Eqation	2	Definition order & degree, General & particular solution of differential Equation of different equation whose general solution is given., Solution of Deferential Equation, By method of separation of variables, Homogeneous equation of first order & first degree
	2	Linear Differential Equation,Equation orthogonal trajectories,exact diffential equation,Question Problem/ Doubts from Exemplar & Takshila Study material
LPP	2	Terminology such as constraints, objective function, Optimization, Different types of L. P problem, Mathematical Formulation of L. P. Problems, Graphical method of solution for problem in two variables, feasible and infeasible and solution (Upto 3-non trail constant), Question Problem/ Doubts from Exemplar & Takshila Study material
Vector	2	Vectors & Scalar quantities, magnitude & direction, Direction cosines & direction ratios of a vector. Types of vectors position vector of a point components of a vector, addition of vectors, Multiplication of a vector by a sclar, position vector of a point dividing a line segment in the given ratio. Scalar product, Cross product.,
	2	Projection of a vector an a line,Scalar triple product,vector triple product, geometrical application + Unsolved Exercise., Question Problem/ Doubts from Exemplar & Takshila Study materialDirection cosines
3D	2	Direction ratios of a line joining two points, Cartesian & vector equation of line, Angle between the line.Cartesian & vector equation of line, distance between Skew lines, Shortest distance between the lines, Condition for caplanarity,Foot of perpendicular,,Perpendicular distance from a point to line Mirror Image of point with respect to line.
	2	Equation of plane in vector & Cartesian(Verious form),Angle between the plane, Angle between line & Plane, Distance of a plane from a point, Distance between parallel planes ,equation of bisector of two plane,Foot of perpendicularMirror Image of a point with respest plane.Unsolved Exercise., Question Problem/ Doubts from Exemplar & Takshila Study material
Probability	2	Conditional probability, Multiplication theorem on probability , Independent events.Total Theorem,Random Variable , Baye's theorem
	2	Probability Distribution Mean, Variance of random variable, Bernoulli's Trials, Binomial Distribution, Question Problem/ Doubts from Exemplar & Takshila Study material
Revision of 11th class	2	Quadratic Equation
	2	Complex Number
	2	Permutation & Combinations
	2	Binomial theorem
	2	sequences and series
	2	Straight Line
	2	Circle
	2	Parabola
	2	Ellipse & Hyperbola
	2	Mathematical Reasoning and statistcs

XI LECTURE PLAN PHYSICS				
Chapter	**No of lectures**	**Hrs per lecture**	**Total hours**	Safalta.com
Units & Measurement	7	1.5	10.5	L1: Introduction, Physical Quantities, Units, System of units, Fundamental, Derived, and supplementary units, Conversion of units, Dimensions, Principle of homogeneity. L2: Dimensional Analysis, Uses and limitations of dimensional analysis. Measurements: Parallax Method, Finding the diameter of Oleic acid. Significant Figure, Rounding off. L3: Errors, Propagation of errors, Experimental Physics, Vernier Callipers(Optional), Screw gauge(Optional). Miscellaneous numericals.
Motion in a straight line	9	1.5	13.5	L1: Distance vs Displacement, Average speed, Average Velocity, Average Acceleration, Uniformly Accelerated motion, equations of motion. L2: Differentiation (Product Rule, Quotient Rule and Chain Rule), Slope and Maxima &Minima, Integration: Definite and Indefinite. Graphical interpretation of integration. L3: Motion Under Gravity, Non-uniformly Accelerated Motion, Kinematics Graphs L4: Relative motion in one Dimension
Motion in a plane	9	1.5	13.5	L1: Vectors (Introduction), Angle between vectors, Addition and Subtraction of vectors, Resolving of vectors, Dot product and Cross product. L2: Introduction to 2D kinamatical quantities, Projectile motion. Ground to ground projectile, Projectile from a tower. L3: Relative Motion in 2D (Rain Man Problem, River Swimmer Problems, Minimum distance of Approach. L4: Circular motion, Definition of angular variable, Centripetal acceleration, uniform and non uniform circular motion.
Laws of Motion	9	1.5	13.5	L1: Newton's three laws, Impulse, Impulse Momentum theorem, Introduction to conservation of linear momentum (Theroritical examples only) Equilibrium of forces and free body diagrams. L2: Common forces, Tension, Normal reaction, spring, weighing machine and spring balance, Pulley, Atwood machine, constraint relations. L3: Friction L4: Pseudo Force, Dynamics of Circular motion. Miscellaneous Problems.
Work, Energy and Power	9	1.5	13.5	L1: Work, Work Done by constant force, Work done by variable force, Work energy theorem. L2: Potential energy, Conservative forces, Relation between force and potential energy, Conservation of mechanical energy, L3: Vertical circular motion, Power, Conservation of linear momentum. Applications of conservation of linear momentum, Jumping from the cart, recoil of gun L4: Explosion of bombs, Collisions, Elastic/inelastic, headon/oblique collisions.
System of Particles	12	1.5	18	L1: Location of center of mass, Motion of center of mass(Velocity and acceleration of center of mass). L2: Moment of inertia, Perpendicular axis theorem, parallel axis theorem. L3:Torque, Equilibrium of rigid bodies, principle of moments, Newton's second law in Rotation, Toppling, Couple. L4: Rolling motion, Kinetic energy in rotational motion, Conservation of mechanical energy problems. L5: Angular momentum and its conservation.
Gravitation	7	1.5	10.5	L1: Newton's Law of Gravitation, Gravitational Field , Acceleration due to gravity, Variation in acceleration due to gravity due to height, depth and rotation of earth. L2: Gravitational potential, Potential due to a point mass, potential due to a ring, potential due to spheres, Gravitational potential energy, Relation between potential and potential energy. Escape velocity. L3: Orbits, circular orbits, satellites, geostationary satellites, kepler laws.
Mechanical properties of solids	2	1.5	3	L1:Stress, strain, Hooke's law, Modulus of elasticity, Stress-strain Curve, Analogy of spring, Elastic potential energy, Wires in series and parallel, Hanging wire, Breaking stress.
Mechanical properties of fluids	7	1.5	10.5	L1: Pressure, Relative density, Variation of pressure with depth, Pascal's Law, Hydraulic lift and brake, Buoyancy and Archimedes Principle, Liquid in accelerated containers. L2: Types of flow, Bernoulli's Principle and its applications (Torricelli's equation, venturimeter) L3: Surface tension, Excess pressure in a soap bubble and a liquid drop, Capillary action, Viscosity, Stoke's law, Terminal velocity,
Thermal properties of matter	4	1.5	6	L1: Temperature, Thermometry, Thermal expansion (Linear, superficial and cubical expansion), Thermal stress and strain, Calorimetry, Specific heat capacity, Molar heat capacity, Latent heat of fusion and vaporization. Water equivalent. L2: Modes of heat transfer, Thermal conduction, Rods in series and parallel, Growth of ice on surface of lakes. Radiation, Stefan's Law, Newton's law of cooling, Wien's displacement law.
Kinetic theory of Gases	2	1.5	3	L1: Postulates of Kinetic theory of gases, Ideal gas laws, Expression for pressure of an Ideal gas, Degrees of freedom, law of equipartition of energy, Speed distribution curve, Mean free path.
Thermodynamics	5	1.5	7.5	L1: Zeroth law of thermodynamics, Heat, work and internal energy, First law of thermodynamics, Thermodynamic processes (Isochoric, isobaric, isothermal, adiabatic, polytropic), indicator diagrams L2: Cyclic processes, Heat engine, Refrigerator, heat pump, Second law of thermodynamics, Carnot cycle, Entropy.
Oscillations	5	1.5	7.5	L1: Periodic motion, Simple harmonic motion, Equations of SHM, Circle Diagram, Energy in SHM, Superposition of SHM. L2: Time period of SHM, Linear SHM, Angular SHM, Compound pendulum, Torsional Pendulum, Damped oscillations, Forced Oscillations.
Wave Motion	5	1.5	7.5	L1: Equation of wave, particle speed, particle acceleration, wave speed, Speed of sound, effect of pressure, temperature and humidity on speed of sound. Basics idea of Interference. L2: Standing waves, waves on string and organ pipes, sonometer wire, resonance column tube experiment, end correction, Beats and Doppler effect.
	92		138	

XII LECTURE PLAN PHYSICS (JEE)				
Chapter	**No of lectures**	**Hrs per lecture**	**Total hours**	Safalta.com
Electrostatics	9	1.5	13.5	L1: Charge, Properties of charges, Methods of charging, Coulomb's Law, Applications of coulomb's law, Electrostatic field, Field due to a point charge, Null point. L2: Field due to a ring, Field due to straight wires, field due to circular arcs, Motions of charged particle in uniform electric field. Electric lines of force, electric flux. L3: Gauss Law, Applications of gauss law (Infinite charged wire, sheet, spheres, cylinder), electric potential and potential energy. L4: Electric dipole, Field and potential due to dipoles at axial, equatorial and general points, Dipole inside uniform and non uniform electric field, Conductors, Properties of conductors in electrostatics, Shielding effect of conductors, Earthing of conductors.
Capacitor	4	1.5	6	L1: Capacitor, capacitance, Energy stored in a charged capacitor, Force between plates of capacitor, Kirchhoff's law, Combination of capacitors L2: Dielectrics, Combination of dielectrics, Variation of Q, C,V, E, U and force when a dielectric is inserted in a capacitor, Spherical capacitors.
Current Electricity	7	1.5	10.5	L1: Current, current density, drift velocity, resistance, Ohm's law, Kirchhoff's law, Grouping of resistors, Symmetric circuits L2: Emf of cells, terminal potential, grouping of cells, maximum power transfer theorem, Bulbs, conversion of galvanometer into ammeter and voltmeter, L3: Electrical devices, meter bridge, potentiometer, RC circuits.
Magnetic Effects of Current	7	1.5	10.5	L1: Biot Savart Law, Field due to a straight current carrying wire and circular arc, Magnetic field on the axis of a current carrying circular coil, Ampere circuital law, Applications of Ampere circuital law (infinite wire, infinite sheet, cylinders(hollow and solid), Solenoid, toroid.) L2: Magnetic Lorentz force, Motion of a charge particle in magnetic field, electric field and combined field, Velocity selector, Mass spectrometer, Cyclotron. L3: Magnetic force on a current carrying conductor, Force between parallel current carrying wires, Magnetic dipole, Torque and potential energy of current carrying loop, Galvanometer, Gyromagnetic Ratio.
Magnetism and matter	4	1.5	6	L1: Bar Magnet, Bending and Cutting of Bar magnet, Time period of oscillations, magnetic field due to bar magnet at axial, equatorial and general point, magnetic field lines, Earth Magnetism, Angle of dip, angle of declination. L2: Magnetic properties of matter, Diamagnetic, Paramagnetic, and Ferromagnetic substances, Magnetic Susceptibility, Magnetic hysteresis, permanent magnets and electromagnets.
Electromagnetic Induction	7	1.5	10.5	L1: Magnetic Flux, Faraday Laws of EMI, Applications, Lenz's Law, AC generator. L2: Motional Emf, Induced electric field, Self and Mutual inductance, Inductors in circuits, Energy stored in inductors. L3: LC oscillations, Growth and Decay of current in an inductor
Alternating Current	4	1.5	6	L1: Introduction to AC, Average and RMS values of AC, Phasor diagrams, Resistor, capacitor and inductor in AC, Power in AC circuits. L2: Series and Parallel LCR Circuit, Resonance, Quality Factor and bandwidth, Transformers
Electromagnetic Waves	2	1.5	3	L1: Maxwell's Equations of Electromagnetism, Displacement current, equations of EM waves, energy density of electric and magnetic field, Properties of EM spectrum.
Ray Optics	9	1.5	13.5	L1: Laws of reflection, Plane Mirrors, Two mirror system, Spherical Mirrors, Mirror formula, Magnification, Longitudinal Magnification, Speed of images. L2: Laws of refraction, Snell's Law, refraction at plane surface, refraction at curved surface, slabs. L3: Lens, power of lens, Combination of lenses, Cutting of lenses, silvering of lenses, Principle of reversibility,Prims, Dispersion, combination of prisms. L4: Eye, Defects of visions, correcting lens, optical instruments, Microscope, Astronomical telescope, Terrestrial telescope, Reflecting telescope.
Wave Optics	4	1.5	6	L1: Huygen's principle, Wavefronts, Wavelets, Interference, YDSE, Slab in front of slits, Thin film interference, L2: Diffraction, Polarization, Law of malus, Brewster Law, Resolving power of microscope and telescope. Doppler effect in light.
Dual Nature of Radiation and Matter	2	1.5	3	L1: De Broglie Hypothesis, Davison and Germer experiment, Photoelectric effect, Dual Nature of light, Einstein's Photoelectric Equation, Photon theory, Compton Effect.
Atoms	2	1.5	3	L1: Thomson's Model, Rutherford's Model and Bohr's Model, Radius, velocity and energy in Bohr's orbits, X-Rays.
Nuclei	2	1.5	3	L1: Introduction to Nucleus, Einstein's Mass energy equivalence, Nuclear Force, Binding energy, Binding energy per nucleon, Radioactivity, Law of radioactivity, Nuclear Fission and Fusion Reaction.
Semiconductor and Communication	3	1.5	4.5	Semiconductors and Communication (Only from Mains point of view)
			99	
Units & Measurement	2	1.5	3	
Motion in a straight line	2	1.5	3	
Motion in a plane	2	1.5	3	
Laws of Motion	2	1.5	3	
Work, Energy and Power	2	1.5	3	
Center of mass	2	1.5	3	
System of Particles	2	1.5	3	
Mechanical properties of solids	2	1.5	3	
Mechanical properties of fluids	2	1.5	3	
Thermal properties of matter	2	1.5	3	
Kinetic theory of Gases & Thermodynamics	2	1.5	3	
Oscillations	2	1.5	3	
Wave Motion	2	1.5	3	
			138	

Lecture Hour: 1.30 Hr. / Lecture			Academic Planner Class-XI (Chemistry) 2020			
				IIT		Safalta.com
Module Zenith	**Module Achme**	**Chapter No**	**CHAPTER NAME**	**lectre**	**hours**	**DESCRIPTION/ Topics / Sub Topics covered (Zenith +NCERT)**
1	**1**	**1**	**Basic Concept of Chemistry**	**9**	**13.5**	Introduction, Mole Concept,Atomic Mass,Molecular Mass,Average Atomic Mass,Average Molecular Mass , Concentration terms.
						Mole-Stoichiometry, Concept of limiting reagent, Emperical & Molecular Formula Covering NCERT Exercise
						Laws of the chemical combination with numerical problems
						Matter,Scientific Notation,Significant Figures & dimensional Analysis and + concentration terms + stoichiometry , POAC
						stoichiometry, POAC
2	**2**	**1**	**Structure of Atom**	**8**	**12**	Dalton's Atomic Theory, Discovery of Electron, Proton & Neutrons and Atomic Modles(Thomson's Model, Rutherford Model and its Merits & Demerits), Planck theory, Bohr's model (Merits and demerits
						Photoelectric Effect, Dual Nature of Matter, Heisenberg's uncertanity Principle.
						Quantum Mechanical Model of Atom, Quantum Model, Pauli's Exclusion Principle, Hund's Rule & Aufbau's principle
2	**2**	**2**	**Classification of Elements & Periodicity in properties**	**5**	**7.5**	Introduction, Genesis of Periodic Classification, Modern periodic Law & Present Form of Periodic Table, Nomenclature of Elements (z>100) identification of group, period & block of element
						Periodic properties & trends (Atomic Radius, IE, Delta, electronegativity & its applications
3			**Chemical Bonding**	**8**	**12**	Electronic Theory of Bonding, Ionic Bond, Covalent Bond & Dative Bond. Fajan's Rule and Lewis dot structures & formal charge,
						VSEPR, Resonance & VBT , types of bond.
						Hybridisation, Dipole Moment & its application
						MOT, Hydrogen Bonding .
4	**4**	**1**	**States of matter (Gaseous state)**	**9**	**22.5**	Intermolecular forces, Gas Laws, Ideal Gas equation. Graham's law of diffusion and maxwell distribution of molecular velocities.
						Compressibility factor and their curves, Real gas, Vanderwall's equation.
						Andrew's isotherms, Liquification & critical constant
		2	**Solid State**	**6**		Introduction. Amorphous & Crystalline Solids, space lattice & types of unit cells & unit cell parameters. Packing efficency , Close packing in solid, voids.
						Ionic Solids (Nacl, Zns, Na2O, Caf2 normal & Inverse spinel)
						Radius Ratio Rules, Density of Crystal, Imperfection in solids, properties of solids
5	**5**	**1**	**Thermodynamics**	**12**	**27**	Introduction, Thermo Dynamic Terms, Thermodynamic Processes and Internal energy, zeroth law, FLOT, enthalpy Change, heat capacity of Gas, Relation b/w Cp & Cv.
						Isothermal Reversible & Irreversible Process, Adiabatic Process.
						Spontaneity & Entropy, SLOT, Gibb's free energy, tlot
			Thermochemistry	**6**		Thermo chemical equation, kirchoff law, enthalpy of formation, enthalpy of combustion. Enthalpy of neutralisation.
						Enthalpy of solution/hydration/atomisation/sublimation/dilution lattice enthalpy . Born haber cycle.
6	**6**	**1**	**Chemical Equilibrium**	**5**	**19.5**	Introduction of chemical equilibrium. & active mass, law of mass action, relation between Kp & Kc, characteristics of equilibrium-constants, factors affecting keq, Vant hoff equation, Le-Chatelier's principle.
						Degree of dissociation & numerical problems on Kc and Kp
		2	**Ionic Equilibrium**	**8**		Electrolytes, Ostwald's dilution law, acid-base theories, ionic product of water, pH & pOH scale &it's temp dependence, pH of strong acid, strong base, weak acid, weak base, buffer solution & Henderson equation
						Salt hydrolysis, indicator
						Solubility equillibria.
			Redox reaction	**5**	**7.5**	Oxidation, Reduction, Redox reaction, O.N Rules , Balancing of redox rxn by O.N & ION- Electron Method,oxidising and reducing agent.
						Galvanic Cell, SHE, Electrochemical series & it's applications
						Volumetry , Redox Titration,
7	**7**		**GOC + REACTION MECHANISM**	**22**	**33**	Nomenclature of alkane , Alkene, Alkyne, Nitro alkane, Haloalkane, Ethers, esters ,anhydride.
						Nomenclature of functional & polyfunctional compounds cyclic, bicyclic compounds
						Structural isomerism, stereoisomerism
						Basic concepts of organic chemistry : Inductive eff. Mesomeric eff. , hyperconjugation ,resonance effect.
						Rxn intermediates, types of rxn & rxn mechanism
8	**8**		**Hydrocarbon**	**16**	**24**	Alkane
						Alkene
						Alkyne & Benzene
		1	**Hydrogen**	**3**	**4.5**	H_2, H_2O, D_2
		2	**s Block**	**6**	**9**	Alkali Metals, Alkaline Earth Metals
		3	**p Block**	**6**	**9**	Boron family, Carbon family
			p block Elements	**3**	**4.5**	Nitrogen Family

Academic Planner Class - XIIth (Chemistry) 2020

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No. of Lecture	**Module Zenith**	**Module Achme**	**Chapter No.**	**Chapter Name**	**Lecture**	**hours**	**Description/ Topics/Sub Topics**
							Covered (Zenith/NCERT)
3	10		1	Solution			Types of solutions, methods to express conc. of solutions
							Henry's Law, Vapour pressure, Raoult's Law & Ideal solution
					6	9	Non-ideal solutions, colligative properties [RLVP, elevation in boiling point, depression in freezing point.]
							Osmotic pressure, abnormal molar mass & Van't Hoff factor
4	10		2	Electrochemistry			Direct & Indirect redox reaction, electrochemical (Galvanic Cell), standard electrode potential (S.H.E.) electrochemical series.
							Application of ECS. Nernst equation for electrode & cell concentration cell. Ecell & equilibrium constant.
					9	13.5	pH & solubility product with help of SHE & calomel electrode thermodynamics of galvanic cell
							Electrolytic cell, Discharge potential theory. Faraday's Laws of electrolysis
							Conductance, conductivity, ^m, ^eq, Debye-Huckel-Onsager equation, Kohlrausch's law & its applications.
							Cells & batteries (Corrosions)
2	11		1	Chemical Kinetics			Introduction average rate of reaction, Instantaneous rate of reaction, Rate law, Order & molecularity of reaction
					8	12	Methods to determine order of reaction, zero order kinetics, first order kinetics, nth order kinetics, Pseudo first order reaction
							Reversible kinetics, different cases of the first order of kinetics & collision theory & arrhenius equation
1	11		2	Surface	4	6	Adsorption, types of adsorption, Freundlich's adsorption isotherm, Colloidal solution, Emulsion & Catalysis
5	7		1	G.O.C.			Stereoisomerism (G.I.)
							Stereoisomerism (O.I.)
					12	18	Electron displacement effects (inductive effect, electromeric effect, Mesomeric effect, Hyperconjugation
							Reaction intermediates, Reaction Mechanism
							Reaction Mechanism
2	12		1	Alkyl Halides & Aryl Halides	6	9	Preparation & Properties of Alkyl Halides & Aryl Halides
							Preparation & Properties of Alkyl Halides & Aryl Halides
2			2	Alcohol, Phenol & Ether			Preparation & Properties of Alcohols & Phenols
					5	7.5	Preparation & Properties of Alcohols & Phenols
2	13		1	Aldehyde & Ketones			Preparation & Properties of carbonyl Compound
					5	7.5	Properties of Carbonyl Compound
1	13		2	Carboxylic Acid & its derivatives	3	4.5	Preparation & properties of carboxylic Acids
1	14		1	Amines & diazonium salt	4	6	Amines & diazonium salt, biomolecules & polymer
1	15		1	Metallurgy	2	3	Metallurgy
2	15		2	p-block			p-block (Group 16, 17, 18)
					6	9	p-block (Group 16, 17, 18)
			3	d- & f-block	4	6	d- & f-block
			4	Coordination Compound	9	12	Co-ordination compound
				Revision XI	2	3	Mole-stoichiometry
					2	3	Mole-stoichiometry, Redox reaction
					2	3	Atomic structure
					3	4.5	Chemical Bonding
					4	6	Thermodynamics
					1	1.5	Chemical equilibrium
					3	4.5	Ionic equilibrium