ALLEN®

DISTANCE LEARNING PROGRAMME

SYLLABUS BOOKLET

SESSION 2024-25

- NEET (UG)
- JEE (Main)
- JEE (Main+Adv.)
- Pre-Nurture & Career Foundation
  For Class 6th to 10th | CBSE & Olympiads

"No preparation is complete until it is self evaluated and properly assessed"

D-SAT

(Systematic Analysis of Test for DLP Students)

For multidimensional performance analysis of **distance students**

The students and parents can review the detailed analysis of the student's performance on

dsat.allen.ac.in

with various scientific & analytical features which are as follows:

Score Card

Gives the quantitative performance of the student in the tests. The score card provides a brief review of the overall score, subject scores, percentage wise, difficulty V/S marks distribution and ranks obtained (subject wise & overall).

Question Wise Report

This report provides summary of all questions attempted (by all students). This will unveil the relative performance of the student in a question, wherein student will find individual question wise analysis compared with the peers.

Test Solution

This report is to facilitate students in the learning process. This displays solutions for Selected questions asked in the exam so that they are aware of the correct answers as well as the right way of attempting questions.

Compare Yourself With Toppers

Benchmark your performance. Discover where you stand in relation to the toppers. This helps students to strive for excellence and better performance.

Difficulty Level Assessment Report

Find out how you performed on the parameter of three difficulty levels i.e. tough, medium and easy. The number of correct and incorrect attempts point out your strengths as well as the areas that needs to be worked upon. The uniqueness of this feature is that the student can compare his performance with toppers.

Test Performance Topic Wise Report

Find out your competent areas. Analyse what topics need to be worked upon and what topics fetch you advantage by reviewing the topic scores. Use them to excel in the exams.

Subject Wise Test Report

This feature provides subject wise analysis of the test. Here the assessment can be compared with the toppers with improvement tips and suggestions followed by subject or topic level analysis.

Compare Center/State Wise Performance

Yes! We know that you are always curious to know your centre/State wise performance report and it is now possible and made available on **dsat.allen.ac.in**

Graphical Test Report

This report displays your performance graph. The slope shows the performance gradient. The student will know whether the effort put in is sufficient or not.

This report will assist in planning and executing both. A thorough analysis of performance and bench-marking will help you in improving constantly and performing outstandingly in the final examinations. Our wishes are with you!

To aim is not enough...you must hit

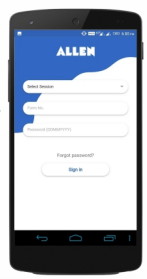
D-SAT Mobile app is available on

ANDROID APP ON Google play

Available on the App Store

"ALLEN D-SAT"

Scan to download **DSAT** App



Multi dimensional analysis of student performance on various parameters

: dsat@allen.in

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SISET - F1	
Foundation Biology-1	Food: Where does it come from, Components of Food, Getting to Know Plants
Foundation Physics-1	Motion and Measurement of Distances, Light, Shadows and Reflection
Foundation Chemistry-1	Chemistry: An Introduction, Fibre to Fabric, Sorting materials into group, Separation of Substances
Foundation Mathematics-1	Knowing Our Numbers, Whole Numbers, Playing with Numbers, Basic Geometrical Ideas
Foundation Mathematics-2	Understanding Elementary Shapes, Integers, Fractions, Decimals
Foundation SST-1	History: What, When, Where and How?, From Hunting -Gathering to Growing Food, In the Earliest Cities, What Books & Burials tell us?, Kingdoms, Kings and an Early Republics, New Questions and Ideas.
	Civics: Understanding Diversity, Diversity and Discrimination, Key Elements of a Democratic Government.
	Geography: Earth in The Solar System, Globe: Latitudes and Longitudes, Motions of the Earth, Maps, Major Domains of Earth.
Foundation English-1	Section A (Grammar) : The Sentence , Nouns, Pronouns, Adjectives, Verbs, Tenses, Modals
	Section B (Vocabulary): Homophones and Homonyms, Synonyms and Antonyms
	Section C (Writing): Paragraph Writing, Picture Composition
	Section D (Comprehension): Comprehension
SISET-A : : TARGET : : Science & Maths Olympiads	
Advance Biology	Food and its Components, Getting to Know Plants, Body Movements, Living Organisms and Its Surroundings, Garbage in Garbage out
Advance Physics	Motion and Measurement of Distance, Light, Shadows and Reflection, Electricity and Circuits, Fun with Magnets, Force and Pressure, Work and Energy, Simple Machines, Universe
Advance Chemistry	Chemistry an introduction, States of Matter, Natural fibres from plants, Classification of materials, Separation of Substances, Changes around us, Air around us, Water.
Advance Mathematics	Knowing our Numbers, Whole Numbers, Playing with Numbers, Negative Numbers & Integers, Fractions, Decimals, Algebra, Basic Geometrical Ideas, Understanding Elementary Shapes, Symmetry, Mensuration, Data Handling, Ratio, Proportion & Unitary Method, Powers & Roots, Percentage, Profit, Loss and Discount, Simple Interest, Time and Work, Time and Distance,Average, Set theory.
Mental Ability-1	**Verbal :** Direction Sense Test, Series, Coding & Decoding, Inserting The Missing Character, Number, Ranking & Time Sequence Test, Alphabet Test, Analogy, Classification, Mathematical Operations, Blood Relation, Logical Venn Diagram, Alpha Numeric Sequence Puzzle & Logical sequence of words, Puzzle Test.
Mental Ability-2	**Non Verbal :** Series, Mirror and Water Images, Analogy, Classification, Cube and Dice, Analytical Reasoning, Dot Situation, Paper folding and Paper Cutting, Spotting out the Embedded Figure, Figure Matrix, Figure Formation, Construction of Squares & Grouping of Identical Figures, Completion of Incomplete Pattern.
TARGET:: NMTC ROUND-1	
Excellent Mathematics-1	Number System, Algebra, Geometry, Ratio and Percentage, Logical Reasoning
SISET-F2	
Foundation Biology-2	Body Movements, The Living Organisms- Characteristics and Habitats, Garbage in Garbage Out
Foundation Physics-2	Electricity and Circuits, Fun with Magnets
Foundation Chemistry-2	Changes Around Us, Water, Air around Us
Foundation Mathematics-3	Data Handling, Mensuration, Algebra
Foundation Mathematics-4	Ratio and Proportion, Symmetry, Practical Geometry
Foundation SST-2	History: Ashoka, the Emperor Who Gave up War, Vital Villages, Thriving Towns, Traders, Kings and Pilgrims, New Empires and Kingdoms, Buildings, Paintings and books.
	Civics: Panchayati Raj, Urban Administration, Rural Administration, Making a living: Rural and Urban Livelihood.
	Geography: Our Country India, The Physical Division of India, Major Landforms of the Earth, India - Climate, India - Natural Vegetation and Wildlife
Foundation English-2	Section A (Grammar): Prepositions, Adverbs, Articles, Determiners, Active and Passive Voice, Conjunctions, Interjections, Punctuations.
	Section B (Vocabulary): One Word for Many, Suffixes and Prefixes.
	Section C (Writing): Letter Writing, Application Writing
	Section D (Comprehension): Comprehension
SISET-E* TARGET: NMTC Final Round	
Excellent Mathematics-2	Same Topics as in Round-1

* Module will be dispatched to NMTC Round-1 Qualified Students.

SESET-F1	
Foundation Biology-1	Nutrition in Plants, Nutrition in Animals, Weather, Climate and Adaptations of Animals to Climate, Soil.
Foundation Physics-1	Heat, Winds, Storms and Cyclones, Motion and Time.
Foundation Chemistry-1	Fibre to Fabric, Acids, Bases and Salts.
Foundation Mathematics-1	Integers, Fractions, Decimals, Data Handling.
Foundation Mathematics-2	Simple Equations, Lines and Angles, The Triangles and Its Properties, Congruence of Triangles.
Foundation SST-1	History: Tracing Changes through a Thousand Years, New Kings and Kingdoms, The Delhi Sultans, The Mughal Empire, Rulers and Buildings, Town, Traders and Craftspersons. Civics: On Equality, The State Government - Role of the Government in Health, The State Government - How State Government Works?. Geography: Environment, Inside Our Earth, Our Changing Earth, Air, Water.
Foundation English-1	Section A (Grammar): Grammar Recap, Nouns, Pronouns, Adjectives, Verbs & Tenses, Modals, Articles and Determiners, Active and Passive Voice, Punctuations. Section B (Vocabulary): Synonyms and Antonyms, One word for Many. Section C (Writing): Letter Writing, Notice Writing. Section D (Comprehension): Comprehension.
SESET-A TARGET:: Science & Maths Olympiads	
Advance Biology	Nutrition in Plants and Animals, Movement in Plants and Animals, Weather Climate and Adaptation, Soil, Respiration in Plants and Animals, Transportation in Plants and Animals, Excretion, Reproduction in Plants, Forest.
Advance Physics	Heat, Winds, Storms and Cyclones, Motion and Time, Electric Current and its Effects, Light.
Advance Chemistry	Element, Compound & Mixtures, Natural fibres from animals, Acids, Bases & Salts, Physical & Chemical changes, Water, Waste water management.
Advance Mathematics	Integers, Fractions, Decimals, Rational Numbers, Squares, Cubes & their roots, Exponents & Powers, Algebraic Expressions, Simple Equations, Lines & Angles, Triangles & Its Properties, Congruence of Triangles, Polygons, Data Handling, Mensuration, Symmetry, Visualising Solid Shapes, Ratio, Proportion and Variation, Percentage, and Its application, Simple Interest and Compound Interest, Time and Work, Profit Loss and Discount, Time and Distance, Set theory.
Mental Ability-1	**Verbal :** Direction Sense Test , Series, Coding & Decoding, Inserting The Missing Characters, Number, Ranking and Time Sequence Test, Alphabet Test, Analogy, Classification, Mathematical Operations, Puzzle test, Blood Relation, Logical Venn Diagram, Alpha Numeric Sequence Puzzle & Logical Sequence of Words.
Mental Ability-2	**Non Verbal :** Series, Mirror and Water Images, Analogy, Classification, Cubes & Dice, Analytical Reasoning, Dot Situation, Paper Folding and Paper Cutting, Spotting out the Embedded Figures, Figure Matrix, Figure formation, Construction of squares and Grouping of Identical Figures, Completion of Incomplete Pattern.
TARGET:: NMTC ROUND-1	
Excellent Mathematics-1	Number Theory, Ratio & Percentage, Indices, Algebra, Geometry, Data Handling, Logical Reasoning
SESET-F2	
Foundation Biology-2	Respiration in Organisms, Transportation in Plants and Animals, Reproduction in Plants, Forests: Our Lifeline
Foundation Physics-2	Electric Current and its Effects, Light
Foundation Chemistry-2	Physical and Chemical Changes, Water-A precious resource, Waste Water Story
Foundation Mathematics-3	Comparing Quantities, Rational Numbers, Practical Geometry, Perimeter & Area
Foundation Mathematics-4	Algebraic Expressions, Exponents and Powers, Symmetry, Visualising Solid Shapes
Foundation SST-2	History: Tribes,Nomads and Settled Communities, Devotional Paths to the Divine, The Making of Regional Cultures, Eighteenth- Century Political Formations. Civics: Understanding the Media, Growing up as Boys and Girls, Markets Around Us, A shirt in the market, Struggles for Equality. Geography: Natural Vegetation and Wild life, Human Environment -Settlement, Human Environment - Transport and Communication, Life in Deserts , Life in Tropical and Subtropical Region.
Foundation English-2	Section A (Grammar): Subject Verb Agreement, Direct and Indirect Speech, Conjunctions, Adverbs, Phrases & Clauses, Prepositions. Section B (Vocabulary): Best Word Vocabulary, Idioms and Phrases. Section C (Writing): Message Writing, Diary Entry Section D (Integrated Grammar Exercise): Error Spotting
SESET-E* TARGET:: NMTC Final Round	
Excellent Mathematics-2	Same Topics as in Round-1

* Module will be dispatched to NMTC Round-1 Qualified Students.

ESET-F1	
Foundation Biology-1	Crop Production and Management, Microorganisms: Friend and Foe, Conservation of Plants and Animals
Foundation Physics-1	Force and Pressure, Friction, Sound
Foundation Chemistry-1	Synthetic Fibres and Plastics, Metals and Non-metals
Foundation Mathematics-1	Rational Numbers, Squares and Square Roots, Cubes and Cube Roots, Exponents and Powers
Foundation Mathematics-2	Linear Equations In One Variable, Understanding Quadrilaterals, Introduction to Graphs and Data Handling, Playing with Numbers.
Foundation SST-1	History: How, When and Where, From Trade to Territory, Ruling the Countryside, Tribals, Dikus and The Vision of a Golden Age, When People Rebel. Civics: The Indian Constitution, Understanding Secularism, Why do we need a Parliament?, Understanding Laws, Judiciary, Understanding our criminal justice system. Geography: Resources, Land, Soil, Water, Natural Vegetation and Wildlife Resources, Mineral and Power Resources.
Foundation English-1	Section A (Grammar): Nouns and Pronouns, Non-finite form of Verbs, Subject-Verb Agreement, Tenses, Active and Passive Voice, Prepositions Section B (Vocabulary): Synonyms and Antonyms, Phrasal Verbs. Section C (Writing): Diary Entry, Notice Writing, Letter Writing, E-mail Writing. Section D (Verbal Ability): Error Spotting
ESET- A TARGET:: Science & Maths Olympiads	
Advance Biology	Cell, Microorganisms, Conservation of Plants & Animals, Crop Production & Management, Adolescence & Reproduction.
Advance Physics	Force & Friction, Thrust & Pressure, Waves and Sound, Electricity, Chemical Effects of Current, Light, Universe
Advance Chemistry	General Chemistry, Man-made Materials, Metals and Non-metals, Fuels and Combustion, Pollution of Water and Air.
Advance Mathematics-1	Number System, Squares and Square roots, Cubes and Cube Roots, Exponents and Powers, Algebraic Expressions, Identities and Factorization, Linear Equations in One Variable, Lines and Angles, Triangles, Quadrilaterals, Mensuration, Visualising Solid Shapes, Data Handling.
Advance Mathematics-2	Every Day Mathematics: Percentage, Profit, Loss and Discount, Partnership, Mixtures and Alligations, Simple and Compound Interest, Ratio and Proportion, Time, Speed and Distance, Unitary Method, Time and Work, Pipes and Cisterns, Problem on Ages and Numbers.
Mental Ability-1	**Verbal:** Blood Relation, Coding & Decoding, Logical Venn Diagram, Inserting The Missing Character, Number, Ranking and Time Sequence Test, Alpha-Numeric Sequence Puzzle, Alphabet Test & Logical Sequence of words, Series, Analogy & Classification, Direction Sense Test, Mathematical Operations, Puzzle test, Arithmetical reasoning.
Mental Ability-2	**Non Verbal:** Series, Analytical Reasoning, Mirror and Water Images, Spotting Out the Embedded Figure, Figure Matrix, Figure Formation, Construction of Squares & Grouping of Identical Figures, Paper Folding & Paper Cutting, Dice and Cube, Dot Situation, Analogy & Classification, Completion of Incomplete Pattern.
ESET-E1 TARGET:: Foundation IJSO (Junior Science Olympiad)	
Excellent Biology	Food & Nutrition, Respiratory System, Transportation in Plants & Animals, Excretory System, Control and Coordination, Health & Diseases, Natural Resources.
Excellent Physics	Motion, Gravitation, Work, Energy, Power, Heat, Magnetic Effects of Current
Excellent Chemistry	Study of Acids, Bases and Salts, States of Matter, Separation Techniques, Structure of Atom, Hydrogen, Oxygen and Nitrogen, Periodic Table, Rates of Chemical Reactions, Practical Chemistry
TARGET:: NMTC ROUND - 1	
Excellent Mathematics - 1	Number Theory, Ratio & Percentage, Indices, Algebra, Geometry, Data Handling, Logical Reasoning
ESET-F2	
Foundation Biology-2	Cell, Reproduction in Animals, Reaching the Age of Adolescence
Foundation Physics-2	Chemical Effects of Electric Current, Some Natural Phenomena, Light, Universe
Foundation Chemistry-2	Coal and Petroleum, Combustion and Flame, Pollution of Air and Water
Foundation Mathematics-3	Algebraic Expressions, Identities and Factorization, Practical Geometry, Visualizing Solid Shapes
Foundation Mathematics-4	Mensuration, Direct and Inverse Proportion, Comparing Quantities
Foundation SST-2	History: Weavers, Iron Smelters and Factory Owners, Civilising the`Native''Educating the Nation, Women, Caste and Reform, The Making of the National Movement 1870s-1947, India after Independence. Civics: Understanding Marginalisation, Confronting Marginalisation, Public Facilities, Law and Social Justice. Geography: Agriculture, Industries, Human Resources.
Foundation English-2	Section A (Grammar): The Sentence, Adverbs, Conjunctions, Reported Speech, Phrases and Clauses, Determiners & Articles, Modals. Section B (Vocabulary): Best Word Vocabulary, Idioms & Phrases. Section C (Writing): Message Writing, Story Writing, Article Writing, Speech Writing. Section D (Integrated Grammar Exercise): Gap Filling
ESET-E2* TARGET:: NMTC Final Round	
Excellent Mathematics -2	Same Topics as in Round - 1

*Module will be dispatched to NMTC Round-1 Qualified Students.

NSET-F1	
Foundation Biology-1	The Fundamental Unit of Life, Tissues, Improvement in Food Resources
Foundation Physics-1	Motion, Force and Laws of Motion, Gravitation
Foundation Chemistry-1	Matter In Our Surroundings,Is Matter Around us Pure
Foundation Mathematics-1	Number System, Polynomials, Introduction to Euclid's Geometry
Foundation Mathematics-2	Lines and Angles, Triangles, Co-ordinate Geometry, Heron's Formula
Foundation SST-1	History: The French Revolution, Socialism in Europe and The Russian evolution, Nazism and the Rise of Hitler.
	Geography: India Size And Location, Physical Features of India, Drainage
	Economics: The Story of Village Palampur, People as Resource
	Civics: What is Democracy?, Why Democracy?, Constitutional Design.
Foundation English-1	Section A (Grammar): Tenses, Subject-Verb Concord, Modals, Reported Speech, Articles & Determiners, Integrated Grammar Exercises.
	Section B (Writing): Descriptive Paragraph (Person), Descriptive Paragraph (Diary), Story Writing
	Section C (Literature):Figures of Speech, BEEHIVE: The Fun They Had, The Road Not Taken, The Sound of Music, Wind, The Little Girl, Rain On The Roof, A Truly Beautiful Mind, The Lake Isle of Innisfree, The Snake and the Mirror, A Legend Of Northland, My Childhood.
	MOMENTS: The Lost Child, The Adventures Of Toto, Iswaran the Storyteller, In The Kingdom of Fools, The Happy Prince.
NSET-A TARGET : : Science & Maths Olympiads	
Advance Biology	Cell - Unit of Life, Tissue, Diversity in Living Organisms, Diseases, Natural Resources, Improvement in Food Resources
Advance Physics	Motion, Force and NLM, Gravitation, Fluid Mechanics; Work, Energy, Power; Sound
Advance Chemistry	Matter around Us, Classification of Materials, Atoms and Molecules, Atomic Structure
Advance Mathematics-1	Number System, Surds and Indices, Polynomials (Factorisation), Polynomials (Remainder and Factor theorem), Linear Equations in two Variables, Lines and Angles, Triangles, Quadrilaterals, Circles, Mensuration, Co-ordinate Geometry, Statistics, Probability.
Advance Mathematics-2	Every Day Mathematics: Percentage, Profit, Loss and Discount, Partnership, Mixtures and Alligations, Simple and Compound Interest, Ratio and Proportion, Time, Speed and Distance, Unitary Method, Time and Work, Pipes and Cisterns, Problems on Ages.
Mental Ability-1	**Verbal :** Series, Logical Sequence of Words, Coding & Decoding, Analogy, Classification, Mathematical Operations, Direction Sense Test , Number, Ranking & Time Sequence Test, Blood relations, Puzzle Test, Alphabet Test, Alpha-numeric Sequence Puzzle, Logical Venn Diagrams, Inserting The Missing Characters, Arithmetical Reasoning, Statement & Conclusion, Sequential output Tracing.
Mental Ability-2	**Non Verbal :** Series, Analogy & Classification, Analytical Reasoning, Mirror and Water Images, Spotting Out The Embedded Figures, Completion of Incomplete Pattern, Figure Matrix, Figure Formation, Construction of Squares & Grouping of Identical Figures, Paper folding and Paper Cutting, Dice and Cube, Dot situation.
NSET-E1 TARGET:: IJSO Round 1 (NSEJS)	
Excellent Biology-1	Animal Physiology, Plant Physiology, Reproduction in living Organisms, Heredity and Evolution, Our Environment, Management of Natural Resources
Excellent Biology-2	Cytology, Anatomy, Conservation of Biodiversity, Diversity In Living Organisms, Microorganisms, Health and Diseases, Immunology
Excellent Physics-1	Units and Dimensions, Error Analysis, Vectors, Kinematics in 1 & 2 Dimensions, Force & Newton's Laws of Motion, Dynamics of Circular Motion, Work, Energy And Power, Rotational Motion, Gravitation, Mechanical Properties of Solids, Fluid Mechanics, Simple Harmonic Motion
Excellent Physics-2	Heat and Thermodynamics, Waves and Sound, Electrostatics, Current Electricity, Magnetic Effects of Electric Current, Light, Nuclear Physics, Measurement, Simple Machines
Excellent Chemistry-1	General Concepts of Chemistry, Atomic Structure, States of Matter, Periodic Classification of Elements, Chemical Bonding
Excellent Chemistry-2	Ionic Equilibrium (Acids, Bases and Salts), Chemical Kinetics, Chemical Equilibrium, Thermodynamics, Metals, Nonmetals and Metallurgy, Carbon and its Compounds, Some Additional Topics
Excellent Mathematics-1	Number System, Surds, Ratio and Proportion, Quadratic Equation, Miscellaneous Equations, Sequences and Series, Logarithm
Excellent Mathematics-2	Binomial Theorem, Inequalities, Permutations and Combinations, Coordinate Geometry, Trigonometry, Geometry, Mensuration, Probability

TARGET:: NMTC ROUND-1	
Excellent Mathematics-3	Algebra, Geometry, Number System, Inequalities
NSET-F2	
Foundation Biology-2	Diversity in Living Organisms, Why do we fall ill, Natural Resources
Foundation Physics-2	Thrust and Pressure, Work and Energy, Sound
Foundation Chemistry-2	Atoms And Molecules, Structure of Atom
Foundation Mathematics-3	Linear Equations in Two Variables, Quadrilaterals, Area of Parallelograms & Triangles
Foundation Mathematics-4	Surface Areas & Volumes, Circles, Constructions, Statistics, Probability
Foundation SST-2	History: Forest Society and Colonialism, Pastoralists in the Modern World.
	Civics: Electoral Politics, Working of Institutions, Democratic Rights.
	Geography: Climate, Natural Vegetation and Wildlife, Population.
	Economics: Poverty as a Challenge, Food Security in India.
Foundation English-2	Section A (Grammar): Integrated Grammar Exercises.
	Section B (Writing): Descriptive Paragraph (Diary), Story Writing
	Section C (Literature) : BEEHIVE: No Men Are Foreign, Packing, The Duck and the Kangaroo, Reach For The Top , On Killing A Tree, The Bond Of Love, The Snake Trying, Kathmandu, A Slumber Did My Spirit Seal, If I Were You.
	MOMENTS: Weathering The Storm In Ersama, The Last Leaf, A House Is Not A Home, The Accidental Tourist, The Beggar.
NSET-E2* TARGET:: NMTC Final Round	
Excellent Mathematics-4	Same Topics as in Round-1
NSET-E3 TARGET:: IJSO Round 2 (INJSO)**	
Excellent Biology-3	Same Topics as in Round-1
Excellent Physics-3	Same Topics as in Round-1
Excellent Chemistry-3	Same Topics as in Round-1

* Module will be dispatched to NMTC Round-1 Qualified Students.

** Module will be dispatched to students who have qualified for IJSO Round-2 (INJSO).

TSET-F1	
Foundation Biology-1	Life Processes - Nutrition, Respiration, Transportation, Excretion, Control and Coordination
Foundation Physics-1	Optics: Reflection of Light, Optics: Refraction of Light, The Human Eye & The Colourful World
Foundation Chemistry-1	Chemical Reactions & Equations, Acids, Bases & Salts, Metals & Non-metals
Foundation Mathematics-1	Real Numbers, Polynomials, Pair of Linear Equations in Two Variables,
Foundation Mathematics-2	Introduction to Trigonometry, Similar Triangles, Statistics
Foundation SST-1	History: The Rise of Nationalism in Europe, Nationalism in India, The Making of a Global World, The Age of Industrialisation.
	Geography: Resources and Development, Forest and Wildlife Resources, Water Resources, Agriculture.
	Civics: Power Sharing, Federalism, Democracy and Diversity, Gender, Religion and Caste.
	Economics: Development, Sectors of the Indian Economy.
Foundation English-1	Section A (Grammar): Tenses, Subject-Verb Concord, Modals, Reported Speech, Articles & Determiners, Integrated Grammar Exercises.
	Section B (Writing) : Letter Writing, Analytical Paragraph Writing
	Section C (Literature): Figures of Speech. FIRST FLIGHT: A Letter To God, Dust Of Snow, Fire And Ice, Nelson Mandela : Long Walk To Freedom, A Tiger in the Zoo, Two Stories About Flying (Part 1 - His First Flight, Part - 2 Black Aeroplane), The Ball Poem, From the Diary Of Anne Frank, Hundred Dresses-I, Hundred Dresses-II
	FOOTPRINTS WITHOUT FEET: A Triumph of Surgery, The Thief's Story, The Midnight Visitor, A Question of Trust, Footprints without Feet
TSET-A TARGET:: NTSE & Olympiads	
Advance Biology-1	Life Process - Nutrition, Life Process - Respiration, Life Process - Transportation, Life Process - Excretion, Control and Coordination, Reproduction in Plants and Animals, Heredity and Evolution, Our Environment, Management of Natural Resources.
Advance Biology-2	Cell, Tissue, Improvement in Food Resources, Diversity in Living Organisms, Why do we fall ill?
Advance Physics-1	Electricity and Chemical Effects of Current, Magnetic Effects of Electric Current, Light, Sources of Energy, Heat, Miscellaneous.
Advance Physics-2	Motion, Force and NLM, Gravitation, Thrust and Pressure; Work, Energy, Power; Waves and Sound
Advance Chemistry-1	Chemical Reactions & Equations, Acid, Bases and Salts, Metals and Non-metals, Carbon and Its Compounds, Periodic Classification of Elements.
Advance Chemistry-2	Matter in Our Surroundings, Is Matter Around us Pure, Atoms and Molecules, Structure of Atom.
Advance Mathematics-1	Linear Equations in Two Variables, Number System, Surds and Indices, Polynomials, Quadratic Equations, Arithmetic Progression, Coordinate Geometry, Trigonometry and Its Applications, Triangles, Circles and Tangent to the circle, Mensuration of Plane Figures, Mensuration of Solid Figures, Statistics, Probability, Lines and Angles, Quadrilaterals, Area of Parallelogram and Polygon.
Advance Mathematics-2	Every Day Mathematics: Percentage, Profit, Loss and Discount, Partnership, Mixtures and Alligations, Simple and Compound Interest, Ratio and Proportion, Time, Speed and Distance, Unitary Method, Time and Work, Pipes and Cisterns, Problems on Ages.
Mental Ability-1	**Verbal:** Series, Logical Sequence of Words, Coding & Decoding, Analogy, Classification, Logical Venn Diagrams, Mathematical Operations, Direction Sense Test, Alphabet Test, Puzzle Test, Number, Ranking & Time sequence Test, Alpha-Numeric Sequence Puzzle, Inserting The Missing Characters, Calendar, Arithmetical Reasoning, Blood Relations, Statements-Conclusions, Clock, Data Sufficiency, Sequential Output Tracing.
Mental Ability-2	**Non Verbal:** Series, Analogy, Classification, Analytical Reasoning, Mirror Images, Water Images, Spotting Out The Embedded Figures, Completion of Incomplete Pattern, Paper Folding & Paper Cutting, Dice, Cube, Dot Situation, Figure Matrix, Figure formation, Construction of Shapes & Grouping of Identical Figures.
Advance SST-1	History: The Making of a Global World, The Age of Industrialisation, Print Culture and the Modern World, The Rise of Nationalism in Europe, Nationalism in India.
	Civics: Power Sharing, Federalism, Democracy and Diversity, Gender, Religion and Caste, Popular Struggles and Movements, Political Parties, Outcomes of Democracy, Challenges to Democracy.
	Geography: Resources and Development, Forest and Wildlife Resources, Water Resources, Agriculture, Mineral and Energy Resources, Manufacturing Industries, Lifelines of National Economy.
	Economics: Development, Sectors of the Indian Economy, Money And Credit, Globalisation and The Indian Economy, Consumer Rights.
Advance SST-2	History : The French Revolution, Socialism in Russia and the Russian Revolution, Nazism and the Rise of Hitler, Forest Society and Colonialism, Pastoralists in the Modern World.

	Civics : What is Democracy? Why Democracy?, Constitutional Design, Electoral Politics, Working of Institutions, Democratic Rights.
	Geography: India Size And Location, Physical Features of India, Drainage, Climate, Natural Vegetation and Wildlife, Population.
	Economics: The Story of Village Palampur, People as resource, Poverty As a Challenge, Food Security in India.
TSET-E1 (E)# TARGET:: FOUNDATION ENGINEERING	
Excellent Physics	Units and Dimensions, Significant Figures & Errors in Measurement, Vectors, Motion in one dimension, Projectile Motion, Newton's Laws of Motion, Friction, Work, Energy & Power, Circular Motion, Gravitation, Simple Harmonic Motion, Wave Motion
Excellent Chemistry	General Concepts in Chemistry, States of Matter, Atomic Structure, Periodic Classification of Elements, Chemical Bonding, Equilibrium, Redox reactions, Basic Concepts of Organic Chemistry.
Excellent Mathematics-1	Sets and Relations, Functions, Quadratic Equation & Expression, Complex Numbers, Logarithm, Trigonometry, Sequences and series, Binomial Theorem, Permutations and Combinations, Points, Straight Lines, Circles, Parabola, Ellipse, Hyperbola
TARGET:: NMTC ROUND-1	
Excellent Mathematics-2	Algebra, Geometry, Number System, Inequalities
TSET-E1 (M)# TARGET : : FOUNDATION MEDICAL	
Excellent Physics	Units and Dimensions, Significant Figures & Errors in Measurement, Vectors, Motion in one dimension, Projectile Motion, Newton's Laws of Motion, Friction, Work, Energy & Power, Circular Motion, Gravitation, Simple Harmonic Motion, Wave Motion
Excellent Chemistry	General Concepts in Chemistry, States of Matter, Atomic Structure, Periodic Classification of Elements, Chemical Bonding, Equilibrium, Redox reactions, Basic Concepts of Organic Chemistry.
Excellent Biology	Diversity in Living Organisms, Cell, Cell Cycle and Cell Division, Biomolecules, Morphology of Flowering Plants, Anatomy of Flowering Plants and Animals, Plant Physiology, Animal Physiology - Animal Nutrition, Respiratory System, Circulatory System, Excretory System, Control and coordination.
	# Will be dispatched according to choice given by student at the time of enrollment for preparing for Foundation Engineering or Foundation Medical respectively.
TSET-F2	
Foundation Biology-2	How do Organisms Reproduce, Heredity and Evolution, Our Environment, Sustainable Management of Natural Resources
Foundation Physics-2	Electricity, Magnetic Effects of Electric Current, Sources of Energy
Foundation Chemistry-2	Carbon and its Compounds, Periodic Classification of Elements
Foundation Mathematics-3	Quadratic Equations, Heights and Distances, Constructions, Arithmetic Progressions
Foundation Mathematics-4	Probability, Circles, Co-ordinate Geometry, Areas Related to Circles, Surface Areas and Volumes
Foundation SST-2	History: Print Culture and the Modern World.
	Geography: Minerals and Energy Resources,Manufacturing Industries, Lifelines of National Economy.
	Civics: Popular Struggles and Movements,Political Parties, Outcomes of Democracy, Challenges to Democracy.
	Economics: Money and Credit, Globalisation and The Indian Economy, Consumer Rights.
Foundation English-2	Section A (Grammar): Integrated Grammar Exercises.
	Section B (Writing) : Letter Writing, Analytical Paragraph Writing
	Section C (Literature) : FIRST FLIGHT : How to Tell Wild Animals, Amanda, Animals, Glimpses of India (Part 1 - A Baker from Goa, Part 2 - Coorg, Part 3 - Tea From Assam,Mijbil the Otter, The Trees, Fog, Madam Rides the Bus, The Tale of Custard the Dragon, The Sermon at Benares, For Anne Gregory, The Proposal (Play), .
	FOOTPRINTS WITHOUT FEET: The Making of a Scientist, The Necklace, The Hack Driver, Bholi, The Book That Saved the Earth.
TSET-E2* TARGET:: NMTC FINAL ROUND	
Excellent Mathematics-3	Same Topics as in Round-1

* Module will be dispatched to NMTC Round-1 Qualified Students.

PRE-MEDICAL

Chapter Wise Reference Chart for Syllabus Covered in Tests for **JOINT PACKAGE STUDENTS**

Test No.	Pattern	**Nurture Joint Package** (Refer Chapter No. on Page No. 30)		
		Physics	Chemistry	Biology
1	NEET (UG)	P-1.1,2	C-1.1,2	B-1.1,2, B-4.1
2	NEET (UG)	P-1.3	C-2.1	B-1.3, B-4.1
3	NEET (UG)	P-1.1,2,3	C-1.1,2, C-2.1	B-1.1,2,3, B-4.1
4	NEET (UG)	P-1.4	C-2.2	B-2.1, B-4.2,4
5	NEET (UG)	P-2.1,3	C-1.5	B-2.2, B-5.1
6	NEET (UG)	P-1.4, P-2.1,3	C-1.5, C-2.2	B-2.1,2, B-4.2,4 B-5.1
7	NEET (UG)	P-1, P-2.1,3	C-1.1,2,5, C-2.1,2	B-1, B-2.1,2, B-4.1,2,4, B-5.1
8	NEET (UG)	P-2.2,4	C-1.3,4,6	B-2.3,4, B-5.2
9	NEET (UG)	P-3.1	C-3.1,2,3	B-3.1,3,5, B-5.3
10	NEET (UG)	P-2.2,4, P-3.1	C-1.3,4,6, C-3.1,2,3	B-2.3,4, B-3.1,3,5, B-5.2,3
11	NEET (UG)	P-2.5,6	C-3.5	B-3.2, B-6.1
12	NEET (UG)	P-3.2,3	C-3.4	B-3.4, B-6.2,3,4
13	NEET (UG)	P-2.5,6, P-3.2,3	C-3.4,5	B-3.2,4, B-6
14	NEET (UG)	P-2.2,4,5,6, P-3	C-1.3,4,6, C-3	B-2.3,4, B-3, B-5.2,3, B-6
15 to 19	NEET (UG)	Full Syllabus	Full Syllabus	Full Syllabus

Test No.	Pattern	**Leader Joint Package** (Refer Chapter No. on Page No. 30)		
		Physics	Chemistry	Biology
1	NEET(UG)	P-1.1,2, P-4.1	C-1.1,2	B-1, B-4.1
2	NEET(UG)	P-1.3, P-4.2	C-1.3,4, C-4.1	B-7.1,2, B-8.1
3	NEET(UG)	P-1.4, P-4.3	C-2.1,2	B-2.1,2, B-4.2,3,4 B-6.3,4
4	NEET(UG)	P-1, P-4	C-1.1,2,3,4, C-2.1,2, C-4.1	B-1, B-2.1,2, B-4, B-6.3,4, B-7.1,2, B-8.1
5	NEET(UG)	P-2.1,2, P-5.1	C-4.2,3	B-9.1, B-10.1
6	NEET(UG)	P-2.3, P-5.2	C-1.5,6	B-7.4, B-9.2, B-10.2
7	NEET(UG)	P-1,P-2.1,2,3,P-4, P-5.1,2	C-1, C-2.1,2, C-4	B-1, B-2.1,2, B-4, B-6.3,4 B-7.1,2,4, B-8.1, B-9, B-10
8	NEET(UG)	P-2.4, P-5.3,4	C-5	B-7.3, B-8.2
9	NEET(UG)	P-3.1, P-6.1	C-3.1,2,3,5	B-8.2, B-6.2
10	NEET(UG)	P-2.6, P-6.2	C-3.4, C-6.1	B-2.3,4, B-5.1,2
11	NEET(UG)	P-2.4,6, P-3.1, P-5.3,4, P-6.1,2	C-3, C-5, C-6.1	B-2.3,4, B-5.1,2 B-6.2, B-7.3, B-8.2
12	NEET(UG)	P-2.5,P-3.2,P-6.3,4,5	C-6.2,3,4	B-3.4, B-5.3
13	NEET(UG)	P-3.3, P-6.6	C-6.5	B-3.1,2,3,5, B-6.1
14	NEET(UG)	P-2.4,5,6, P-3, P-5.3,4, P-6	C-3, C-5, C-6	B-2.3,4, B-3, B-5 ,B-6.1,2 B-7.3, B-8.2
15	NEET (UG)	XIth Full Syllabus	XIth Full Syllabus	XIth Full Syllabus
16	NEET (UG)	XIIth Full Syllabus	XIIth Full Syllabus	XIIth Full Syllabus
17 to 26	NEET (UG)	Full Syllabus	Full Syllabus	Full Syllabus

PHYSICS

Test No.	Unit Covered/Topic Covered

01 **Unit-1**: **BASIC MATHEMATICS USED IN PHYSICS & VECTORS, ALGEBRA :** Quadratic Equation (Roots of quadratic equation, Solution by Factorization and by Shridharacharya Formula, Properties of roots (real, equal, imaginary etc), Application of Quadratic equation in physics), Binomial Theorem and binomial approximation, Logarithm and Exponents (Laws of logarithms and exponents with applications / examples), Series (Arithmetic Progression and its general term and Sum, Sum of first n Natural numbers, Geometrical Progression and its general term and Sum, Sum of infinite GP), Componendo & Dividendo rule.

TRIGONOMETRY : Angle & its measurement (Sexagesimal and Circular system) , Trigonometric-ratios, Trigonometric identities , Four Quadrants & ASTC rule, T-ratios for general angles , Addition/ subtraction Formulae , Small angle Approximation, Ranges of T-functions.

CO-ORDINATE GEOMETRY : Define Origin, Axis or Axes, Co-ordinates of a point in a plane or space (2D or 3D), Distance Formula, Slope of a line and its interpretation, Graphs of commonly used functions (Straight line, Parabola, Circle, Ellipse , Hyperbola Including rectangular hyperbola , Sinusoidal functions (sine and cosine functions), Exponential functions.

CALCULUS : Differential calculus (Average rate of change and Instantaneous rate of change, Differentiation of commonly used functions, Rules of differentiation including Product and Quotient rules, Application of derivatives: Increasing and Decreasing nature, Maxima and Minima with geometrical/graphical explanation), Integral calculus (Integration is the reverse process of differentiation, Indefinite and Definite Integration, Integration of commonly used functions, Rules of Integration, Application of Integral calculus: Area under a curve and Average value of a continuous function in an interval).

VECTORS : Definition of scalar and vector quantities, Graphical representation of vectors, Notation of Vectors, Angle between two vectors , Types of Vectors (Unit vector, Null vector, Equal vectors and equality of vectors, opposite and Negative of a vector, Parallel and anti-parallel vectors, Co-planar vectors, axial vectors) , Position and displacement vectors , Addition/subtraction of two vectors (Triangle law, Parallelogram law), Addition of many vectors (Polygon law),Unit vectors and their significance (Representation of vector in terms of unit vector in plane and in space), Resolution of a Vector into components i.e. Cartesian Components in two and three dimensions and Direction Cosines , Multiplication or Division of a Vector by a Scalar (i.e. Real number), Scalar (Dot) product of two Vectors and component of a vector in the direction of another vector , Vector (Cross) product of two Vectors with its geometrical interpretation and Right hand rule for direction.

UNIT AND MEASUREMENTS

Classification of Physical Quantities according to their dependency i.e. Fundamental (or Base) and Derived quantities , Need for measurement (Units of measurement), Systems of units (FPS, CGS, MKS, SI system of units and Supplementary units, fundamental and derived units , Some idea about Practical and Improper units) , Standards of Length, mass and time measurements, Dimensions of physical quantities, Dimensional Formulae of important physical quantities, Dimensional analysis and its applications & its limitations, SI prefixes and general guidelines for using Symbols of SI units , Errors in measurement (Systematic, Random and Least count Errors), Absolute Error, Relative Error, Percentage Error and Combination of Errors , Significant figures and its rules for Arithmetic operations (i.e. addition, subtraction, multiplication and division) , Rounding off the uncertain digits.

02 **Unit-2**: **KINEMATICS**

(Motion along a straight line and Motion in a Plane)

Motion and Rest with introduction of frame of reference , Variables of Translatory Motion (Position/ Displacement / Path length(Distance) , Velocity/ Speed / Average Velocity / Average Speed, Acceleration / Average Acceleration) , Relation among various variables of motion and their applications to variable acceleration , Equations of Motion with constant acceleration (scalar and vector forms), Motion along a straight line, velocity-time and position-time graphs for uniformly accelerated motion (graphical

treatment) , Motion under gravity, Free-fall , Motion in a plane with constant acceleration , Projectile Motion – Ground to Ground projection, Projection from a height (Horizontal projection) , Relative Motion in one-dimensions , Relative Velocity in two dimensions (Rain-Man problem, River-Boat Problem & wind based questions)

03 **Review Test - 1 : Syllabus of Test No. 1 & 2**

04 **Unit-3**: **NEWTON'S LAWS OF MOTION AND FRICTION**

Intuitive concept of force , Basic or Fundamental forces in nature , The law of Inertia, Newton's first law of motion ,Momentum and Newton's second law of motion; impulse , Newton's third law of motion , Common forces in mechanics-Weight, Normal reaction, Friction, Contact force, Tension in string , Free Body diagram, Equilibrium of concurrent forces-Lami's theorem, Motion of bodies in contact or connected by strings, Pulley systems , Frame of Reference-Inertial and Non Inertial Frames. Pseudo Force and its applications , Cause of Friction, Static and Kinetic friction , Laws of friction, Limiting Static and Kinetic friction coefficients, Angle of Friction, Angle of Repose , Rolling friction.

05 **Unit-4** : **WORK, ENERGY & POWER**

Work done by a constant force (use of dot product) and variable force(use of definite integration i.e. area under the curve) , Kinetic energy , Work-energy theorem for a Constant and a Variable force, Concept of potential energy, conservative forces and non-conservative forces. Gravitational Potential Energy , Potential energy versus position graph and stable, unstable & neutral equilibrium , Spring force and Elastic Potential energy of a spring, Conservation of mechanical energy (kinetic and potential energies) , Power (Instantaneous and Average power).

CENTRE OF MASS & COLLISIONS

Impulse of a force and Impulse-Momentum theorem, Idea about Impulsive forces,

Law of conservation of linear momentum and its applications, Elastic and inelastic collisions in one and two dimensions (Head-on and Oblique collisions), Coefficient of restitution and line of impact, Expression of loss in Kinetic energy in inelastic collision,

Centre of mass of discrete system: two-particle system and n-particle system, Centre of mass of continuous system: General formula, Centre of mass of symmetrical rigid bodies; centre of mass of uniform rod , Centre of mass of composite and truncated bodies.

06 **Review Test - 2 : Syllabus of Test No. 4 & 5**

07 **Semi Major Test - 1 : Syllabus of Test No. 1 to 6**

08 **Unit-5** : **CIRCULAR MOTION**

Kinematics of circular motion (Variables of motion (Angular Displacement, Angular Velocity, Angular acceleration), Relations among Angular Variables for constant angular acceleration , General relation among angular variables) , Dynamics of uniform circular motion. Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road) , Dynamics of non-uniform circular motion(Motion in a vertical circle)

ROTATIONAL MOTION

Kinematics of Rotational Motion about a fixed axis: Comparison of linear and rotational motions, Moment of inertia, radius of gyration and its significance. Values of M.I. for simple geometrical objects (Ring, Rod and Disc with derivation and others with no derivation).Statement of parallel and perpendicular axes theorems and their applications, Moment of a force-torque, Equilibrium of rigid bodies, Angular momentum, Relation between torque and Angular momentum, Conservation of angular momentum with some examples , Pure Rolling or rolling motion on a smooth/rough horizontal surface. Expression for Rotational Kinetic Energy, Rolling motion on an inclined plane, Expression for acceleration and minimum friction coefficient.

09 **Unit-6**: **THERMAL PHYSICS**

Temperature and Thermal Expansion: (Temperature, Temperature scales, Brief idea about thermometers, Thermal expansion; thermal expansion of solids, liquids, and gases. Anomalous expansion)

Calorimetry : (Heat, Heat capacity, Specific heat capacity, Molar heat capacity, Water Equivalent, Heat of transformation – latent heat, Principle of Calorimetry, Heating curve, Phase diagram)

Heat transfer Conduction : (Process, Steady State, Law of Conduction, Thermal conductivity,

Thermal resistance, Series and Parallel combinations of rods, Growth of ice on ponds) , Convection: Process, Idea about Natural and Forced Convection, Radiation: Qualitative ideas of Black Body Radiation, Ideal Black Body, Absorptive Power, Emissive Power, Spectral Emissive Power, Kirchhoff's Law and its applications, Stefan's Law, Newton's law of cooling, Wien's displacement law and Green House effect, Solar constant.

Thermodynamics : Thermal equilibrium and definition of temperature (Zeroth law of Thermodynamics). Heat, work and internal energy. First law of thermodynamics. Cyclic, Isochoric, Isobaric, Isothermal and Adiabatic processes, Second law of the thermodynamics: Reversible and irreversible processes.

Kinetic theory of gases : Gas Laws, Equation of state of a perfect gas, Brief idea of van der Waals' equation and Critical temperature, Assumptions, Concept of pressure. Different types of speeds of gas molecules, Maxwell's velocity distribution curve, Kinetic energy and temperature; Degrees of freedom, Law of equipartition of energy (statement only) and application to specific heat capacities of gases; Concept of mean free path.

10 **Review Test - 3 : Syllabus of Test No. 8 & 9**

11 **Unit-7**: **GRAVITATION**

The universal law of gravitation(Newton's law of Gravitation), Gravitational Field and its Intensity, Brief idea about Inertial and Gravitational mass, Acceleration due to gravity and its variation with altitude and depth. Idea about variation in g due to Shape and Rotation of earth, Gravitational potential energy and gravitational potential, Kepler's laws of planetary motion (The law of orbits, Areas and Periods), Motion of Planets and Satellites in Circular orbits ,Orbital velocity of a satellite, Total Energy and Binding Energy of a satellite, Escape velocity and escape energy.

PROPERTIES OF MATTER AND FLUID MECHANICS

Elastic behavior, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity, Poisson's ratio; elastic energy. Pressure, Pascal's law, Archimedes' Principle and Buoyancy. Floatation and Translatory equilibrium, Variation of Pressure with Depth, Atmospheric pressure and Gauge Pressure, Hydraulic Machines, Streamline and turbulent flow, Critical velocity and Reynolds's number, Principle of Continuity, Bernoulli's theorem and its applications. Speed of Efflux: Torricelli's law, Venturi-meter, Dynamic lift, Viscosity, Newton's law of viscous force, Stokes' law, terminal velocity,Surface energy and surface tension, angle of contact, excess of pressure, application of surface tension ideas to drops, bubbles and capillary rise. Detergent and surface tension

12 **Unit-8** : **OSCILLATIONS (SHM)**

Periodic (harmonic) motion and Oscillatory motion, Periodic motion-period, frequency, displacement as a function of time, Periodic functions, Simple harmonic motion (SHM) and its equation; Velocity, Acceleration and Phase, Oscillations of a spring-restoring force and force constant. Equivalent spring constant of Series and parallel combinations, Energy in SHM –Kinetic and Potential energies, Simple pendulum-derivation of expression for its time period, Superposition of two SHMs of Same Frequency in the same direction, Free, forced and damped oscillations (qualitative ideas only), resonance.

WAVE MOTION

Wave motion, Mechanical Waves, Longitudinal and transverse waves, Equation of Plane Progressive waves, Velocity of Transverse mechanical waves, Intensity of waves , Sound waves: Audible, Infrasonic and Ultrasonic waves , Speed of sound waves: Newton's formula and Laplace correction, Effect of temperature, Pressure and Humidity on speed of Sound waves , Some idea about description of sound waves as Displacement and Pressure waves, Characteristics of sound waves: Pitch, Loudness and Quality, Reflection and transmission of waves & Echo , Principle of superposition of waves, Interference and Beats, Stationary waves, Standing waves in strings and organ pipes, fundamental mode and harmonics. Resonance tube.

EXPERIMENTAL SKILLS

Familiarity with the basic approach and observations of the experiments and activities:

I. Vernier calipers-its use to measure the internal and external diameter and depth of a vessel.

2. Screw gauge-its use to determine thickness/ diameter of thin sheet/wire.

3. Simple Pendulum-dissipation of energy by plotting a graph between the square of amplitude and time.
4. Metre Scale - the mass of a given object by the principle of moments.
5. Young's modulus of elasticity of the material of a metallic wire.
6. Surf ace tension of water by capillary rise and effect of detergents.
7. Co-efficient of Viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body.
8. Speed of sound in air at room temperature using a resonance tube,
9. Specific heat capacity of a given (i) solid and (ii) liquid by method of mixtures.

13 **Review Test - 4 : Syllabus of Test No. 11 & 12**

14 **Semi Major Test - 2 : Syllabus of Test No. 8 to 13 Test No. 15 to 19 Full Syllabus**

CHEMISTRY

Test No. Unit Covered/Topic Covered

01 **Unit-1**: **SOME BASIC CONCEPTS OF CHEMISTRY :** Matter and its nature, Dalton's atomic theory: Concept of atom, molecule, element and compound : Laws of chemical combination; Atomic and molecular masses, mole concept, molar mass, percentage composition, empirical and molecular formulae: Chemical equations and stoichiometry.

ATOMIC STRUCTURE : Nature of electromagnetic radiation, photoelectric effect; Spectrum of the hydrogen atom. Bohr model of a hydrogen atom - its postulates, derivation of the relations for the energy of the electron and radii of the different orbits, limitations of Bohr's model; Dual nature of matter, de Broglie's relationship. Heisenberg uncertainty principle. Elementary ideas of quantum mechanics, quantum mechanics, the quantum mechanical model of the atom, its important features. Concept of atomic orbitals as one-electron wave functions: Variation of Ψ and Ψ^2 with r for 1s and 2s orbitals: various quantum numbers (principle, angular momentum and magnetic quantum numbers) and their significance; shapes of s, p, and d - orbitals, electron spin and spin quantum number: Rules for filling electrons in orbitals - Aufbau principle. Pauli's exclusion principle and Hund's rule, electronic configuration of elements, extra stability of half-filled and completely filled orbitals.

02 **Unit-2**: **CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES :** Modern periodic law and present form of the periodic table. s, p, d and f block elements - periodic trends in properties of elements atomic and ionic radii. ionization

enthalpy, electron gain enthalpy, valence, oxidation states and chemical reactivity.

03 **Review Test - 1 : Syllabus of Test No. 1 & 2**

04 **Unit-3**: **CHEMICAL BONDING AND MOLECULAR STRUCTURE :** Kossel - Lewis approach to chemical bond formation, the concept of ionic and covalent bonds.

Ionic Bonding : Formation of ionic bonds, factors affecting the formation of ionic bonds; calculation of lattice enthalpy.

Covalent Bonding : Concept of electronegativity. Fajan's rule, dipole moment : Valence Shell Electron Pair Repulsion (VSEPR) theory and shapes of simple molecules.

Quantum mechanical approach to covalent bonding: Valence bond theory - its important features, the concept of hybridization involving s, p, and d orbitals; Resonance.

Molecular orbital Theory - Its important features, LCAOs, types of molecular orbitals (bonding, anti bonding), sigma and pi-bonds, molecular orbital electronic configurations of homonuclear diatomic molecules, the concept of bond order, bond length, and bond energy. Elementary idea of metallic bonding. Hydrogen bonding and is applications.

05 **Unit-4**: **CHEMICAL THERMODYNAMICS :** Fundamentals of thermodynamics: System and surroundings, extensive and intensive properties, state functions, types of processes.

The first law of thermodynamics - Concept of work, heat internal energy and enthalpy, heat capacity, molar heat capacity; Hess's law of constant heat summation; Enthalpies of bond dissociation, combustion, formation, atomization, sublimation, phase transition, hydration, ionization, and solution.

The second law of thermodynamics - Spontaneity of processes; ΔS of the universe and ΔG of the system as criteria for spontaneity. ΔG° (Standard Gibbs energy change) and equilibrium constant.

06 **Review Test - 2 : Syllabus of Test No. 4 & 5**

07 **Semi Major - 1 : Syllabus of Test No. 1 to 6**

08 **Unit-5**: **EQUILIBRIUM :** Meaning of equilibrium, the concept of dynamic equilibrium.

Equilibria involving physical processes : Solid-liquid, liquid - gas and solid-gas equilibria, Henry's law. General characteristics of equilibrium involving physical processes.

Equilibrium involving chemical processes : Law of chemical equilibrium, equilibrium constants (Kp and Kc) and their significance, the significance of ΔG and ΔG° in chemical equilibrium, factors affecting equilibrium concentration, pressure, temperature, the effect of catalyst; Le Chatelier's principle.

Ionic equilibrium : Weak and strong electrolytes, ionization of electrolytes, various concepts of acids and bases (Arrhenius. Bronsted - Lowry and Lewis) and their ionization, acid-base equilibria (including multistage ionization) and ionization constants, ionization of water. pH scale, common ion effect, hydrolysis of salts and pH of their solutions, the solubility of sparingly soluble salts and solubility products, buffer solutions.

REDOX REACTIONS : Concept of oxidation and oxidation and reduction, redox reactions,

oxidation number, balancing redox reactions in terms of loss and gain of electron and change in oxidation numbers.

09 **Unit-6**: **SOME BASIC PRINCIPLES OF ORGANIC CHEMISTRY :** Tetravalency of carbon: Shapes of simple molecules - hybridization (s and p): Classification of organic compounds based on functional groups: and those containing halogens, oxygen. nitrogen. and sulphur; Homologous series: Isomerism - structural and stereoisomerism.

Nomenclature (Trivial and IUPAC)

Covalent bond fission - Homolytic and heterolytic : free radicals, carbocations and carbanions; Stability of carbocations and free radicals, electiophiles, and nucleophiles.

Electronic displacement in a covalent bond - Inductive effect, electromeric effect, resonance and hyperconjugation.

Common types of organic reactions - Substitution, addition, elimination and rearrangement.

10 **Review Test - 3 : Syllabus of Test No. 8 & 9**

11 **Unit-7**: **Purification and Characterisation Of Organic Compounds**

Purification - Crystallization, sublimation, distillation, differential extraction and chromatography - principles and their applications.

Qualitative analysis - Detection of nitrogen, sulphur, phosphorus and halogens.

Quantitative analysis (basic principles only) - Estimation of carbon, hydrogen, nitrogen, halogens, sulphur, phosphorus.

Calculations of empirical formulae and molecular formulae : Numerical problems in organic quantitative analysis.

12 **Unit-8**: **HYDROCARBONS :** Classification, isomerism, IUPAC nomenclature, general methods of preparation, properties, and reactions.

Alkanes - Conformations: Sawhorse and Newman projections (of ethane): Mechanism of halogenation of alkanes.

Alkenes - Geometrical isomerism: Mechanism of electrophilic addition: addition of hydrogen, halogens, water, hydrogen halides (Markownikoffs and peroxide effect): Ozonolysis and polymerization.

Alkynes - Acidic character: Addition of hydrogen, halogens, water and hydrogen halides. Polymerization.

Aromatic hydrocarbons - Nomenclature, benzene - structure and aromaticity: Mechanism of electrophilic substitution: halogenation, nitration.

Friedel - Craft's alkylation and acylation, directive influence of the functional group in mono-substituted benzene.

13 **Review Test - 4 : Syllabus of Test No. 11 & 12**

14 **Semi Major Test No.-2 : Syllabus of Test No. 8 to 13**

Test No. 15 to 19 Full Syllabus

BIOLOGY

Test No. Unit Covered/Topic Covered

01 **Unit-1**: **DIVERSITY IN LIVING WORLD : The living world** : What is living ? ; Biodiversity; Need for classification; Taxonomy & Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature.

Biological Classification : Five kingdom classification; salient features and classification of Monera; Protista and Fungi into major groups; Lichens; Viruses and Viroids. Prokaryotic Cell (Bacteria).

ANIMAL KINGDOM : Salient features and classification of animals-nonchordate up to phyla level.

02 **Unit-2**: **Plant Kingdom** : Salient features and classification of plants into major groups-Algae, Bryophytes, Pteridophytes, Gymnosperms (three to five salient and distinguishing features and at least two examples of each category).

ANIMAL KINGDOM : Salient features and classification of animals-chordate up to classes level (Three to five salient features and at least two examples).

03 **Review Test - 1 : Syllabus of Test No. 1 & 2**

04 **Unit-3**: **STRUCTURAL ORGANISATION IN PLANTS** : Morphology and modifications, Tissues, Anatomy and functions of different parts of flowering plants: Root, Stem, Leaf, Inflorescence, Cymose and racemose, flower, Fruit and seed (To be dealt along with the relevant practical of the Practical Syllabus) & Families (Malvaceae, Cruciferae, leguminoceae, compositae, graminae).

STRUCTURAL ORGANISATION IN ANIMALS: Animal tissues; Morphology, anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of an insect Frog.

05 **Unit-4**: **Anatomy of flowering plants:** Anatomy and function of different tissues, tissue system, internal structure of Root, Stem, Leaf, secondary Growth.

Breathing and Exchange of Gases : Respiratory organs in animals (recall only); Respiratory system in humans; Mechanism of breathing and its regulation in humans-Exchange of gases, transport of gases and regulation of respiration; Respiratory volumes; Disorders related to respiration-Asthma, Emphysema, Occupational respiratory disorders.

06 **Review Test - 2 : Syllabus of Test No. 4 & 5**

07 **Semi Major Test - 1 : Syllabus of Test No. 1 to 6**

08 **Unit-5** : **CELL STRUCTURE AND FUNCTION :** Cell theory and cell as the basic unit of life; Structure of prokaryotic and eukaryotic cell; Plant cell and animal cell; Cell envelope, cell membrane, cell wall; Cell organelles-structure and function; Endomembrane system-endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles; mitochondria, ribosomes, plastids, micro bodies; Cytoskeleton, cilia, flagella, centrioles (ultra structure and function); Nucleus-nuclear membrane, chromatin, nucleolus.

Cell division: Cell cycle, mitosis, meiosis and their significance.

Body fluids and circulation : Composition of blood. Composition of lymph and its function; blood groups, blood corpuscles :

Human circulatory system-Structure of human heart and blood vessels; Cardiac cycle, cardiac output. ECG. Double circulation: Regulation of

cardiac activity; Disorders of circulatory system-Hypertension. Coronary artery disease, Angina pectoris, Heart failure.

09 **Unit-6**: **Respiration in plants :** Exchange of gases; Cellular respiration-glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); The respiratory balance sheet, Energy relation - Number of ATP molecule generated, Amphibolic pathways; Respiratory quotient.

Enzymes- types, properties, enzyme action, classification and nomenclature of enzymes.

Biomolecules-structure and function of proteins, carbohydrates, lipids, nucleic acids.

Excretory products and their elimination: Modes of excretion Ammonotelism, ureotelism, uricotelism; Human excretory system structure and fuction; Urine formation, Osmoregulation; Regulation of kidney function-Renin-angiotensin, Atrial Natriuretic Factor, ADH and Diabetes insipidus; Role of other organs in excretion; Disorders; Uraemia, Renal failure, Renal calculi, Nephritis; Dialysis, artificial kidney.

10 **Review Test - 3 : Syllabus of Test No. 8 & 9**

11 **Unit-7**: **Photosynthesis in higher plants** as a means of Autotrophic nutrition; Site of photosynthesis take place; pigments involved in Photosynthesis (Elementary idea); Photochemical and biosynthetic phases of photosynthesis; Cyclic and non cyclic and photophosphorylation; Chemiosmotic hypothesis; Photorespiration C_3 and C_4 pathways; Factors affecting photosynthesis.

Neural Control And Coordination: Neuron and nerves; Nervous system in humans - central nervous system, peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse.

12 **Unit-8**: **Plant growth and development:** Seed germination; Phases of Plant growth and plant growth rate; Conditions of growth; Differentiation, dedifferentiation and redifferentiation; Sequence of developmental process in a plant cell; Growth regulators-auxin,gibberellin, cytokinin, ethylene, ABA.

Chemical Coordination and Integration : Endocrine glands and hormones; Human endocrine system-Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary Idea); Role of hormones as messengers and regulators, Hypo-and hyperactivity and related disorders (Common disorders e.g. Dwarfism, Acromegaly, Cretinism, goitre, exopthalmic goitre, diabetes, Addison's disease).

Locomotion and Movement: Types of movement- ciliary, flagellar, muscular; Skeletal muscle- contractile proteins and muscle contraction; Skeletal system and its functions (To be dealt with the relevant practical of Practical syllabus); Joints; Disorders of muscular and skeletal system-Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, Osteoporosis, Gout.

13 **Review Test - 4 : Syllabus of Test No. 11 & 12**

14 **Semi Major Test- 2 : Syllabus of Test No. 8 to 13**

Test No. 15 to 19 Full Syllabus

PHYSICS

Test No.	Unit Covered/Topic Covered
01	**Unit-1**: **BASIC MATHEMATICS USED IN PHYSICS & VECTORS, ALGEBRA :** Quadratic Equation (Roots of quadratic equation, Solution by Factorization and by Shridharacharya Formula, Properties of roots (real, equal, imaginary etc), Application of Quadratic equation in physics), Binomial Theorem and binomial approximation, Logarithm and Exponents (Laws of logarithms and exponents with applications / examples), Series (Arithmetic Progression and its general term and Sum, Sum of first n Natural numbers, Geometrical Progression and its general term and Sum, Sum of infinite GP), Componendo & Dividendo rule. **TRIGONOMETRY :** Angle & its measurement (Sexagesimal and Circular system) , Trigonometric-ratios, Trigonometric identities , Four Quadrants & ASTC rule, T-ratios for general angles , Addition/subtraction Formulae , Small angle Approximation, Ranges of T-functions. **CO-ORDINATE GEOMETRY :** Define Origin, Axis or Axes, Co-ordinates of a point in a plane or space (2D or 3D), Distance Formula, Slope of a line and its interpretation, Graphs of commonly used functions (Straight line, Parabola, Circle, Ellipse , Hyperbola including rectangular hyperbola , Sinusoidal functions (sine and cosine functions), Exponential functions. **CALCULUS:** Differential calculus (Average rate of change and Instantaneous rate of change, Differentiation of commonly used functions, Rules of differentiation including Product and Quotient rules, Application of derivatives: Increasing and Decreasing nature, Maxima and Minima with geometrical / graphical explanation), Integral calculus (Integration is the reverse process of differentiation, Indefinite and Definite Integration, Integration of commonly used functions, Rules of Integration, Application of Integral calculus: Area under a curve and Average value of a continuous function in an interval). **VECTORS** Definition of scalar and vector quantities, Graphical representation of vectors, Notation of Vectors, Angle between two vectors , Types of Vectors (Unit vector, Null vector, Equal vectors and equality of vectors, opposite and Negative of a vector, Parallel and anti-parallel vectors, Co-planar vectors, axial vectors) , Position and displacement vectors , Addition/subtraction of two vectors (Triangle law, Parallelogram law), Addition of many vectors (Polygon law),Unit vectors and their significance (Representation of vector in terms of unit vector in plane and in space) , Resolution of a Vector into components i.e. Cartesian Components in two and three dimensions and Direction Cosines , Multiplication or Division of a Vector by a Scalar (i.e. Real number) ,Scalar (Dot) product of two Vectors and component of a vector in the direction of another vector , Vector (Cross) product of two Vectors with its geometrical interpretation and Right hand rule for direction. **UNIT AND MEASUREMENT** Classification of Physical Quantities according to their dependency i.e. Fundamental (or Base) and Derived quantities , Need for measurement (Units of measurement) , Systems of units (FPS, CGS, MKS, SI system of units and Supplementary units, fundamental and derived units , Some idea about Practical and Improper units) , Standards of Length, mass and time measurements, Dimensions of physical quantities, Dimensional Formulae of important physical quantities, Dimensional analysis and its applications & its limitations, SI prefixes and general guidelines for using Symbols of SI units , Errors in measurement (Systematic, Random and Least count Errors), Absolute Error, Relative Error, Percentage Error and Combination of Errors , Significant figures and its rules for Arithmetic operations (i.e. addition, subtraction, multiplication and division) ,Rounding off the uncertain digits. **ELECTROSTATICS** Electric charges and their basic properties, Conductors and Insulators, Method of charging: Charging by Friction, Charging by Induction and Charging by Conduction, Gold-leaf Electroscope, Coulomb's law-force, between two point charges, force, between multiple charges and Superposition principle, Equilibrium of charge systems and SHM, Electric field Intensity, electric field due to a point charge and a system of charges. Electric field due to an arc, Electric field on an axial point of Ring, Electric field lines and their properties, Electric flux, statement of Gauss's theorem and its applications to find field due to [Infinitely long straight wire, Uniformly charged infinite plane sheet, Uniformly charged thin spherical shell (field inside and outside)], Electric potential, Potential difference, Electric potential due to(A point charge, A system of charges, Ring(on an axial point),Conducting and non conducting sphere),Electrical potential energy of a system of two/more than two point charges,

Equipotential surfaces, Relation between Field and Potential, Motion of charged particle in Electric Field, Electric dipole and dipole moment(Electric Potential due to a dipole, Electric field due to a dipole, Torque on a dipole in a uniform electric field, Electrical potential energy of electric diploes in an electrostatic field, Work done in rotating a dipole)

02 **Unit-2: KINEMATICS**

(Motion along a straight line and Motion in a Plane)

Motion and Rest with introduction of frame of reference , Variables of Translatory Motion (Position/ Displacement / Path length(Distance) , Velocity/ Speed / Average Velocity / Average Speed , Acceleration / Average Acceleration) , Relation among various variables of motion and their applications to variable acceleration , Equations of Motion with constant acceleration (scalar and vector forms), Motion along a straight line, velocity-time and position-time graphs for uniformly accelerated motion (graphical treatment) , Motion under gravity, Free-fall , Motion in a plane with constant acceleration , Projectile Motion – Ground to Ground projection, Projection from a height (Horizontal projection) , Relative Motion in one-dimensions , Relative Velocity in two dimensions (Rain-Man problem, River-Boat Problem & wind based questions)

CURRENT ELECTRICITY

Electric current, flow of electric charges in a metallic conductor, drift velocity and mobility, relaxation time and their relation with electric current and current density,Ohm's law, electrical resistance, V-I characteristics (liner and non-linear),Electrical resistivity and conductivity, Series and parallel combinations of resistors,Temperature dependence of resistance,Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel,Kirchhoff's laws (KCL and KVL) and simple applications,Wheatstone bridge, Meter Bridge, Moving coil galvanometer and its,Current sensitivity and voltage sensitivity, Conversion to ammeter and voltmeter, Electrical energy and power. Applications to Electric Bulbs and Heaters.

03 **Unit-3: NEWTON'S LAWS OF MOTION AND FRICTION**

Intuitive concept of force, Basic or Fundamental forces in nature, The law of Inertia, Newton's first law of motion ,Momentum and Newton's second law of motion; impulse , Newton's third law of motion , Common forces in mechanics-Weight, Normal reaction, Friction, Contact force, Tension in string , Free Body diagram, Equilibrium of concurrent forces-Lami's theorem, Motion of bodies in contact or connected by strings, Pulley systems , Frame of Reference-Inertial and Non Inertial Frames. Pseudo Force and its applications , Cause of Friction, Static and Kinetic friction , Laws of friction, Limiting Static and Kinetic friction coefficients, Angle of Friction, Angle of Repose , Rolling friction.

CAPACITOR

Concept of Capacity, Capacitors and capacitance, Capacity of an Isolated Spherical Capacitor, Sharing of Charges, Capacitance of a parallel plate capacitor with and without dielectric medium between the plates, Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, Combination of capacitors in series and in parallel, Work done by Battery in charging of a capacitor. Energy stored in a capacitor, Charging and discharging of a Capacitor.

04 **Review Test - 1 : Syllabus of Test No. 1, 2 & 3**

05 **Unit-4: WORK, ENERGY & POWER**

Work done by a constant force (use of dot product) and variable force(use of definite integration i.e. area under the curve), Kinetic energy, Work-energy theorem for a Constant and a Variable force , Concept of potential energy, conservative forces and non-conservative forces. Gravitational Potential Energy , Potential energy versus position graph and stable, unstable & neutral equilibrium , Spring force and Elastic Potential energy of a spring , Conservation of mechanical energy (kinetic and potential energies) , Power (Instantaneous and Average power).

CIRCULAR MOTION

Kinematics of circular motion (Variables of motion (Angular Displacement, Angular Velocity, Angular acceleration), Relations among Angular Variables for constant angular acceleration , General relation among angular variables) , Dynamics of uniform circular motion. Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road) , Dynamics of non-uniform circular motion(Motion in a vertical circle)

MAGNETIC EFFECT OF CURRENT AND MAGNETISM

Concept of magnetic field, Oersted's experiment, Biot-Savart law and its application to current carrying circular loop and straight wire, Ampere's law and its applications to (Infinitely long straight wire, Straight and toroidal solenoids),Circular motion of a moving charged particle in uniform magnetic field, Force on a

moving charge in uniform magnetic and electric fields (Lorentz force)(Velocity Selector], Force on a current-carrying conductor in a uniform magnetic field, Force between two parallel current-carrying conductors-definition of ampere, Torque experienced by a current loop in a magnetic field, Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment of a revolving electron, Bar Magnet(Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis, Torque on a magnetic dipole (bar magnet) in a uniform magnetic field, Bar magnet as an equivalent solenoid, Magnetic field lines), Magnetic properties of Materials(Diamagnetism with examples, Para magnetism with examples, Ferromagnetism with examples and brief analysis of magnetic Hysteresis.

06 **Unit-5**: **CENTRE OF MASS & COLLISIONS**

Impulse of a force and Impulse-Momentum theorem, Idea about Impulsive forces,

Law of conservation of linear momentum and its applications, Elastic and inelastic collisions in one and two dimensions (Head-on and Oblique collisions), Coefficient of restitution and line of impact, Expression of loss in Kinetic energy in inelastic collision,

Centre of mass of discrete system: two-particle system and n-particle system, Centre of mass of continuous system: General formula, Centre of mass of symmetrical rigid bodies; centre of mass of uniform rod , Centre of mass of composite and truncated bodies .

ELECTROMAGNETIC INDUCTION

Magnetic Flux, Electromagnetic induction(Faraday's Experiments),Faraday's law, Induced emf, induced, current and induced charge, Lenz's Law and its applications, Static, Dynamic and Rotational Emf, Induced Electric Field and its properties, Eddy currents, Self Induction(Coefficient of self induction (L),Growth and Decay of Current in L-R circuits),Mutual Induction(Coefficient of Mutual induction (M), Coefficient of Coupling (K)],AC generator,Transformer.

07 **Review Test - 2 : Syllabus of Test No. 1 to 6**

08 **Unit-6**: **ROTATIONAL MOTION**

Kinematics of Rotational Motion about a fixed axis: Comparison of linear and rotational motions, Moment of inertia, radius of gyration and its significance. Values of M.I. for simple geometrical objects (Ring, Rod and Disc with derivation and others with no derivation).Statement of parallel and perpendicular axes theorems and their applications, Moment of a force-torque, Equilibrium of rigid bodies, Angular momentum, Relation between torque and Angular momentum, Conservation of angular momentum with some examples , Pure Rolling or rolling motion on a smooth/rough horizontal surface. Expression for Rotational Kinetic Energy, Rolling motion on an inclined plane, Expression for acceleration and minimum friction coefficient.

ALTERNATING CURRENT

Alternating current and Voltage, Measurement of AC, Comparison between AC and DC, Peak, Average and RMS value of alternating current/ voltage, Circuit elements in ac circuits(Resistive Circuit, Capacitive Circuit, Inductive Circuit),RC, RL circuits and their Reactance & impedance in series and parallel combination, LCR series circuit, Resonance, Quality Factor, Power in AC circuits, Wattles Current, Power Factor.

ELECTROMAGNETIC WAVES

Need for displacement current, Electromagnetic waves and their characteristics (qualitative ideas only),Transverse nature of electromagnetic waves, Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, x-rays, gamma rays) including elementary facts about their uses.

09 **Unit-7**: **THERMAL PHYSICS**

Temperature and Thermal Expansion: (Temperature, Temperature scales, Brief idea about thermometers, Thermal expansion; thermal expansion of solids, liquids, and gases. Anomalous expansion)

Calorimetry : (Heat, Heat capacity, Specific heat capacity, Molar heat capacity, Water Equivalent, Heat of transformation – latent heat, Principle of Calorimetry, Heating curve, Phase diagram)

Heat transfer Conduction : (Process, Steady State, Law of Conduction, Thermal conductivity, Thermal resistance, Series and Parallel combinations of rods, Growth of ice on ponds) , Convection: Process, Idea about Natural and Forced Convection, Radiation: Qualitative ideas of Black Body Radiation, Ideal Black Body, Absorptive Power, Emissive Power, Spectral Emissive Power, Kirchhoff's Law and its applications, Stefan's Law, Newton's law of cooling, Wien's displacement law and Green House effect, Solar constant.

Thermodynamics : Thermal equilibrium and

definition of temperature (Zeroth law of Thermodynamics). Heat, work and internal energy. First law of thermodynamics. Cyclic, Isochoric, Isobaric, Isothermal and Adiabatic processes, Second law of the thermodynamics: Reversible and irreversible processes.

Kinetic theory of gases : Gas Laws, Equation of state of a perfect gas, Brief idea of van der Waals' equation and Critical temperature, Assumptions, Concept of pressure. Different types of speeds of gas molecules, Maxwell's velocity distribution curve, Kinetic energy and temperature; Degrees of freedom, Law of equipartition of energy (statement only) and application to specific heat capacities of gases; Concept of mean free path.

RAY OPTICS AND OPTICAL INSTRUMENTS

Reflection of light(Laws of Reflection, Reflection at Plane Surface (Plane Mirror): Formation of Image, Deviation, Rotation of mirror, Number of images, velocity of image, Minimum length of mirror to see full image of a man, Field of view, Reflection at Spherical Surface(Curved Mirror: Rules of image tracing, Image formation in concave and convex mirrors, Focal length of spherical mirrors, Relation between u,v and f (i.e. Mirror Equation for Para-axial rays), Sign convention, Magnification),Refraction of light at Plane Surface(Snell's law, Total internal reflection and its applications (Mirage, Looming, Diamond, prism and optical fibers),Optical Path, Lateral and normal shift],Refraction at spherical surfaces(single and double surface),Lenses(Thin lens formula, Lens-maker's formula, Magnification, Power of a lens, Combination of thin lenses in contact), Refraction and dispersion of light through a prism, combinations of prisms, Some Natural Phenomena due to Sunlight(Rainbow-dispersion of sun light and TIR) using lenses, Microscopes and telescopes (reflecting and refracting) and their magnifying powers)

10 Unit-8: PROPERTIES OF MATTER AND FLUID MECHANICS

Elastic behavior, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity, Poisson's ratio; elastic energy. Pressure, Pascal's law, Archimedes' Principle and Buoyancy. Floatation and Translatory equilibrium, Variation of Pressure with Depth, Atmospheric pressure and Gauge Pressure, Hydraulic Machines, Streamline and turbulent flow, Critical velocity and Reynolds's number, Principle of Continuity, Bernoulli's theorem and its applications. Speed of Efflux: Torricelli's law, Venturi-meter, Dynamic lift, Viscosity, Newton's law of viscous force, Stokes' law, terminal velocity,Surface energy and surface tension, angle of contact, excess of pressure, application of surface tension ideas to drops, bubbles and capillary rise. Detergent and surface tension

WAVE OPTICS

Wave front and Huygens' Principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygens' Principle, Coherent and incoherent sources, LASER(only qualitative idea),Superposition of Light Waves: Interference, Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light,Diffraction due to a single slit, width of central maximum, Polarisation, Polarisation by Scattering and Reflection, plane polarized light, Brewster's law, uses of plane polarized light and Polaroid's.

11 Review Test - 3 : Syllabus of Test No. 8, 9 & 10

12 Unit-9: GRAVITATION

The universal law of gravitation(Newton's law of Gravitation), Gravitational Field and its Intensity, Brief idea about Inertial and Gravitational mass, Acceleration due to gravity and its variation with altitude and depth. Idea about variation in g due to Shape and Rotation of earth, Gravitational potential energy and gravitational potential, Kepler's laws of planetary motion (The law of orbits, Areas and Periods), Motion of Planets and Satellites in Circular orbits ,Orbital velocity of a satellite, Total Energy and Binding Energy of a satellite, Escape velocity and escape energy.

OSCILLATIONS (SHM)

Periodic (harmonic) motion and Oscillatory motion, Periodic motion-period, frequency, displacement as a function of time, Periodic functions, Simple harmonic motion (SHM) and its equation; Velocity, Acceleration and Phase, Oscillations of a spring-restoring force and force constant. Equivalent spring constant of Series and parallel combinations, Energy in SHM –Kinetic and Potential energies, Simple pendulum-derivation of expression for its time period, Superposition of two SHMs of Same Frequency in the same direction.

MODERN PHYSICS - I (Dual Nature of Radiation and Matter) : Photoelectric effect(Hertz observation, Hallwach's and Lenard's observations,Einstein's photoelectric equation- particle nature of light (photon),Matter waves(Wave nature of particles, de Broglie relation,

MODERN PHYSICS - II (Nuclei) : Nuclei (Composition and size of nucleus, Atomic masses, Isotopes, isobars, isotones and isodiapheres, Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number, Nuclear fission and fusion, Nuclear reactor, Nuclear Force and its properties.

MODERN PHYSICS - III (Atoms) : Atoms(Alpha-particle scattering experiments; Rutherford's model of atom,Bohr model, energy levels, hydrogen spectrum),X-rays and their elementary idea.

13 Unit-10: WAVE MOTION

Wave motion, Mechanical Waves, Longitudinal and transverse waves, Equation of Plane Progressive waves, Velocity of Transverse mechanical waves, Intensity of waves , Sound waves: Audible, Infrasonic and Ultrasonic waves , Speed of sound waves: Newton's formula and Laplace correction, Effect of temperature, Pressure and Humidity on speed of Sound waves , Some idea about description of sound waves as Displacement and Pressure waves, Characteristics of sound waves: Pitch, Loudness and Quality, Reflection and transmission of waves & Echo , Principle of superposition of waves, Interference and Beats, Stationary waves, Standing waves in strings and organ pipes, fundamental mode and harmonics. Resonance tube.

SEMICONDUCTOR AND DIGITAL ELECTRONICS

Classification of Metals, Conductors and Semi-conductors on the basis of(Conductivity, Intrinsic Semi-conductor,Extrinsic Semi-conductor (n-type and p-type),p-n Junction: p-n junction formation, Barrier potential, Semiconductor diode: I-V characteristics in forward and reverse bias, Application of Junction Diode as a Rectifier and Filter(only qualitative idea),Special purpose p-n junction diodes and their I-V characteristics (LED, Photodiode, Solar cell, Zener diode), Junction Breakdown : Zener and Avalanche breakdown, Zener diode as a voltage regulator, Digital Electronics and Logic gates(Law of Boolean algebra and De Morgan's Theorem, Basic Logic gates(OR gate, AND gate, NOT gate)(Combination of gates(NAND gate, NOR gate) Brief Idea about Ics)

EXPERIMENTAL SKILLS

Familiarity with the basic approach and observations of the experiments and activities :

I. Vernier calipers-its use to measure the internal and external diameter and depth of a vessel.

2. Screw gauge-its use to determine thickness/ diameter of thin sheet/wire.
3. Simple Pendulum-dissipation of energy by plotting a graph between the square of amplitude and time.
4. Metre Scale - the mass of a given object by the principle of moments.
5. Young's modulus of elasticity of the material of a metallic wire.
6. Surf ace tension of water by capillary rise and effect of detergents.
7. Co-efficient of Viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body.
8. Speed of sound in air at room temperature using a resonance tube,
9. Specific heat capacity of a given (i) solid and (ii) liquid by method of mixtures.
10. The resistivity of the material of a given wire using a metre bridge.
11. The resistance of a given wire using Ohm 's law.
12. Resistance and figure of merit of a galvanometer by half deflection method.
13. The focal length of;
    (I) Convex mirror
    (ii) Concave mirror, and
    (iii) Convex lens, using the parallax method.
14. The plot of the angle of deviation vs angle of incidence for a triangular prism.
15. Refractive index of a glass slab using a travelling microscope.
16. Characteristic curves of a p-n junction diode in forward and reverse bias.
17. Characteristic curves of a Zener diode and finding reverse break down voltage.
18. Identification of' Diode. LED,. Resistor. A capacitor from a mixed collection of such items.

14 Review Test - 4 : Syllabus of Test No. 8 to 13

15 Syllabus of Test : 11th Class Full Syllabus

16 Syllabus of Test : 12th Class Full Syllabus

Test No. 17 to 26 Full Syllabus

CHEMISTRY

Test No.	Unit Covered/Topic Covered

01 **Unit-1**:

SOME BASIC CONCEPTS OF CHEMISTRY : Matter and its nature, Dalton's atomic theory: Concept of atom, molecule, element and compound : Laws of chemical combination; Atomic and molecular masses, mole concept, molar mass, percentage composition, empirical and molecular formulae: Chemical equations and stoichiometry.

ATOMIC STRUCTURE : Nature of electromagnetic radiation, photoelectric effect; Spectrum of the hydrogen atom. Bohr model of a hydrogen atom - its postulates, derivation of the relations for the energy of the electron and radii of the different orbits, limitations of Bohr's model; Dual nature of matter, de Broglie's relationship. Heisenberg uncertainty principle. Elementary ideas of quantum mechanics, quantum mechanics, the quantum mechanical model of the atom, its important features. Concept of atomic orbitals as one-electron wave functions: Variation of Ψ and Ψ^2 with r for 1s and 2s orbitals: various quantum numbers (principle, angular momentum and magnetic quantum numbers) and their significance; shapes of s, p, and d - orbitals, electron spin and spin quantum number: Rules for filling electrons in orbitals - Aufbau principle. Pauli's exclusion principle and Hund's rule, electronic configuration of elements, extra stability of half-filled and completely filled orbitals.

02 **Unit-2**: **CHEMICAL KINETICS :** Rate of a chemical reaction, factors affecting the rate of reactions: concentration, temperature, pressure, and catalyst; elementary and complex reactions, order and molecularity of reactions, rate law, rate constant and its units, differential and integral forms of zero and first-order reactions, their characteristics and half-lives, the effect of temperature on the rate of reactions. Arrhenius theory, activation energy and its calculation, collision theory of bimolecular gaseous reactions (no derivation).

EQUILIBRIUM : Meaning of equilibrium, the concept of dynamic equilibrium.

Equilibria involving physical processes : Solid-liquid, liquid - gas and solid-gas equilibria, Henry's law. General characteristics of equilibrium involving physical processes.

Equilibrium involving chemical processes : Law of chemical equilibrium, equilibrium constants (K_p and K_c) and their significance, the significance of ΔG and ΔG° in chemical equilibrium, factors affecting equilibrium concentration, pressure, temperature, the effect of catalyst; Le Chatelier's principle.

Ionic equilibrium : Weak and strong electrolytes, ionization of electrolytes, various concepts of acids and bases (Arrhenius. Bronsted - Lowry and Lewis) and their ionization, acid-base equilibria (including multistage ionization) and ionization constants, ionization of water. pH scale, common ion effect, hydrolysis of salts and pH of their solutions, the solubility of sparingly soluble salts and solubility products, buffer solutions.

03 **Unit-3**: **CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES :** Modern periodic law and present form of the periodic table. s, p, d and f block elements - periodic trends in properties of elements atomic and ionic radii. ionization enthalpy, electron gain enthalpy, valence, oxidation states and chemical reactivity.

CHEMICAL BONDING AND MOLECULAR STRUCTURE : Kossel - Lewis approach to chemical bond formation, the concept of ionic and covalent bonds.

Ionic Bonding : Formation of ionic bonds, factors affecting the formation of ionic bonds; calculation of lattice enthalpy.

Covalent Bonding : Concept of electronegativity. Fajan's rule, dipole moment : Valence Shell Electron Pair Repulsion (VSEPR) theory and shapes of simple molecules.

Quantum mechanical approach to covalent bonding: Valence bond theory - its important features, the concept of hybridization involving s, p, and d orbitals; Resonance.

Molecular orbital Theory - Its important features, LCAOs, types of molecular orbitals (bonding, anti bonding), sigma and pi-bonds, molecular orbital electronic configurations of homonuclear diatomic molecules, the concept of bond order, bond length, and bond energy. Elementary idea of metallic bonding. Hydrogen bonding and is applications.

04 **Review Test - 1 : Syllabus of Test No. 1, 2 & 3**

05 **Unit-4**: **SOLUTIONS :** Different methods for expressing the concentration of solution - molality, molarity, mole fraction, percentage (by volume and mass both), the vapour pressure of solutions and Raoult's law - Ideal and non-ideal solutions, vapour pressure - composition, plots for ideal and non-ideal solutions; colligative properties of dilute solutions - a relative lowering of vapour pressure, depression of freezing point, the elevation of boiling point and osmotic pressure; Determination of molecular mass using colligative properties; Abnormal value of molar mass, van't Hoff factor and its significance.

ELECTROCHEMISTRY : Electrolytic and metallic conduction, conductance in electrolytic solutions, molar conductivities and their variation with concentration: Kohlrausch's law and its applications.

Electrochemical cells - Electrolytic and Galvanic cells, different types of electrodes, electrode potentials including standard- electrode potential, half-cell and cell reaction, emf of a Galvanic cell and its measurement : Nernst equation and it's applications; Relationship between cell potential and Gibbs' energy change: Dry cell and lead accumulator, Fuel cells.

06 **Unit-5**: **CHEMICAL THERMODYNAMICS :** Fundamentals of thermodynamics: System and surroundings, extensive and intensive properties, state functions, types of processes.

The first law of thermodynamics - Concept of work, heat internal energy and enthalpy, heat capacity, molar heat capacity; Hess's law of constant heat summation; Enthalpies of bond dissociation, combustion, formation, atomization, sublimation, phase transition, hydration, ionization, and solution.

The second law of thermodynamics - Spontaneity of processes; ΔS of the universe and ΔG of the system as criteria for spontaneity. ΔG° (Standard Gibbs energy change) and equilibrium constant.

REDOX REACTIONS : Electronic concepts of oxidation and reduction, redox reactions, oxidation number, rules for assigning oxidation number, balancing of redox reactions.

07 **Review Test - 2 : Syllabus of Test No. 1 to 6**

08 **Unit-6**: **p-BLOCK ELEMENTS :**

Group 13 to Group 18 Elements

General Introduction: Electronic configuration and general trends in physical and chemical properties of elements across the periods and down the groups; unique behaviour of the first element in each group.

CO-ORDINATION COMPOUNDS : Introduction to co-ordination compounds. Werner's theory; ligands, coordination number, denticity. chelation; IUPAC nomenclature of mononuclear co-ordination compounds, isomerism; Bonding-Valence bond approach and basic ideas of Crystal field theory, colour and magnetic properties; importance of co-ordination compounds (in qualitative analysis, extraction of metals and in biological systems).

d and f Block Elements : Transition Elements

General introduction, electronic configuration, occurrence and characteristics, general trends in properties of the first-row transition elements - physical properties, ionization enthalpy, oxidation states, atomic radii, colour, catalytic behaviour, magnetic properties, complex formation, interstitial compounds, alloy formation; Preparation, properties, and uses of $K_2Cr_2O_7$ and $KMnO_4$.

Inner Transition Element :

Lanthanoids - Electronic configuration, oxidation states, and lanthanoid contraction.

Actinoids - Electronic configuration and oxidation states.

09 **Unit-7**: **ORGANIC CHEMISTRY**

Purification and Characterisation Of Organic Compounds

Purification - Crystallization, sublimation, distillation, differential extraction and chromatography - principles and their applications.

Qualitative analysis - Detection of nitrogen, sulphur, phosphorus and halogens.

Quantitative analysis (basic principles only) - Estimation of carbon, hydrogen, nitrogen, halogens, sulphur, phosphorus.

Calculations of empirical formulae and molecular formulae : Numerical problems in organic quantitative analysis.

SOME BASIC PRINCIPLES OF ORGANIC CHEMISTRY : Tetravalency of carbon: Shapes of simple molecules - hybridization (s and p): Classification of organic compounds based on functional groups: and those containing halogens, oxygen. nitrogen. and sulphur; Homologous series: Isomerism - structural and stereoisomerism.

Nomenclature (Trivial and IUPAC)

Covalent bond fission - Homolytic and heterolytic : free radicals, carbocations and carbanions; Stability of carbocations and free radicals, electiophiles, and nucleophiles.

Electronic displacement in a covalent bond - Inductive effect, electromeric effect, resonance and hyperconjugation.

Common types of organic reactions - Substitution, addition, elimination and rearrangement.

10 **Unit-8**: **HYDROCARBONS :** Classification, isomerism, IUPAC nomenclature, general methods of preparation, properties, and reactions.

Alkanes - Conformations: Sawhorse and Newman projections (of ethane): Mechanism of halogenation of alkanes.

Alkenes - Geometrical isomerism: Mechanism of electrophilic addition: addition of hydrogen, halogens, water, hydrogen halides (Markownikoffs and peroxide effect): Ozonolysis and polymerization.

Alkynes - Acidic character: Addition of hydrogen, halogens, water and hydrogen halides. Polymerization.

Aromatic hydrocarbons - Nomenclature, benzene - structure and aromaticity: Mechanism of electrophilic substitution: halogenation, nitration.

Friedel - Craft's alkylation and acylation, directive influence of the functional group in mono-substituted benzene.

ORGANIC COMPOUNDS CONTAINING HALOGENS

General methods of preparation, properties and reactions; Nature of C-X bond: Mechanisms of substitution reactions.

Uses; Environmental effects of chloroform, iodoform freons and DDT

11 **Review Test - 3 : Syllabus of Test No. 8, 9 & 10**

12 **Unit-9** : **ORGANIC COMPOUNDS CONTAINING OXYGEN**

General methods of preparation, properties, reactions, and uses.

ALCOHOLS, PHENOLS, AND ETHERS :

Alcohols : Identification of primary. secondary. and tertiary alcohols: mechanism of dehydration.

Phenols : Acidic nature, electrophilic substitution reactions: halogenation nitration and sulphonation. Reimer - Tiemann reaction.

Ethers : Structure.

Aldehyde and Ketones : Nature of carbonyl group; Nucleophilic addition to >C=O group, relative reactivities of aldehydes and ketones; Important reactions such as - Nucleophilic addition reactions (addition of HCN, NH3, and its derivatives), Grignard reagent; **Oxidation** : reduction (Wolf Kishner and Clemmensen); the acidity of α-hydrogen, aldol condensation, Cannizzaro reaction. Haloform reaction, Chemical tests to distinguish between aldehydes and Ketones.

ORGANIC COMPOUNDS CONTAINING NITROGEN:

General methods of preparation, Properties, reactions and uses.

Amines : Nomenclature, classification structure, basic character, and identification of primary, secondary, and tertiary amines and their basic character.

Diazonium Salts : Importance in synthetic organic chemistry.

13 **Unit-10** : **Biomolecules :** General introduction and importance of biomolecules.

CARBOHYDRATES - Classification; aldoses and ketoses: monosaccharides (glucose and fructose) and constituent monosaccharides of oligosaccharides (sucrose, lactose, and maltose).

PROTEINS - Elementary Idea of α-amino acids, peptide bond, polypeptides, Proteins : primary, secondary, tertiary and quaternary structure (qualitative idea only), denaturation of proteins, enzymes.

VITAMINS - Classification and functions.

NUCLEIC ACIDS - Chemical constitution of DNA and RNA. Biological functions of nucleic acids.

Hormones (General introduction)

PRINCIPLES RELATED TO PRACTICAL CHEMISTRY : Detection of extra elements (Nitrogen, Sulphur. halogens) in organic compounds; Detection of the following functional groups: hydroxyl (alcoholic and phenolic), carbonyl (aldehyde and ketones) carboxyl, and amino groups in organic compounds.

- The chemistry involved in the preparation of the following :

Inorganic compounds : Mohr's salt, potash alum.

Organic compounds: Acetanilide, p-nitro acetanilide, aniline yellow, iodoform.

- The chemistry involved in the titrimetric exercises - Acids, bases and the use of indicators, oxalic- acid vs $KMnO_4$, Mohr's salt vs $KMnO_4$.

- Chemical principles involved in the qualitative salt analysis :

Cations Pb^{2+}, Cu^{2+}, Al^{3+}, Fe^{3+}, Zn^{2+}, Ni^{2+}, Ca^{2+}, Ba^{2+}, Mg^{2+}, NH_4^+,

Anions - CO_3^{2-}, S^{2-}, SO_4^{2-}, NO^{3-}, NO^{2-}, Cl^-, Br^-, I^-,

(Insoluble salts excluded)

Chemical principles Involved in the following experiments :

1. Enthalpy of solution of $CuSO_4$
2. Enthalpy of neutralization of strong acid and strong base.
3. Preparation of lyophilic and lyophobic sols.
4. Kinetic study of the reaction of iodide ions with hydrogen peroxide at room temperature.

14 **Review Test - 4 : Syllabus of Test No. 8 to 13**

15 **Syllabus of Test : 11th Class Full Syllabus**

16 **Syllabus of Test : 12th Class Full Syllabus**

Test No. 17 to 26 Full Syllabus

BIOLOGY

Test No. Unit Covered/Topic Covered

01 **Unit-1**: **DIVERSITY IN LIVING WORLD : The living world** : What is living ? ; Biodiversity; Need for classification; Taxonomy & Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature.

Biological Classification : Five kingdom classification; salient features and classification of Monera; Protista and Fungi into major groups; Lichens; Viruses and Viroids. Prokaryotic Cell (Bacteria)

Plant Kingdom : Salient features and classification of plants into major groups-Algae, Bryophytes, Pteridophytes, Gymnosperms (three to five salient and distinguishing features and at least two examples of each category).

Animal Kingdom : Salient features and classification of animals-nonchordate up to phyla level and chordate up to classes level (Three to five salient features and at least two examples).

02 **Unit-2**: **Sexual reproduction in flowering plants:** Flower structure; Development of male and female gametophytes; Pollination-types, agencies and examples; Out breeding devices, Pollen-Pistil interaction; Double fertilization; Post fertilization events-Development of endosperm and embryo, Development of seed and formation of fruit; Special modes-apomixis, parthenocarpy, polyembryony; Significance of seed and fruit formation.

Human Reproduction: Male and female reproductive systems; Microscopic anatomy of testis and ovary; Gametogenesis-spermatogenesis & oogenesis; Menstrual cycle; Fertilisation, embryo development upto blastocyst formation, implantation; Pregnancy and placenta formation (Elementary idea); Parturition (Elementary idea); Lactation (Elementary idea).

Reproductive Health: Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control-Need and Methods, Contraception and Medical Termination of Pregnancy (MTP); Amniocentesis; Infertility and assisted reproductive technologies – IVF, ZIFT, GIFT (Elementary idea for general awareness).

03 **Unit-3**: **STRUCTURAL ORGANISATION IN PLANTS** : Morphology and modifications, Tissues, Anatomy and functions of different parts of flowering plants: Root, Stem, Leaf, Inflorescence, Cymose and racemose, flower, Fruit and seed (To be dealt along with the relevant practical of the Practical Syllabus) & Families (Malvaceae, Cruciferae, leguminoceae, compositae, graminae).

Anatomy of flowering plants : Anatomy and functions of different Tissues, Tissue system, Internal structure of root, stem, leaf, secondary growth.

Structural Organisation In Animals : Animal tissues; Morphology, anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of an insect Cockroach, Frog .

Locomotion and Movement: Types of movement- ciliary, flagellar, muscular; Skeletal muscle- contractile proteins and muscle contraction; Skeletal system and its functions (To be dealt with the relevant practical of Practical syllabus); Joints; Disorders of muscular and skeletal system-Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, Osteoporosis, Gout.

04 **Review Test - 1 : Syllabus of Test No. 1, 2 & 3**

05 **Unit-4**: **GENETICS : Principles of Inheritance and variation** : Mendelian Inheritance; Deviations from Mendelism-Incomplete dominance, Co-dominance, Multiple alleles and Inheritance of blood groups, Pleiotropy; Elementary idea of polygenic inheritance; Chromosome theory of inheritance; Chromosomes and genes; Sex

determination-In humans, birds, honey bee; Linkage and crossing over; Sex linked inheritance-Haemophilia, Colour blindness; Mendelian disorders in humans-Thalassemia; Chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes, Mutation (Hardy-weinberg's principle), population genetics.

Biotechnology : Principles and process of Biotechnology: Genetic engineering (Recombinant DNA technology).

Biotechnology and Its Applications : Application of Biotechnology in health and agriculture: Human insulin and vaccine production, stem cell technology, gene therapy; Genetically modified organisms-Bt crops; Transgenic Animals; Biosafety issues-Biopiracy and patents, **Tissue culture**.

06 **Unit-5**: **Molecular Basis of Inheritance :** Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central dogma; Transcription, genetic code, translation; Gene expression and regulation-Lac Operon; Genome and human genome project; DNA finger printing, **protein biosynthesis**.

Microbes in human welfare : In household food processing, industrial production, sewage treatment, energy generation and microbes as biocontrol agents and biofertilizers.

ORIGIN AND EVOLUTION : Origin ot life; Biological evolution and evidences for biological evolution mom Paleontology, comparative anatomy, embryology and molecular evidence; Darwin's contribution. **Neodarwinism (Gene flow. genetic drift)**, Hardy weinberg's principle, Modern Synthetic theory' of Evolution, Genetic basis of adaptation, Modern synthetic theory of evolution.

Mechanism of evolution - Variation and Natural Selection types of natural, Adaptive Radiation; **Species, Speciation**, Human evolution.

07 **Review Test - 2 : Syllabus of Test No.1 to 6**

08 **Unit-6** : **Ecology and environment & Demography :** Organisms and environment: Population interactions-mutualism, competition, predation, parasitism; Population attributes-growth, birth rate and death rate, age distribution **(Demography).**

Biology and Human Welfare : Health and Disease; Pathogens; parasites causing human diseases (Malaria, Dengue, Chikungunya, Filariasis, Ascariasis. Typhoid, Pneumonia, common cold, amoebiasis, ring worm); Basic concepts of immunology-vaccines; Cancer, HIV and AIDS; Adolescence, drug and alcohol abuse, **Tobacco abuse**.

09 **Unit-7**: **Ecosystem:** Patterns, components; productivity and decomposition; Energy flow; Pyramids of number, biomass, energy .

Biodiversity and its Conservation: Concept of Biodiversity; Patterns of Biodiversity; Importance of Biodiversity; Loss of Biodiversity; Biodiversity conservation; Hotspots, endangered organisms, extinction, Red Data Book, biosphere reserves, National parks and sanctuaries, Sacred groves.

Chemical Coordination and Integration: Endocrine glands and hormones; Human endocrine system-Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary Idea); Role of hormones as messengers and regulators, Hypo-and hyperactivity and related disorders (Common disorders e.g. Dwarfism, Acromegaly, Cretinism, goitre, exopthalmic goitre, diabetes, Addison's disease).

10 **Unit-8**: **Cell Structure and Function :** Cell theory and cell as the basic unit of life; Structure of prokaryotic and eukaryotic cell; Plant cell and animal cell; Cell envelope, cell membrane, cell wall; Cell organelles-structure and function;

Endomembrane system-endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles; mitochondria, ribosomes, plastids, micro bodies; Cytoskeleton, cilia, flagella, centrioles (ultra structure and function); Nucleus-nuclear membrane, chromatin, nucleolus.

Cell Division: Cell cycle, mitosis, meiosis and their significance.

Breathing and Exchange of gases : Respiratory organs in animals (recall only); Respiratory system in humans; Mechanism of breathing and its regulation in humans-Exchange of gases, transport of gases and regulation of respiration; Respiratory volumes; Disorders related to respiration-Asthma, Emphysema, Occupational respiratory disorders.

Body fluids and circulation : Composition of blood. blood groups, blood corpuscles: Composition of lymph and its function;

Human circulatory system-Structure of human heart and blood vessels; Cardiac cycle, cardiac output. ECG. Double circulation: Regulation of cardiac activity; Disorders of circulatory system-Hypertension. Coronary artery disease, Angina pectoris, Heart failure.

11 **Review Test - 3 : Syllabus of Test No. 8, 9 & 10**

12 **Unit-9**: **Plant growth and development:** Seed germination; Phases of Plant growth and plant growth rate; Conditions of growth; Differentiation, dedifferentiation and redifferentiation; Sequence of developmental process in a plant cell; Growth regulators-auxin,gibberellin, cytokinin, ethylene, ABA.

HUMAN PHYSIOLOGY : Excretory products and their elimination: Modes of excretion-Ammonotelism, ureotelisrn, uricotelism;

Human excretory system-structure and faction; Urine formation, Osmoregulation; Regulation of kidney function-Renin-angiotensin, Atrial Natriuretic Factor, ADH and Diabetes insipidus; Role of other organs in excretion; Disorders; Uraemia, Renal failure, Renal calculi, Nephritis; Dialysis and artificial kidney.

13 **Unit-10**: **Photosynthesis in higher plants :** Photosynthesis as a means of Autotrophic nutrition; Site of photosynthesis take place; pigments involved in Photosynthesis (Elementary idea); Photochemical and biosynthetic phases of photosynthesis; Cyclic and non cyclic and photophosphorylation; Chemiosmotic hypothesis; Photorespiration C_3 and C_4 pathways; Factors affecting photosynthesis.

Respiration in plants : Exchange of gases; Cellular respiration-glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); Energy relations- number of ATP molecules generated, The respiratory balance sheet, Amphibolic pathways; Respiratory quotient.

Biomolecules : Chemical constituents of living cells: structure and function of proteins, carbohydrates, lipids, nucleic acids.

Enzyme - Types, properties, enzyme action, classification and nomenclature of enzyme.

Neural Control and Coordination: Neuron and nerves; Nervous system in humans- central nervous system, peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse.

14 **Review Test - 4: Syllabus of Test No. 8 to 13**

15 **Syllabus of Test : 11th Class Full Syllabus**

16 **Syllabus of Test : 12th Class Full Syllabus**

Test No. 17 to 26 Full Syllabus

PHYSICS

M. No.	S. No.	Topic Covered
P-01	1	Basic Mathematics used in physics & Vectors
P-01	2	Units and Measurement
P-01	3	Kinematics (Motion along a straight line and motion in a plane)
P-01	4	Newton's Laws of motion & Friction
P-02	1	Work , Energy & Power
P-02	2	Circular Motion
P-02	3	Centre of Mass & Collisions
P-02	4	Rotational Motion
P-02	5	Gravitation
P-02	6	Properties of matter and Fluid Mechanics
P-04	1	Electrostatics
P-04	2	Current Electricity
P-04	3	Capacitor
P-03	1	Thermal Physics
P-03	2	Oscillations (SHM)
P-03	3	Wave Motion
P-05	1	Magnetic effect of current and Magnetism
P-05	2	Electromagnetic Induction (EMI)
P-05	3	Alternating Current (AC)
P-05	4	Electromagnetic Waves (EMW)
P-06	1	Ray optics and optical Instruments
P-06	2	Wave Optics
P-06	3	Modern Physics-I (Dual nature of radiation and matter)
P-06	4	Modern Physics-II (Nuclei)
P-06	5	Modern Physics-III (Atoms)
P-06	6	Semiconductor & Digital Electronics

CHEMISTRY

M. No.	S. No.	Topic Covered
C-01	1	Some Basic concept of chemistry
C-01	2	Atomic Structure
C-01	3	Chemical Equilibrium
C-01	4	Ionic Equilibrium
C-01	5	Thermodynamics & Chemical Energetics
C-01	6	Redox Reaction
C-02	1	Periodic Table
C-02	2	Chemical Bonding
C-04	1	Chemical kinetics
C-04	2	Solutions
C-04	3	Electrochemistry
C-03	1	Classification & Nomenclature
C-03	2	Isomerism
C-03	3	Fundamental concept in organic reaction mechanism
C-03	4	Hydrocarbons
C-03	5	Purification methods, Qualitative and Quantitative analysis of organic compounds
C-05	1	p-Block Elements
C-05	2	d and f-Block Elements
C-05	3	Co-ordination Compounds
C-06	1	Haloalkanes and Haloarenes
C-06	2	Alchohol, Phenol and Ether
C-06	3	Adehydes, Ketones and Carboxylic acids
C-06	4	Amines
C-06	5	Biomolecules

BIOLOGY

M. No.	S. No.	Topic Covered
B-01	1	The Living World
B-01	2	Biological Classification
B-01	3	Plant Kingdom
B-02	1	Morphology of Flowering plants
B-02	2	Anatomy of Flowering plants
B-02	3	Cell : The unit of life
B-02	4	Cell cycle and cell division
B-04	1	Animal Kingdom
B-04	2	Structural organisation in animals (Animal Tissues)
B-04	3	Cockroach (Periplaneta americana)
B-04	4	Frog
B-07	1	Human Reproduction
B-07	2	Reproductive Health
B-07	3	Human Health and Diseases
B-07	4	Origin and Evolution of Life
B-08	1	Sexual reproduction in Flowering Plant
B-08	2	Ecology and Demography (Organism & Environment)
B-03	1	Enzymes
B-03	2	Photosynthesis in Higher plants
B-03	3	Respiration in plants
B-03	4	Plant growth and Development
B-03	5	Biomolecules (Protoplasm)
B-05	1	Breathing and exchange of gases
B-05	2	Body Fluids and Circulation
B-05	3	Excretory Products & their Elimination
B-06	1	Neural Control and Coordination (Nervous System)
B-06	2	Chemical Co-ordination & Integration (Endocrine System)
B-06	3	Locomotion and movement (Skeletal System)
B-06	4	Locomotion and movement (Limb Muscles)
B-09	1	Genetics (Principles of Inheritance and Variations)
B-09	2	Genetics (Molecular Basis of Inheritance)
B-10	1	Biotechnology
B-10	2	Microbes in Human Welfare

PHYSICS

Test No.	Topic Covered
1	Basic Maths Used In Physics , Unit & Dimension , Vectors
2	Kinematics-1D , 2D
3	Newton Laws of Motion , Friction
4	Review Test -1 : Syllabus of Test No. 1, 2 & 3
5	Circular Motion
6	Work, Power & Energy
7	Review Test -2 : Syllabus of Test No. 1 to 6
8	Center of Mass , Momentum & Collision
9	Rotational Dynamics
10	Elasticity, Thermal Expansion , Calorimetry & Heat Transfer
11	Review Test -3 : Syllabus of Test No. 8, 9 &10
12	KTG ,Thermodynamics
13	Fluid Mechanics , Simple Harmonic Motion
14	Review Test -4 : Syllabus of Test No. 8 to 13
15-19	Full Syllabus

CHEMISTRY

Test No.	Topic Covered
1	Mole Concept & Eudiometry , Concentration Terms
2	Quantum Number & Electronic Configuration , Periodic Table & Periodic Properties
3	Chemical Bonding
4	Review Test -1 : Syllabus of Test No. 1, 2 & 3
5	Redox & Equivalent Concepts
6	Nomenclature & Common Names , Electronic Displacement Effects
7	Review Test -2 : Syllabus of Test No. 1 to 6
8	Electronic Displacement Effects
9	Acidic Strength & Basic Strength, Ideal Gas , Real Gas, Atomic Structure (Upto Bohr Model)
10	Atomic Structure
11	Review Test -3 : Syllabus of Test No. 8, 9 &10
12	Chemical Equilibrium
13	Isomerism , Purification & Characteristics of Organic Compounds
14	Review Test -4 : Syllabus of Test No. 8 to 13
15-19	Full Syllabus

MATHEMATICS

Test No.	Topic Covered
1	Sets , Numbers & Intervals , Fundamental of Algebra , Quadratic Equations
2	Logarithms , Sequence & Series
3	Trigonometric Ratio & Identities
4	Review Test -1 : Syllabus of Test No. 1, 2 & 3
5	Trigonometric Ratio & Identities, Trigonometric Equation , Fundamental of Geometry
6	Straight Line
7	Review Test -2 : Syllabus of Test No. 1 to 6
8	Circle
9	Parabola , Ellipse , Hyperbola
10	Permutation & Combination , Binomial Theorem
11	Review Test -3 : Syllabus of Test No. 8, 9 &10
12	Complex Number
13	Relation , Statistics , Function , Limit & Derivaties , 3D , Probability (All Elementry Level)
14	Review Test -4 : Syllabus of Test No. 8 to 13
15-19	Full Syllabus

PHYSICS

Test No.	Topic Covered
1	Basic Maths Used In Physics , Unit & Dimension , Vectors , Geometrical Optics
2	Kinematics - 1D, 2D , Electrostatics
3	Newton Laws of Motion , Friction, Gravitation
4	Review Test - 1 : Syllabus of Test No. 1, 2 & 3
5	Circular Motion , Current Electricity
6	Work, Power, Energy , Capacitance
7	Review Test - 2 : Syllabus of Test No. 1 to 6
8	Center of Mass , Momentum & Collison , Magnetic Effect of Current
9	Rotational Dynamics , Electromagnetic Induction (EMI)
10	Elasticity, Thermal Expansion , Calorimetry & Heat Transfer , Alternating Current
11	Review Test - 3 : Syllabus of Test No. 8, 9 &10
12	KTG , Thermodynamics , Wave Of String , Sound Wave , EM Waves , Wave Optics
13	Fluid Mechanics , Simple Harmonic Motion , Modern Physics , Error In Measurments & Instruments , Semiconductor , Principle of Communication
14	Review Test - 4 : Syllabus of Test No. 8 to 13
15-28	Full Syllabus

CHEMISTRY

Test No.	Topic Covered
1	Mole Concept & Eudiometry , Concentration Terms Solid State , Liquid Solution
2	Quantum Number & Electronic Configuration , Periodic Table & Periodic Properties , Chemical Kinetics
3	Chemical Bonding, Thermodynamics - 01, Thermochemistry , Thermodynamics - 02
4	Review Test - 1 : Syllabus of Test No. 1, 2 & 3
5	Redox & Equivalent Concepts , Coordination Chemistry , Metallurgy
6	Nomenclature & Common Names , Electronic Displacement Effects , Halogen Derivatives , Alcohol & Ether , Hydrocarbon
7	Review Test - 2 : Syllabus of Test No. 1 to 6
8	Electronic Displacement Effects , Carbonyl Compound , Oxidation , Reduction , Aldol & Similar Name Reactions
9	Acidic Strength & Basic Strength , Ideal Gas , Real Gas, Atomic Structure(Upto Bohr Model), Ionic Equilibrium , Electrochemistry
10	Atomic Structure , Surface Chemistry , Salt Analysis , Heating Effect , Reactions of Salt Analysis
11	Review Test - 3 : Syllabus of Test No. 8, 9 &10
12	Chemical Equilibrium , s - Block Element & d - Block Compounds , p - Block Element , Hydrogen And Its Compounds, f - Block Element , Environmental Chemistry
13	Isomerism , Purification & Characteristics Of Organic Compounds , Carboxylic Acids & Its Derivative , Alphatic Amines , Aromatic Compounds , Biomolecules , Polymer And Practical Organic Chemistry , Separation Techniques , Chemistry In Every Day Life
14	Review Test - 4 : Syllabus of Test No. 8 to 13
15-28	Full Syllabus

MATHEMATICS

Test No.	Topic Covered
1	Sets , Numbers & Intervals , Fundamental of Algebra , Quadratic Equations , Function , Inverse Trigonometric Function
2	Logarithms , Sequence & Series, Limit, Continutity & Differentiability
3	Trigonometric Ratio & Identities , Method Of Differentiation , Application of Derivative
4	Review Test - 1 : Syllabus of Test No. 1, 2 & 3
5	Trigonometric Ratio & Identities, Trigonometric Equation , Fundamental of Geometry, Indefinite Integration
6	Straight Line , Determinant, Definite Integration
7	Review Test - 2 : Syllabus of Test No. 1 to 6
8	Circle , Area Under The Curve , Differential Equation
9	Parabola , Ellipse , Hyperbola , Matrices
10	Permutation & Combination , Binomial Theorem , Vectors
11	Review Test - 3 : Syllabus of Test No. 8, 9 &10
12	Complex Number, 3- Dimensional Geometry
13	Relation , Statistics, Probability
14	Review Test - 4 : Syllabus of Test No. 8 to 13
15-28	Full Syllabus

PHYSICS

Topic Covered

- Basic Maths Used In Physics , Unit & Dimension , Vectors , Geometrical Optics
- Kinematics - 1D, 2D , Electrostatics
- Newton Laws of Motion , Friction, Gravitation
- Circular Motion , Current Electricity
- Work, Power, Energy , Capacitance
- Center of Mass , Momentum & Collison , Magnetic Effect of Current
- Rotational Dynamics , Electromagnetic Induction (EMI)
- Elasticity, Thermal Expansion , Calorimetry & Heat Transfer , Alternating Current
- KTG , Thermodynamics , Wave of String , Sound Wave , EM Waves , Wave Optics
- Fluid Mechanics, Simple Harmonic Motion, Modern Physics , Error In Measurments & Instruments, Semiconductor , Principle of Communication

CHEMISTRY

Topic Covered

- Mole Concept & Eudiometry , Concentration Terms Solid State , Liquid Solution
- Quantum Number & Electronic Configuration , Periodic Table & Periodic Properties , Chemical Kinetics
- Chemical Bonding, Thermodynamics - 01, Thermochemistry , Thermodynamics - 02
- Redox & Equivalent Concepts , Coordination Chemistry , Metallurgy
- Nomenclature & Common Names , Electronic Displacement Effects , Halogen Derivatives , Alcohol & Ether , Hydrocarbon
- Electronic Displacement Effects, Carbonyl Compound , Oxidation , Reduction , Aldol & Similar Name Reactions
- Acidic Strength & Basic Strength, Ideal Gas , Real Gas , Atomic Structure (Upto Bohr Model) , Ionic Equilibrium , Electrochemistry
- Atomic Structure , Surface Chemistry , Salt Analysis , Heating Effect , Reactions of Salt Analysis
- Chemical Equilibrium , s - Block Element & d - Block Compounds , p - Block Element , Hydrogen And Its Compounds , f - Block Element , Environmental Chemistry
- Isomerism , Purification & Characteristics Of Organic Compounds , Carboxylic Acids & Its Derivative , Alphatic Amines , Aromatic Compounds , Biomolecules , Polymer And Practical Organic Chemistry , Separation Techniques , Chemistry In Every Day Life

MATHEMATICS

Topic Covered

- Sets , Numbers & Intervals , Fundamental of Algebra , Quadratic Equations , Function , Inverse Trigonometric Function
- Logarithms , Sequence & Series, Limit , Continutity & Differentiability
- Trigonometric Ratio & Identities , Method Of DIfferentiation , Application Of Derivative
- Trigonometric Ratio & Identities ,Trigonometric Equation , Fundamental Of Geometry , Indefinite Integration
- Straight Line , Determinant, Definite Integration
- Circle , Area Under The Curve , Differential Equation
- Parabola , Ellipse , Hyperbola , Matrices
- Permutation & Combination , Binomial Theorem , Vectors
- Complex Number, 3- Dimensional Geometry
- Relation , Statistics , Probability

PHYSICS

Test No.	Topics Covered
1	Basic Maths Used In Physics , Unit & Dimension , Vectors
2	Kinematics 1-D (Motion in 1D) , Kinematics 2- D (Projectile Motion)
3	Newton Laws of Motion and Friction
4	Review Test -1 : Syllabus of Test No. 1, 2 & 3
5	Circular Motion
6	Work, Power & Energy
7	Review Test -2 : Syllabus of Test No. 1 to 6
8	Center of Mass (Momentum & Collision)
9	Rotational Dynamics
10	Elasticity, Thermal Expansion , Calorimetry & Heat Transfer
11	Review Test -3 : Syllabus of Test No. 8, 9 &10
12	KTG ,Thermodynamics
13	Fluid Mechanics , Simple Harmonic Motion
14	Review Test -4 : Syllabus of Test No. 8 to 13
15-19	Full Syllabus

CHEMISTRY

Test No.	Topics Covered
1	Mole Concept & Eudiometry , Concentration Terms
2	Quantum Number & Electronic Configuration (Atomic structure) , Periodic Table & Periodic Properties
3	Chemical Bonding
4	Review Test -1 : Syllabus of Test No. 1, 2 & 3
5	Redox & Equivalent Concepts
6	Nomenclature & Common Names , Electronic Displacement Effects
7	Review Test -2 : Syllabus of Test No. 1 to 6
8	Electronic Displacement Effects
9	Acidic Strength & Basic Strength, Atomic Structure (Upto Bohr Model)
10	Atomic Structure
11	Review Test -3 : Syllabus of Test No. 8, 9 &10
12	Chemical Equilibrium
13	Isomerism , Purification & Characteristics of Organic Compounds
14	Review Test -4 : Syllabus of Test No. 8 to 13
15-19	Full Syllabus

MATHEMATICS

Test No.	Topics Covered
1	Sets , Numbers & Intervals , Fundamental of Algebra (Basic Maths) , Quadratic Equations
2	Logarithms , Sequence & Series
3	Trigonometric Ratio & Identities
4	Review Test -1 : Syllabus of Test No. 1, 2 & 3
5	Trigonometric Ratio & Identities, Fundamental of Geometry
6	Straight Line
7	Review Test -2 : Syllabus of Test No. 1 to 6
8	Circle
9	Parabola , Ellipse , Hyperbola
10	Permutation & Combination , Binomial Theorem
11	Review Test -3 : Syllabus of Test No. 8, 9 &10
12	Complex Number
13	Relation , Statistics , Function, Limit & Derivaties, 3d, Probability (All Elementry Level)
14	Review Test -4 : Syllabus of Test No. 8 to 13
15-19	Full Syllabus

PHYSICS

Test No.	Topics Covered
1	Basic Maths used in Physics, Vectors, Unit & Dimension ,Geometrical Optics (Ray Optics, Optical Instruments)
2	Kinematics 1-D (Motion in 1D) , Kinematics 2-D (Projectile Motion), Electrostatics
3	Newton Laws of Motion and Friction, Gravitation
4	Review Test -1 : Syllabus of Test No. 1, 2 & 3
5	Current Electricty, Circular Motion
6	Work, Power, Energy, Capacitance (Capacitors)
7	Review Test -2 : Syllabus of Test No. 1 to 6
8	Centre of Mass (Momentum & Collison), Magnetic Effect of Current
9	Rotational Motion, Electromagnetic Induction (EMI)
10	Alternating current, Elasticity, Thermal Expansion, Calorimetry , Heat Transfer
11	Review Test -3 : Syllabus of Test No. 8, 9 &10
12	KTG , Thermodynamics, Sound Wave , EM Waves, Wave optics
13	Fluid Mechanics, SHM, Modern Physics, Error in Measurments & Instruments, Semiconductor
14	Review Test -4 : Syllabus of Test No. 8 to 13
15-24	Full Syllabus

CHEMISTRY

Test No.	Topics Covered
1	Mole Concept & Eudiometry, Concentration Terms (Mole Concepts), Liquid Solution
2	Quantum Number & Electronic Configuration (Atomic structure) , Periodic Table & Periodic Properties , Chemical Kinetics
3	Chemical Bonding, Thermodynamics - 01 , Thermochemistry , Thermodynamics - 02 (Chemical Thermodynamics & Energetics)
4	Review Test -1 : Syllabus of Test No. 1, 2 & 3
5	Redox & Equivalent Concepts , Coordination Chemistry
6	Nomenclature & Common Names , Electronic Displacement Effects , Halogen Derivatives , Alcohol & Ether , Hydrocarbon
7	Review Test -2 : Syllabus of Test No. 1 to 6
8	Electronic Displacement Effects , Carbonyl Compound , Oxidation , Reduction , Aldol & Similar Name Reactions
9	Acidic Strength & Basic Strength , Ionic Equilibrium , Electrochemistry, Atomic Structure (Upto Bohr Model)
10	Atomic Structure, Salt Analysis , Heating Effect , Reactions of Salt Analysis (Practical Chemistry)
11	Review Test -3 : Syllabus of Test No. 8, 9 &10
12	Chemical Equilibrium , d - Block Compounds , p - Block Element , f - Block Element
13	Isomerism , Purification & Characteristics of Organic Compounds, Carboxylic Acids & Its Derivative , Alphatic Amines, Aromatic Compounds , Biomolecules, Practical Organic Chemistry , Separation Techniques
14	Review Test -4 : Syllabus of Test No. 8 to 13
15-24	Full Syllabus

MATHEMATICS

Test No.	Topics Covered
1	Sets , Numbers & Intervals , Fundamental of Algebra (Basic Maths), Quadratic Equations, Function , Inverse Trigonometric Function
2	Logarithms (Basic Maths) , Sequence & Series , Limit , Continutity & Differentiability
3	Trigonometric Ratio & Identities , Method of Differentiation , Application of Derivative
4	Review Test -1 : Syllabus of Test No. 1, 2 & 3
5	Trigonometric Ratio & Identities, Fundamental of Geometry, Indefinite Integration
6	Straight Line , Determinant, Definite Integration
7	Review Test -2 : Syllabus of Test No. 1 to 6
8	Circle , Area Under The Curve , Differential Equation
9	Parabola, Ellipse, Hyperbola (Conic Section), Matrices
10	Permutation & Combination, Binomial Theorem, Vectors
11	Review Test -3 : Syllabus of Test No. 8, 9 &10
12	3- Dimensional Geometry, Complex Number
13	Relation, Statistics, Probability
14	Review Test -4 : Syllabus of Test No. 8 to 13
15-24	Full Syllabus

PHYSICS

Topic Covered

- GEOMETRICAL OPTICS (Ray Optics, Optical Instruments), Wave Optics
- Current Electricty, Electrostatics & Capacitors
- Modern Physics, Electronics & Experimental Physics
- Magnetic Effect of Current & Magnetism , EMI and AC & EMW
- Unit, Dimension, Vector, Motion in 1- D , Projectile Motion , Circular Motion , NLM & Friction
- Work, Power, Energy, Centre of Mass,Rotational Motion, Gravitation, SHM, Wave Theory, Sound Waves and Fluid Mechanics
- Heat & Thermodynamics

CHEMISTRY

Topic Covered

- Chemical Kinetics, Solutions, Electrochemistry
- Atomic Structure, Periodic Table, Chemical Bonding
- Co-ordination Chemistry, D & F- Block Elements & Practical Chemistry, P-Block Elements (Group - 13,14,15,16,17 &18)
- Organic Chemistry (Theory Part-I)
- Organic Chemistry (Theory Part-II)
- Organic Chemistry (Exercise Part-I & II)
- Mole Concept, Chemical Equilibrium, Chemical Thermodynamics and Energetics, Ionic Equilibrium, Acid, Base & Redox Reaction

MATHEMATICS

Topic Covered

- Basic Maths, Functions, ITF & Limit, Continuity, Differentiability, Differentiation & A.O.D.
- Vector & 3-D
- Indefinite, Definite Integration , Area Under The Curve & Differential Equations
- Binomial Theorem, Permutation and Combination , Sets and Probability, Complex Number, Determinant & Matrices
- Trigonometric Ratio,Statistics & Relations
- Point,Straight Line, Circle & Conic Section
- Progression & Quadratic Equations

ALLEN
TRANSFORMING
DREAMS
INTO
REALITY
37 STUDENTS
IN TOP 100

JEE (Advanced) Result 2023


AIR 4
Raghav Goyal
Classroom


AIR 6
Prabhav Khandelwal
Classroom


AIR 8
Malay Kedia
Classroom


AIR 9
Nagireddy Balaaji Reddy
Distance


AIR 16
Harshit Kansal
Distance Learning


AIR 19
Moulik Jindal
Classroom


AIR 20
Sameer A. Patil
Classroom


AIR 22
Deshank P. Singh
Classroom


AIR 24
Jatsya Jariwala
Classroom


AIR 26
Mayank Soni
Digital-OLTS

37 in Top 100 | 64 in Top 200 | 158 in Top 500

Total Students Qualified 6647 CCP : 4637 DLP : 2010

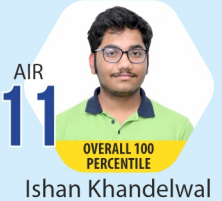
34
STUDENTS IN
TOP 100
ALL INDIA RANKS
Highest among all Institutes

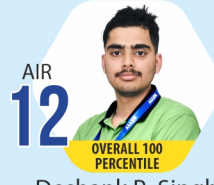
JEE (Main) Result 2023


AIR 3
300/300
OVERALL 100 PERCENTILE
MRUNAL S. VAIRAGADE
Classroom

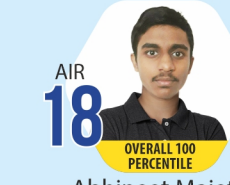

AIR 4
300/300
OVERALL 100 PERCENTILE
MALAY KEDIA
Classroom


AIR 5
300/300
OVERALL 100 PERCENTILE
KAUSHAL VIJAYVERGIYA
Classroom


AIR 11
OVERALL 100 PERCENTILE
Ishan Khandelwal
Classroom


AIR 12
OVERALL 100 PERCENTILE
Deshank P. Singh
Classroom


AIR 17
OVERALL 100 PERCENTILE
Harshul Suthar
Classroom


AIR 18
OVERALL 100 PERCENTILE
Abhineet Majety
Distance


AIR 20
OVERALL 100 PERCENTILE
Raghav Goyal
Classroom

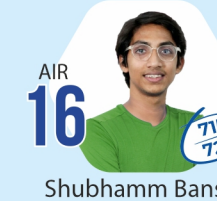
34 in Top 100 | 157 in Top 500 | 322 in Top 1000

ALLEN Students Eligible for JEE (Adv.) 2023 22007 CCP : 17042 DLP : 4965

NEET (UG) Result 2023


AIR 10
715/720
Parth Khandelwal
Classroom


AIR 14
715/720
Shashank Kumar
Classroom


AIR 16
715/720
Shubhamm Bansal
Distance


AIR 19
715/720
Arnab Pati
Classroom


AIR 20
712/720
Shashank Sinha
Classroom


AIR 21
711/720
Prakhar Agrawal
Distance


AIR 24
711/720
Samuel H. Tsapa
Distance


AIR 27
710/720
Tanishq D. Bhagat
Classroom


AIR 28
710/720
Nishant Sharma
Distance


AIR 29
710/720
Shivam Patel
Classroom

17 in Top 50 | 30 in Top 100 | 344 in Top 1000

Total Students Qualified 104650 CCP : 68853 DLP : 35797

path to success

ALLEN CAREER INSTITUTE
KOTA (RAJASTHAN)

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