

St. Paul's School, Aya Nagar

Science Section Monthwise Syllabus Session-2026-27

Class XII

English		
Month	Lessons or Skills	Activities
April 19 Days	Flamingo 1. The Last Lesson 2. My Mother at Sixty-Six Vistas 1. The Third Level Creative Writing Skills 1. Invitations and Replies	
May + June 13 Days	<u>P.T. I Syllabus</u> Reading Skills 1. Unseen Passage – Factual / Descriptive / Literary Creative Writing Skills 1. Invitations and Replies Literature Flamingo 1. The Last Lesson 2. My Mother at Sixty-Six Vistas 1. The Third Level Flamingo 1. Lost Spring 2. Keeping Quiet Vistas 1. The Tiger King Creative Writing Skills 1. Report Writing 2. Notice Writing	● Assignments ● Holiday Homework ● Allocation of Project Work ● Allocation of AIL
SUMMER VACATIONS		
July 25 Days	Creative Writing Skills 1. Job Application with Resume 2. Article Writing Flamingo 1. Deep Water 2. A Thing of Beauty Vistas 1. Journey to the End of the Earth	Project Work Submission
August 20 Days	<u>P.T. II Syllabus</u> Reading Skills 1. Unseen Passage – Case Based	Listening Skills Assessment

	Writing Skills 1. Report Writing 2. Job Application with Resume 3. Notice Writing Literature Flamingo 1. Lost Spring 2. Keeping Quiet Vistas 1. The Tiger King	
	Flamingo 1. The Rattrap 2. A Roadside Stand 3. Indigo Vistas 1. The Enemy	
September 15 Days	Creative Writing Skills 1. Letter to the Editor Half-Yearly Exam – Syllabus Covered till the first week of September Flamingo 1. Aunt Jennifer's Tigers 2. The Interview	Project Work and Listening Skills = 10 + 10 = 20
October 22 Days	Flamingo 1. Poets and Pancakes 2. Going Places Vistas 1. On the Face of It 2. Memories of Childhood	
November 21 Days	Revision of the Syllabus Pre-Board I – Complete Syllabus	
December + January 22 Days + 18 Days	Pre-Board Practical and Pre-Board II – Complete Syllabus	Speaking Skills Assessment and Viva based on the Project

Physics		
Month	Chapters and Topic Covered	Practical/Activities
April	Chapter–1: Electric Charges and Fields Electric charges, Conservation of charge, Coulomb's law-force between two point charges, forces between	Activities 1. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse

	multiple charges; superposition principle and continuous charge distribution. Electric field, electric field due to a point charge, electric field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field. Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside). Chapter–2: Electrostatic Potential and Capacitance Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two-point charges and of electric dipole in an electrostatic field. Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarisation, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor (no derivation, formulae only).	and a power source. 2. To assemble the components of a given electrical circuit.
May	Chapter–3: Current Electricity Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, V-I characteristics (linear and nonlinear), electrical energy and power, electrical resistivity and conductivity, 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 rules, Wheatstone bridge. Chapter–4: Moving Charges and Magnetism Concept of magnetic field, Oersted's experiment. Biot - Savart law and its application to the current carrying circular loop. Ampere's law and its applications to infinitely long straight wire. Straight solenoid (only qualitative treatment), force on a moving charge in uniform magnetic and electric fields. 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 uniform magnetic field; Current loop as a magnetic dipole and its magnetic dipole moment, moving coil galvanometer current sensitivity and conversion to ammeter and voltmeter.	To determine resistivity of two / three wires by plotting a graph for potential difference versus current. To find resistance of a given wire / standard resistor using a metre bridge.
July	Chapter–5: Magnetism and Matter Bar magnet, bar magnet as an equivalent solenoid (qualitative treatment only), magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis (qualitative treatment only), torque on a magnetic dipole (bar magnet) in a uniform magnetic field (qualitative treatment only), magnetic field lines.	To verify the laws of combination (series) of resistances using a metre bridge. OR To verify the laws of combination (parallel) of

	Magnetic properties of materials- Para-, dia- and ferro - magnetic substances with examples, Magnetization of materials, effect of temperature on magnetic properties. Chapter–6: Electromagnetic Induction Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction.	resistances using a metre bridge.
August	Chapter–7: Alternating Current Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LCR series circuit (phasors only), resonance, power in AC circuits, power factor, wattless current. AC generator, Transformer. Chapter–8: Electromagnetic Waves Basic idea of displacement current, Electromagnetic waves, their characteristics, their transverse nature (qualitative idea only). Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.	To determine resistance of a galvanometer by half-deflection method and to find its figure of merit. To convert the given galvanometer (of known resistance and figure of merit) into a voltmeter of desired range and to verify the same. OR To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.
September	Chapter–9: Ray Optics and Optical Instruments Ray Optics: Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lens maker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism. Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers. Chapter–10: Wave Optics Wave optics: Wavefront and Huygens principle, reflection and refraction of plane waves at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygens principle. Interference, Young's double slit experiment and expression for fringe width (No derivation final expression only), coherent sources and sustained interference of light, diffraction due to a single slit, width of central maxima (qualitative treatment only).	To find the value of v for different values of u in case of a concave mirror and to find the focal length. To find the focal length of a convex mirror, using a convex lens
October	Chapter–11: Dual Nature of Radiation and Matter Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light. Experimental study of photoelectric effect Matter waves-wave nature of particles, de-Broglie relation. Chapter–12: Atoms Alpha-particle scattering experiment; Rutherford's model	To find the focal length of a concave lens, using a convex lens. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of

	of atom; Bohr model of hydrogen atom, Expression for radius of nth possible orbit, velocity and energy of electron in his orbit, of hydrogen line spectra (qualitative treatment only)	deviation.
November till First week	Chapter–13: Nuclei Composition and size of nucleus, nuclear force Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion. Chapter–14: Semiconductor Electronics: Materials, Devices and Simple Circuits Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Intrinsic and extrinsic semiconductors- p and n type, p-n junction Semiconductor diode - I-V characteristics in forward and reverse bias, application of junction diode -diode as a rectifier.	To find the refractive index of a liquid using a convex lens and plane mirror. To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias.

Chemistry		
Month	Chapters and Topic Covered	Practical/Activities
April	Unit 6: Haloalkanes and Haloarenes Classification, Nomenclature, Nature of C–X bond, Methods of Preparation of Haloalkanes, Preparation of Haloarenes, Physical Properties, Chemical Reactions, Polyhalogen Compounds. Unit 7: Alcohols, Phenols and Ethers Classification, Nomenclature, Structures of Functional Groups, Alcohols and Phenols, Some commercially Important Alcohols, Ethers.	1) To identify the functional group in the given organic compound. 2) To identify the functional group in the given organic compound. 3) To identify the functional group in the given organic compound. To identify the functional group in present in the given organic compound. Electrochemistry Variation of cell potential in $\text{Zn/Zn}^{2+} \text{Cu}^{2+}/\text{Cu}$ with change in concentration of electrolytes (CuSO_4 or ZnSO_4) at room temperature.
May	Ch-8 Aldehyde, ketone and Carboxylic -Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses. Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.	1) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of R_f values 2) To analyse the given inorganic salt for acidic and basic radicals $[(\text{NH}_4)_2 \text{CO}_3]$ 3) To analyse the given salt of

		acidic and basic radical (NH_4Cl)
July	Ch - 9 Amines Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines. Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry. Ch- 10 Biomolecules- Carbohydrates - Classification (aldoses and ketoses), monosaccharides (glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates. Proteins -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure. Vitamins - Classification and functions. Nucleic Acids: DNA and RNA.	1): To analyse the given inorganic salt for acidic and basic radicals.. 2) To analyze the given inorganic salt for acidic and basic radical.,. 3) To analyze the given inorganic salt for acidic and basic radical. (ZnCl)₂.
August	Unit 1: Solutions; Types of Solutions, Expression of Concentration of Solutions, Solubility, Vapour Pressure of Liquid Solutions, Ideal and Non –Ideal Solutions, Colligative Properties and Determination of Molar Mass, Abnormal Molecular Masses. Unit 2: Electrochemistry Electrochemical Cells, Galvanic Cells, Nernst Equation, Conductance of Electrolytic solutions, Electrolytic Cells and Electrolysis, Batteries, Fuel Cells, Corrosion.	Writing of the content for the sub- topics of the project. 1) To analyze the given inorganic salt for acidic and basic radical. (NH_4)₂C₂O₄ 2) To analyze the given inorganic salt for acidic and basic radical.
September	Unit 3: Chemical Kinetics Rate of a Chemical reaction, factors influencing rate of reaction, integrated rate equations, Temperature Dependence of the rate of a reaction, Collision theory of Chemical Reactions. HALF YEARLY EXAMINATION	To prepare solution of M/20 oxalic acid with its help determine the molarity and strength of given KMnO_4 solution.
October	Unit 4: d and f Block Elements Position in the Periodic Table, Electronic configuration of the d-Block Elements, General properties of the Transition Elements (d-Block), Some Important Compounds of Transition Elements, The Lanthanoids, The Actinoids, Some Applications of d- and f- Block Elements. Unit 5: Coordination Compounds	Group Presentation on important topics of these chapters . To prepare 250 ml of 0.02 M (M/50) Mohr's Salt solution.

	Werner's Theory of Coordination Compound, Definition of Some important terms pertaining to Coordination Compounds, Nomenclature of Coordination Compounds. Isomerism in Coordination Compounds, Bonding in coordination compounds, Bonding in Metal Carbonyls, Importance and Applications of Coordination Compounds.	
November till First week	REVISION	1) To study carbohydrates in pure form of detect its presence in food. 2) To study fat in pure form and to detect into presence in given food sample.

Mathematics		
Month	Chapters and Topic Covered	Practical/Activities
March	1. Matrices 2. Determinants	Assignment on Matrices and Determinants
April	1. Continuity and Differentiability 2. Applications of Derivatives	Lab activities: - To find analytically the limit of the function $f(x)$ at $x = c$ and also check the continuity of the function at the point. - To establish a relationship between common logarithm (to the base 10) and natural logarithm (to the base e) of the number x. - To understand the concept of decreasing and increasing functions. - To understand the concepts of local maxima, local minima and point of inflection.
May	1. Inverse Trigonometric Functions 2. Relations and Functions	Lab activities: - To verify that the relation R in the set L of all lines in a plane, defined by $R = \{(l, m) : l \parallel m\}$ is an equivalence relation. - To demonstrate a function which is not one-one but is onto. - To draw the graph of $\sin^{-1}x$, using the graph of $\sin x$ and demonstrating the $\sin^{-1}x$ concept of mirror reflection (about the line $y = x$).
July	1. Integration	Assignment

August	1. Application of integrals 2. Differential equations	Assignment on Differential equations
September	1. Vector Algebra	LAB ACTIVITY: 1. To verify that angle in a semi-circle is a right angle, using vector method.
October	1. Three-Dimensional Geometry 2. Linear programming 3. Probability	LAB ACTIVITIES: 1. To locate the points to given coordinates in space, measure the distance between two points in space and then to verify the distance using distance formula. 2. To explain the computation of conditional probability of a given event A, when event B has already occurred, through an example of throwing a pair of dice.
November	1. REVISION	

BIOLOGY		
Months and No. of periods	Chapter and Topics proposed	Practical
April 18 periods	Ch 5 - Molecular Basis of Inheritance Ch 4 - Principles of Inheritance and Variation	Prepare pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness. Mendelian inheritance using seeds of different colour/sizes of any plant.
	Ch 5 - Molecular Basis of Inheritance Ch 6 - Evolution	
May 18 periods	Ch 6 - Evolution	Flash cards models showing examples of homologous and analogous organs.

July 24 periods	Ch 1 - Sexual reproduction in flowering plants	Prepare a temporary mount to observe pollen germination. Prepare a temporary mount of onion root tip to study mitosis. Flowers adapted to pollination by different agencies (wind, insects, birds). Pollen germination on stigma through a permanent slide or scanning electron micrograph. Controlled pollination - emasculation, tagging and bagging
	Ch 2 - Human reproduction	Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice). Meiosis in onion bud cell or grasshopper testis through permanent slides. T.S. of blastula through permanent slides (Mammalian).
August	Ch 3 -Reproductive Health	
August	Ch 9 - Biotechnology: Principles and Processes	Isolate DNA from available plant material such as spinach, green pea seeds, papaya
August	Ch 10 Biotechnology and its application	
September	Human health and diseases	Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, any fungus causing ringworm through permanent slides, models or virtual images or specimens. Comment on symptoms of diseases that they cause.
October 24 periods	Ch 7 - Human health and diseases Ch 8 - Microbes in human welfare	Study the plant population density by quadrat method. Study the plant population frequency by quadrat method. Models specimen showing symbiotic association in root modules of leguminous plants, Cuscuta on host, lichens.

	Ch 11 - Organisms and population Ch 12 – Ecosystem Ch 13 - Biodiversity and conservation	
November 7 periods	Revision	
December 7 periods	Revision	
	Revision	

Computer Science		
Month	Chapters and Topic Covered	Practical/Activities
April	Chapter 1 - Python Revision Tour-I Chapter 2 – Python Revision Tour-II Chapter 10: Relational databases Ch 11: Simple Queries in Sql Ch 12: Table Creation and Data manipulation commands	Create and use expressions in Python codes Creating, sorting and managing data using different objects of Python Create and use a database. Create and insert data in a table/relation Create and insert data in a table/relation Creating and managing
May	Chapter 13: Grouping Records, Joins in Sql Ch. 14: Interface Python with Mysql	- Show the joins using Sql commands - Group the table data on the basis of a column which has multiple entries of some values. Creating a small application using database connectivity
July	Chapter 3: Working with functions Chapter 4: Using Python Libraries	Hands-on Practice: Create a Python program to define user defined functions Area(), Circum() in the same program Create a library/package in Python
August	Chapter 5 File handling	

Economics		
Month	Chapters and Topic Covered	Practical/Activities
April	Unit 1 of Macro CH 1: Circular Flow of Income CH 2: Basic Concepts of Macroeconomics CH 3: National Income and Related Aggregates CH 4: Measurement of National Income Unit 1 of IED CH 1: Indian Economy on the Eve of Independence	NCERT Questions Topics will be discussed for Practical Project Students will be asked to collect information relevant to their topic and submit a hard copy of the same
May	Unit 2 of Macro CH 5: Money CH 6: Banking- Commercial Banks and the Central Bank	

	Unit 1 of IED CH 2: Indian Economy (1950-1990)	
July	Unit 3 of Macro CH 7: Aggregate Demand and Related Concepts CH 8: Income Determination and Multiplier Unit 1 of IED CH 3: Liberalisation, Privatisation and Globalisation: An Appraisal	Project written part to be completed completely
August	Unit 3 of Macro CH 9: Excess Demand and Deficient Demand Unit 2 of IED CH 4: Human Capital Formation CH 5: Rural Development	Review: Students will work on presentation part and make the file
September	Unit 4 of Macro CH 10: Government Budget and the Economy Unit 2 of IED CH 6: Employment- Growth, Informalisation and Other Issues	
October	Unit 5 of Macro CH 11: Foreign Exchange Rate Unit 2 of IED CH 7: Environment and Sustainable Development	Files to be submitted for correction AIL- PPT to be made based on the topic of the Project
November till First week	Unit 5 of Macro CH 12: Balance of Payments Unit 3 of IED CH 8: Comparative Development Experience of India and its Neighbours	

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Informatics Practices		
Month	Chapters and Topic Covered	Practical/Activities
April	Chapter 1 – Python Pandas I Introduction to pandas Series Accessing elements Index values Head and tail Data frame Attributes of data frame Accessing elements Adding and Deleting rows & columns Modifying rows and columns Renaming Deleting and adding rows/col	Create a series with the help of an array and give an index to it Create a data frame using a list of dictionaries and display it in an appropriate format. Create a data frame in Python Pandas using Boolean index values

	Using Boolean indexes\	
April	Chapter 5 -MySQL Revision Tour Creating and Accessing Database and tables Inserting data into tables Writing simple queries. Sql constraints Modifying data in tables. Deleting data from tables. Altering table structure Dropping tables	Create and use a database. Create and insert data in a table/relation Creating and managing relations in a database Null values and their significance. Pattern matching using the two wild card characters
May	Chapter 6 – MySQL functions String /Numeric functions. Char() Concat Lcase Substr Mod Date/Time functions.	Apply various function to strings. Calculate using numeric functions. Extract portions from date/time fields
July	Chapter 7 – Querying using Sql • Order by clause • Aggregate functions • Group by clause Using ‘Having’ to impose conditions Chapter 8 – Joins and Set operations • Unrestricted joins(Cartesian product) • Restricted joins • Equi join • Natural join • Set operations: Union, Minus	Create reports using multiline functions. Group the table data on the basis of a column which has multiple entries of some values Writing Sql commands to see the result of functions and Group by Write Sql commands to perform Cartesian product
August	Ch. 9-10Introduction to Computer Networks and Internet • Topologies • Network Devices • History of WWW • URL Web page and Website Ch-11 Societal Impacts Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open source software (FOSS)	Draw the three topologies of Network
September	SEPTEMBER HALF YEARLY EXAM : Lesson 1,5-11and plug-ins, cookies.	

October	Chapter 2 Python Pandas II Iterating over a data frame Binary operations on data frames Min() , max() Chapter 3– Plotting with Pyplot Data Visualization Using Pyplot Components of Charts	- Use iterrows() and iteritems(). Apply add, mul, div operations on data frames - Create line chart, bar chart and histograms Apply the different attributes of charts.
November till First week	Chapter 4 – Importing/Exporting Between CSV/MySQL and Pandas Completion of final project	Create a csv file Transfer and load to and from a csv file

Psychology		
Month	Chapters and Topic Covered	Practical/Activities
April	Ch1- Variations in psychological attributes	Practical 1 RSPM
May	Ch- 2 Self and personality Ch-3 Meeting life challenges	Practical 2 Self Concept questionnaire
July	Ch-4 Psychological disorders	Practical -3 Sinha comprehensive Anxiety Test
August	Ch-5 Therapeutic approaches	Practical -4 Bell's adjustment inventory
September	Ch-6 Attitude and social Cognition	Practical -5 Sodhi's attitude scale
October	Chapter -7 Social influence and group processes	Case profile
November till First week	Theory Discussion Chapter 1 Variations in Psychological Attributes Chapter 2 Self and Personality Ch 4- Psychological Disorders Ch 5- Therapeutic Approaches	

Physical Education		
Month	Chapters and Topic Covered	Practical/Activities
April	CHAPTER-1 MANAGEMENT OF SPORTINGS EVENTS - FUNCTIONS OF SPORTS EVENTS MANAGEMENT - VARIOUS COMMITTEES AND THEIR RESPONSIBILITIES	Topics will be discussed for Practical Project CYCLE TEST 1

	● FIXTURES AND ITS PROCEDURE - KNOCKOUT AND LEAGUE	
May	CHAPTER-2 CHILDREN AND WOMEN IN SPORTS ● Common postural deformities ● Special consideration ● Female athletes triad	
July	CHAPTER-3 YOGA AS PREVENTIVE MEASURES FOR LIFESTYLE DISEASE ● OBESITY ● DIABETES ● ASTHMA ● HYPER TENSION CHAPTER-4 PHYSICAL EDUCATION & SPORTS FOR CWSN CHAPTER-5 SPORTS & NUTRITION CHAPTER-6 TEST & MEASUREMENT IN SPORTS ● FITNESS TEST ● COMPUTING BASAL METABOLIC RATE ● RIKLI AND JONES SENIOR CITIZEN FITNESS TEST	PERIODIC TEST 1
August	CHAPTER-7 PHYSIOLOGY AND INJURIES IN SPORTS ● PHYSIOLOGICAL FACTORS DETERMINING COMPONENTS OF PHYSICAL FITNESS ● EFFECT OF EXERCISE ON MUSCULAR SYSTEM ● EFFECT OF EXERCISE ON RESPIRATORY SYSTEM ● SPORTS INJURIES	
September	CHAPTER-8 BIOMECHANICS AND SPORTS ● NEWTON'S LAW OF MOTION AND THEIR APPLICATION IN SPORTS ● EQUILIBRIUM- DYNAMIC AND STATIC AND CENTER OF GRAVITY AND ITS APPLICATION IN SPORTS ● FRICTION AND SPORTS ● PROJECTILE IN SPORTS	
October	CHAPTER-9 PSYCHOLOGY AND SPORTS ● PERSONALITY ● AGGRESSION ● PSYCHOLOGICAL ATTRIBUTES IN SPORTS	
November till First week	CHAPTER-10 TRAINING IN SPORTS ● CONCEPT OF TALENT IDENTIFICATION AND TALENT DEVELOPMENT IN SPORTS ● INTRODUCTION TO SPORTS TRAINING CYCLE ● TYPES AND METHODS TO DEVELOP- STRENGTH ,ENDURANCE, & SPEED ● TYPES AND METHODS TO DEVELOP - FLEXIBILITY AND COORDINATIVE ABILITY	

