DELHI PUBLIC SCHOOL DHALIGAON

SYLLABUS BREAK UP

CLASS: XII (SCIENCE)
SESSION: 2024-25

NAME:-_____

SECTION:-_____ ROLL NO:-_____

◈INDEX◈

MONTH	NO. OF WORKING DAYS
APRIL	22
MAY	25
JUNE	17
JULY	9
AUGUST	24
SEPTEMBER	23
OCTOBER	16
NOVEMBER	21
DECEMBER	18
JANUARY	22
FEBRUARY	21
MARCH	24

SUBJECT:- ENGLISH LANGUAGE & LITERATURE

Sl. No.	Month	Chapter /Unit No.	Topics and sub topics
1	**April'24**	Literature, Language& Comm. Skills	➢ My mother at Sixty Six ➢ The Last Lesson ➢ The Lost Spring ➢ The Third Level ➢ Notice Drafting ➢ COMM. SKILL-GROUP DISCUSSION
2	**May'24**	Literature, Language & Comm. Skills	➢ Deep Water ➢ Keeping Quiet ➢ The Tiger King ➢ Letter to the Editor ➢ Reading Comprehension ➢ COMM. SKILL-INTERVIEWS
3	**June'24**	Literature, Language & Comm. Skills	➢ The Rattrap ➢ The Journey to the end of the Earth ➢ Article Writing ➢ COMM.SKILLS-NEWS READING
4	**July'24**	Literature, Language & Comm. Skills	➢ The Thing of Beauty ➢ The Interview ➢ Formal Invitation & Replies ➢ COMM SKILLS-DEBATE
5	**Aug'24**	Literature, Language & Comm. Skills	➢ Poets and Pancakes ➢ The Enemy ➢ The Roadside Stand ➢ Report Writing ➢ COMM SKILLS-SPEECH
6	**Sept'24**	Literature, Language	FIRST TERM EXAM ➢ Indigo ➢ Informal Invitation & Replies
7	**Oct'24**	Literature, Language & Comm. Skills	➢ Aunt Jennifer's Tiger ➢ On the face of it ➢ Job application ➢ COMM SKILLS -CONTENT PRESENTATION
8	**Nov'24**	Literature, Language & Comm. Skills	➢ Memories of Childhood ➢ Going Places ➢ Reading Comprehension ➢ COMM. SKILLS-EXTEMPORE
9	**Dec'24**		1st Preboard

SUBJECT:-MATHEMATICS

Sl. No.	Month	Chapter /Unit No.	Topics and sub topics
1	**April'24**	CH – 3 CH - 4 CH – 4 **CH - 12**	**<u>Matrices</u>** • Concept, notation, order, equality, types of matrices, zero and identity matrix • Transpose of a matrix, symmetric and skew symmetric matrices. • Operations on matrices: Addition and multiplication and multiplication with a scalar. • Simple properties of addition, multiplication and scalar multiplication. • Non commutatively of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). • Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries). **<u>Determinants</u>** • Determinant of a square matrix (up to 3 x 3 matrices), **<u>Determinants</u>** • Minors, Co-factors and applications of determinants in finding the area of a triangle. • Adjoint and inverse of a square matrix. • Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in • two or three variables (having unique solution) using inverse of a matrix. **<u>Linear Programming</u>** • Introduction, related terminology such as constraints, objective function, optimization
2	**May'24**		**<u>Linear Programming</u>** • Graphical method of solution for problems in • two variables, feasible and infeasible regions (bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

			Vectors • Vectors and scalars, magnitude and direction of a vector. • Direction cosines and direction ratios of a vector. • Types of vectors (equal, unit, zero, parallel and collinear vectors), • position vector of a point, negative of a vector, components of a vector, • Addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. • Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors. **Three - dimensional Geometry** • Direction cosines and direction ratios of a line joining two points. • Cartesian equation and vector equation of a line • Skew lines, shortest distance between two lines. • Angle between two lines. **Relations and Functions** • Types of relations: reflexive, symmetric, transitive and equivalence relations. ***Activity:1:*** *To verify that angle in a semi-circle is a right angle, using vector method.* ***Activity :2:*** *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.*
3	**June'24**	CH – 12	**Relations and Functions** • One to one and onto functions. **Inverse Trigonometric Functions** • Definition, range, domain, principal value branch.

		CH - 10	• Graphs of inverse trigonometric functions. • Properties of Inverse Trigonometric Functions.(In deleted syllabus)
			Activity: 3: *To verify that the relation R in the set L of all lines in a plane, defined by R = {(l, m): l ⊥ m} is symmetric but neither reflexive nor transitive.* ***Activity: 4:*** *To verify that the relation R in the set L of all lines in a plane, defined by R = {(l, m): l || m} is an equivalence relation.*
4	**July'24**	CH - 5	**Continuity and Differentiability** • Continuity and differentiability • Chain rule, derivative of inverse trigonometric functions, like $\sin^{-1}x$,$\cos^{-1}x$and $\tan^{-1}x$, • Derivative of implicit functions. • Concept of exponential and logarithmic functions. Derivatives of logarithmic and exponential functions. Logarithmic differentiation. ***Activity:5:*** *To demonstrate a function which is not one-one but is onto.* ***Activity:6:*** *To demonstrate a function which is one-one but not onto*.
5	**Aug'24**	CH – 5 CH – 6 CH – 7 **SYLLABUS COMPLETION FOR TERM I**	**Continuity and Differentiability** • Derivative of functions expressed in parametric forms. Second order derivatives. **Applications of Derivatives** • Applications of derivatives: rate of change of quantities, • Increasing/decreasing functions, • Maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real life situations). ***Activity:7:*** *To find analytically the limit of a function f (x) at x =*

			c and also to check the continuity of the function at that point. ***Activity :8:*** *To understand the concepts of local maxima and point of inflexion.* ***Activity:9:*** *To construct an open box of maximum volume from a given rectangular sheet by cutting equal squares from each corner.* **Integrals** • Integration as inverse process of differentiation. • Integration of a variety of functions by (i) Substitution, (ii) Partial fractions and by parts, (iii) Evaluation of simple integrals of the following types and problems based on them. $\int \frac{dx}{x^2+a^2}$, $\int \frac{dx}{x^2-a^2}$, $\int \frac{dx}{a^2-x^2}$, $\int \frac{dx}{\sqrt{x^2+a^2}}$, $\int \frac{dx}{\sqrt{x^2-a^2}}$, $\int \frac{dx}{\sqrt{a^2-x^2}}$, $\int \frac{dx}{ax^2+bx+c}$, $\int \frac{dx}{\sqrt{ax^2+bx+c}}$, $\int \frac{px+q}{ax^2+bx+c}dx$, $\int \frac{px+q}{\sqrt{ax^2+bx+c}}dx$, $\int \sqrt{ax^2+bx+c}dx$
6	**Sept'24**	CH – 7	**Integrals** Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.**TERM-1 EXAM**
7	**Oct'24**	CH – 8	**Applications of the Integrals** • Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only) • Area between the curves. (simple curves as mentioned in exercise 8:2)

		CH – 9	**<u>Differential Equations</u>** • Definition, order and degree, general and particular solutions of a differential equation. • Solution of differential equations by method of separation of variables, • Solutions of homogeneous differential equations of first order and first degree. • Solutions of linear differential equation of the type: $\frac{dy}{dx} + py = q, p,q$are function of x or constants $\frac{dx}{dy} + px = q, p,q$ are function of y or constants
8	**Nov'24**	CH - 13	**<u>Probability</u>** • Conditional probability, • Multiplication theorem on probability, • Independent events, • Total probability, • Bayes' theorem, • Random variable and its probability distribution • Mean of random variable. ***<u>Activity :10:</u>*** *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.*
9	**Dec'24**		FIRSTPreboard

SUBJECT:- PHYSICS

Sl. No.	Month	Chapter /Unit No.	Topics and sub topics
1	**April'24**	CH-1,2	Electrostatics: **Chapter–1: Electric Charges and Fields** Electric charges, Conservation of charge, Coulomb's law-force between two-point charges, forces between 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. **PRACTICAL:** To determine resistivity of two / three wires by plotting a graph for potential difference versus current
2	**May'24**	CH-2,3	**Chapter–2: Electrostatic Potential and Capacitance(CONT.)** Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, 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). **Unit II: Current Electricity** **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 non-linear) **PRACTICAL:** To find resistance of a given wire / standard resistor using metre bridge.
3	**June'24**	CH-3	**Chapter–3: Current Electricity(CONT.)** 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. **PRACTICAL:** To verify the laws of combination (series) of resistances using a metre bridge. **OR** To verify the laws of combination (parallel) of resistances using a metre bridge
4	**July'24**	CH-4	**Unit III: Magnetic Effects of Current and Magnetism** **Chapter–4: Moving Charges and Magnetism** Concept of magnetic field, Oersted's experiment. Biot - Savart law and its application to 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 **PRACTICAL:** To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
5	**Aug'24**	CH-4,5	**Chapter–4:Moving Charges and Magnetism(CONT.)** torque experienced by a current loop in uniform magnetic field; Current loop as a magnetic dipole and its magnetic dipole moment, moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter. **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. Magnetic properties of materials- Para-, dia- and ferro - magnetic substances with examples, Magnetization of materials, effect of temperature on magnetic properties. **PRACTICAL:** To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.
6	**Sept'24**	CH-6,7,8	**Unit IV: Electromagnetic Induction and Alternating Currents** **Chapter–6: Electromagnetic Induction** Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction **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. **Unit V: Electromagnetic waves** **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. **Unit VI: Optics** **Ray Optics:** Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and optical fibers, refraction at spherical surfaces

			PRACTICAL: To find the value of *v* for different values of *u* in case of a concave mirror and to find the focal length. **REVISION** 1st Term Examination
7	**Oct'24**	CH-9,10	**Unit VI: Optics** **Chapter–9: Ray Optics and Optical Instruments** , 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:** Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's 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). **Unit VII: Dual Nature of Radiation and Matter** **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. **PRACTICAL:** To find the focal length of a convex lens by plotting graphs between *u* and *v* or between *1/u* and *1/v*.

Sl. No.	Month & (W. Days)	Chapter /Unit No.	Topics and sub topics
8	**Nov'24**	CH-11,12,13,14	**Unit VIII: Atoms and Nuclei** **Chapter–12: Atoms** Alpha-particle scattering experiment; Rutherford's model 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). **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. **Unit IX: Electronic Devices** **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. **PRACTICAL:** To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias. **REVISION**
9	**Dec'24**		1st Preboard

SUBJECT:-CHEMISTRY

Sl. No.	Month & (W. Days)	Chapter /Unit No.	Topics and sub topics
1	**April'24**	2	**Solutions:** Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular

			masses using colligative properties , abnormal molecular mass, Van't Hoff factor **PRACTICAL – Salt Analysis**
2	**May'24**	4 14	**<u>Chemical Kinetics:</u>** Rate of chemical reaction, factors influencing rate of chemical reaction,integrated rate equation, Pseudo 1st reaction, temperature dependence of rate of reaction, Collision Theory **Biomolecules:-** Carbohydrates, Proteins, Vitamins, Nucleic Acids **PRACTICAL – Salt Analysis**
3	**June'24**	3	**<u>Electrochemistry :-</u>** Redox reactions, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell conductance in electrolytic solutions, specific and molar conductivity (contd…) **PRACTICAL – Titration-1**
4	**July'24**	3 8	**<u>Electrochemistry :-</u>** variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion **<u>d and f Block Elements:-</u>** General introduction, electronic configuration, occurrence and characteristics of transition metals. **PRACTICAL – Titration-2**
5	**Aug'24**	8 8, 9	**<u>d and f Block Elements (contd…):-</u>** general trends in properties of the first-row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$ **Lanthanoids –** Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences **Actinoids -** Electronic configuration, oxidation states

			and comparison with lanthanoids **<u>Coordination Compounds:-</u>** Werner's theory Introduction, ligands, coordination number ,IUPAC nomenclature, isomerism, VBT, CFT, the importance of coordination compounds . **PRACTICAL – functional group analysis**
6	**Sept'24**	10	**<u>Haloalkanes and Haloarenes</u>**.:- **Haloalkanes:-** Nomenclature, nature of C–X bond, physical and chemical properties optical rotation mechanism of substitution reactions **Haloarenes:** Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT. **PROJECT** **REVISION 1ST TERM EXAMINATION**
7	**Oct'24**	11	**Alcohols:** Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol **Phenols:** Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols. **Ethers:** Nomenclature, methods of preparation, physical and chemical properties, uses. **PROJECT**
8	**Nov'24**	12 13	**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. **<u>Amines:</u>**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. **Revision for the Pre- Board**
9	**Dec'24**		**FIRST PRE BOARD**

SUBJECT:-BIOLOGY

Sl. No.	Month & (W. Days)	Chapter /Unit No.	Topics and sub topics
1	**April'24**	**5**	Principles of Inheritance and Variation :Heredity and variation: Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance. **Human Reproduction :** Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis -spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea).
2	**May'24**	**5**	Principles of Inheritance and Variation: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 and honey bee; linkage and crossing over **Reproductive Health** : Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); 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). Human Health and Diseases : Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology - vaccines; cancer, HIV and AIDS; Adolescence - drug and alcohol abuse.
3	**June'24**	**2**	Sexual Reproduction in Flowering Plants Flower

			structure; development of male and female gametophytes; pollination - types, agencies and examples; out breeding devices Sexual Reproduction in Flowering Plants; 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 dispersal and fruit formation **Microbes in Human Welfare :** Microbes in food processing, industrial production, sewage treatment
4	**July'24**	**5,6**	Principles of Inheritance and Variation : sex linked inheritance - haemophilia, colour blindness; Mendelian disorders in humans - thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes Molecular Basis of Inheritance Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; **Microbes in Human Welfare:** Energy generation andmicrobes as bio-control agents and bio-fertilizers. Antibiotics; production and judicious use
5	**Aug'24**	**6**	Molecular Basis of Inheritance : DNA replication; Central Dogma; transcription, genetic code, translation; gene 8 expression and regulation - lac operon; Genome, Human and rice genome projects; DNA fingerprinting Evolution Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, embryology and molecular evidences); Darwin's contribution, modern synthetic theory of evolution. **Organisms and Populations : :** population attributes - growth, birth rate and death rate, age distribution
6	**Sept'24**	**7**	Evolution :mechanism of evolution - variation (mutation and recombination) and natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy - Weinberg's principle; adaptive radiation; human evolution. **Organisms and Populations**. Population interactions - mutualism, competition, predation, parasitism

			REVISION &1st TERM EXAMINATION
7	**Oct'24**	**11**	Biotechnology - Principles and Processes Genetic Engineering (Recombinant DNA Technology **Ecosystem :** Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy
8	**Nov'24**	**12**	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. **Biodiversity and its Conservation:** Biodiversity-Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites
9	**Dec'24**		**REVISION** **1st PRE-BOARD**

SUBJECT:-COMPUTER SCIENCE

Sl. No.	Month & (W. Days)	Chapter /Unit No.	Topics and sub topics
1	**April'24**	Programming and Computational Thinking -2	Revision of Python topics covered in Class XI. Functions: types of function (built-in functions, functions defined in module, user defined functions),
2	**May'24**	Programming and Computational Thinking -2	Revision of Python topics covered in Class XI. Creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope)
3	**June'24**	Programming and Computational Thinking -2	**File Handling** • Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths • Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file,

			opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file • CSV file: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader( ) **File Handling** • Binary file: basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab, ab+), close a binary file, import pickle module, dump() and load() method, read, write/create, search, append and update operations in a binary file
4	**July'24**	Programming and Computational Thinking -2	**File Handling** • CSV file: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader( ) **Data Structure** •Stack, operations on stack (push & pop), implementation of stack using list. Introduction to queue, operations on queue (enqueue, dequeue, is empty, peek, is full), implementation of queue using list.
5	**Aug'24**	**• Database concepts: introduction to database concepts and its need •**	Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key) • Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete
6	**Sept'24**		Revision for First Term

Sl. No.	Month		Topics and sub topics
7	Oct'24		• **Database concepts: introduction to database concepts and its need** • select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command, aggregate functions (max, min, avg, sum, count), group by, having clause, joins: cartesian product on two tables, equi-join and natural join • Interface of python with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications
8	Nov'24	Computer Networks Computer Networks	communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching) ● Transmission media: Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves) ● Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card) ● Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree) ● Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP, wireless/mobile communication protocol such as GSM, GPRS and WLL ● Mobile telecommunication technologies: 1G, 2G, 3G, 4G and 5G ● Introduction to web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting

09	**Dec'24 (18 days)**		1st Pre-Board

SUBJECT:-INFORMATICS PRACTICES

Sl. No.	Month	Chapter /Unit No.	Topics and sub topics
1	**April'24**	Data Handling using Pandas -I	Introduction to Python Libraries Data Structure in Pandas -I Series: Creation of Series from – ndarray, dictionary, scalar value;mathematical, operations; Head and Tail functions; Selection, Indexing and Slicing.
2	**May'24**	Data Handling using Pandas -I	Data Frames: creation - from dictionary of Series, list of dictionaries,Text/CSV,files; display; iteration; Operations on rows and columns: add, select,delete,rename;Headand Tail functions; Indexing using Labels, Boolean Indexing;
3	**June'24**	Data Handling using Pandas and Data Visualization	importing/Exporting Data between CSV files and Data Frames
4	**July'24**	Data Visualization	Purpose of plotting; drawing and saving following types of plots using Matplotlib line plot , Bar graph and histogram, customizing plot
5	**Aug'24**	Database Query using SQL	Math functions: POWER (), ROUND (), MOD (). Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID()/SUBSTRING()/SUBSTR(),LENGTH(), LEFT (), RIGHT (),INSTR(),LTRIM(),RTRIM(),TRIM(). Date Functions: NOW(), DATE(), MONTH(), MONTHNAME(),YEAR(),DAY(),DAYNAME(). Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT();usingCOUNT(*). Querying and manipulating data using Group by, Having, Order by
6	**Sept'24**		**Revision of 1st Term**
7	**Oct'24**	Introduction to Computer	**Introduction to networks, Types of network:** LAN, MAN, WAN. Network Devices: modem, hub,

		Networks	switch, repeater, router, gateway Network Topologies: Star, Bus, Tree, Mesh. 7 Introduction to Internet, URL,
8	**Nov'24**	Introduction to Computer Networks Societal Impacts	**Introduction to networks, Types of network** WWW, and its applications-Web,email,Chat,VoIP.Website: Introduction, difference between a website and webpage, static vs dynamic web page, web server and hosting of a website. Web Browsers: Introduction, commonly used browsers, browsersettings,add-ons etc.Digital footprint, net and communication etiquettes, data protection,intellectual.property,rights (IPR), plagiarism, licensing and copyright, free and open source software (FOSS),cybercrime and cyber laws, hacking, phishing, cyber bullying,overviewof Indian. Awareness about health concerns related to the usage of technology.
9	**Dec'24**		**1st Preboard**

SUBJECT:-PHYSICAL EDUCATION

Sl. No.	Month	Chapter /Unit No.	Topics and sub topics
1	**April'24**	1,2	**MANAGEMENT OF SPORTING EVENTS: (Unit-1)** • Function of Sports events Management(Planning, Organising, staffing, Directing & Controlling) • Various Committees and its responsibilities(pre, during and post) • Fixture and its Procedures—Knock out,(Bye & Seeding) & League (Staircase, Cyclic & Tabular Method) Combination Tournament. • Intramural and Extramural Tournaments- Meaning , Objectives and its significance. Specific sports programme- (Sports Day, Run for Fun, Health Run, Run For specific causes & Run for unity.) **CHILDREN & WOMEN IN SPORTS: (UNIT-2)** • Exercise guide lines Of WHO for different age groups. • Common Postural deformities- Knock Knee, Bow legs, Flat foot, Round Shoulders, Lordosis, Kyphosis, Scoliosis and their corrective measures. • Special consideration (Menarche

			&MenstruralDyfunction) • Women participation in sports- Physical, Psychological and social benefits. • Female athlete triad(Osteoporosis, Amenorrhea, Eating disorder)
2	**May'24**	3,4	**<u>Yoga as preventive measure for Lifestyle Disease:</u>** • Obesity: Procedure Benefits & Contraindications for Tadasana, Katichakrasana, Pavanmuktasana, Matsyasana, Halasana, Pachimuttansana, Ardha-Matsyendrasana, Dhanurasana, Ushtrasana, Surybedhan Pranayama. • Diabetes: Procedure Benefits & Contraindications for Katichakrasana, Pavanmuktasana, Bhujangasana,Shalabhasana, Supta-Vajrasana, Pachimuttansana, Ardha- Matsyendrasana, Dhanurasana, Mandukasana, Gomukasana, Yogmudra, Ushtrasana, Kapalbhati. • Asthma: Procedure Benefits & Contraindications for Tadasana, Urdhwahastottanasana, UttanMandukasana, Bhujangasana, Dhanurasana, Ushtrasana, Vakrasana, Kapabhati, Gomukhasana, Matsyasana, Anulom-Vilom. **Hypertension:** Procedure Benefits & Contraindications for Tadasana, Uttanpadasana, Katichakrasana, ArdhaHalasana, SaralaMatyasana, Gomukasana, Uttanmandukasana, Vakrasana, Bhujangasana, Makrasana, Shavasana, Nadi-shodhanapranayam, SitlipranayamBack pain and Arthritis- Procedure , benefits &contrainidication. **<u>Physical Education & Sports for CWSN(Children with</u>** <u>Special Needs-Divyang) : (Unit-4)</u>
3	**June'24**	5	• Organisations Promoting Disability Sports(Special Olympics, Paralympics, deaflympics) • Classification &division in sports. Concept of Inclusion in sports, its need and Implementation. • Advantages of Physical Activities for children with special needs. • Strategies to make physical Activities assessable for children with special needs.

			SPORTS AND NUTRITION: (Unit –5) • Balance diet and Nutrition: Macro and Micro Nutrients. • Nutritive and Non nutritive Component of diet. • Eating for weight control- A healthy weight, the pitfalls of dieting, Food Intolerance and food myth. • Importance of diet in sports –Pre, During and post competition requirements
4	**July'24**	6	**Test & Measurement in Sports.(Unit-6)** Fitness Test- SAI Khelo India Fitness Test in school: • Age Group- 5-8 years/ class 1-3 : BMI, Flamingo Balance Test, Plate Tapping Test, • Age Group- 9-18 years/ class 4-12 : BMI, 50 mt Speed Test, 600 mt Run/ walk test, Sit & Reach flexibility test, Strength test(Abdomina Partial Curl up, push –ups for Boys and Modified push-ups for Girls). • Measurement of cardio-vascular fitness- Harvard step Test. • Computing Basal Metabolic Rate. Rikli& Jones- Senior Citizen Fitness Test: • Chair stand test for lower body strength. • Arm curl test for upper body strength. • Chair sit & reach test for lower body flexibility. • Back scratch test for upper body flexibility. • Eight foot up & Go test for Agility. Six Minute walk Test for Aerobic Endurance
5	**Aug'24**	7,8	**Physiology & Injuries in Sports- (Unit-7):** • Physiological factors determining components of physical fitness. • Effect of exercise on muscular system. • Effect of exercise on Cardio respiratory system • Physiological changes due to aging. • Sports Injuries: Classification(Soft Tissue injuries- Abrasion, Contusion, Laceration, • Incision, Sprain, Strain, Bone & joint injuries- Dislocation, Fractures, Green stick, Comminuted, Transverse Oblique & Impacted) **Biomechanics & Sports- (Unit-8):** • Newton's Law of motion & its application in

			sports. • Types of Levers and their application in sports.
			• Equilibrium- Dynamic & Static and Centre of Gravity and its application in sportsFriction and sportsProjectile in sports
6	**Sept'24**	9	**<u>Psychology and Sports-(Unit-9)</u>:** • Personality: Its definition & types (Jung classification & Big five theory) • Motivation, its type and Techniques • Exeecise Adherence reasons. Benefits & strategies for enhancing it. • Meaning , concept & types of Aggressions in sports. Psychological Attributes in sports- Self Esteem, Mental Imagery, Self Talk, Goal Setting REVISION 1st TERM
7	**Oct'24**	10	**<u>Training in Sports-(Unit-10)</u>:** • Concept of Talent Identification and Talent Development in sports. • Introduction to Sports training Cycle- Micro, Meso, Macro Cycle. • Types & Method to Develop- Strength, Endurance and Speed. Types and Develop- Flexibility and Coordinative Ability
8	**Nov'24**		***REVISION***
9	**Dec'24**		FIRST PRE-BOARD