Subject Wise Syllabus (Session: 2024-25) Class – XII (Science)

First Unit Test		
English	**Flamingo**	1. The Last Lesson 2. Lost Spring
	Vistas	1. The Third Level 2. The Tiger King 3. Journey to the end of the Earth
	Poetry	1. My Mother at Sixty Six
	C.W. Skills	1. Notice 2. Invitation (Formal and Informal; and Reply)
	Reading Skills	1. Unseen Passage (factual, descriptive, literary) 2. Unseen Passage (case-based)
Maths	**Ch-1. Relations and Functions:** Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions **Ch-2. Inverse Trigonometric Functions:** Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions.	
Biology	**Unit-VI Chapter-2: Sexual Reproduction in Flowering Plants** Flower structure; development of male and female gametophytes; pollination - types, agencies and examples; outbreeding 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 dispersal and fruit formation. **Chapter-3: 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). **Chapter-4: 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, AI (elementary idea for general awareness. **Practical – Minimum 3**	
Physics	**Unit I: 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, additive property, quatisation of charge, 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 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:** Any two, **Activities:** Any two	

Chemistry	**Unit II: 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. **Unit III: Electrochemistry :**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, variations of conductivity with concentration, Kohlrausch's Law. **Practical : Minimum 5**
Computer Science	**Unit I: Computational Thinking and Programming – 2:** Revision of the basics of Python covered in Class XI. Functions: scope, parameter passing, mutable/immutable properties of data objects, passing strings, lists, tuples, dictionaries to functions, default parameters, positional parameters, return values, functions using libraries: mathematical and string functions, **Data-structures**: Stacks – Push, Pop using a list
I.P.	**Unit 2: Database Query using SQL :** **Revision of database concepts and SQL commands covered in class XI** 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 (); using COUNT (*). Querying and manipulating data using Group by, Having, Order by. Working with two tables using equi-join
Phy. Edu.	**Unit I: Management of Sporting Events** 1. Functions of Sports Events Management (Planning, Organising, Staffing, Directing & Controlling) 2. Various Committees & their Responsibilities (pre; during & post) 3. Fixtures and their Procedures – Knock-Out (Bye & Seeding) & League (Staircase, Cyclic, Tabular method) and Combination tournaments. 4. Intramural & Extramural tournaments – Meaning, Objectives & Its Significance 5. Community sports program (Sports Day, Health Run, Run for Fun, Run for Specific Cause & Run for Unity) **Unit II: Children & Women in Sports** 1. Exercise guidelines of WHO for different age groups. 2. Common postural deformities-knock knees, flat foot, round shoulders, Lordosis, Kyphosis, Scoliosis, and bow legs and their respective corrective measures. 3. Women's participation in Sports – Physical, Psychological, and social benefits. 4. Special consideration (menarche and menstrual dysfunction) 5. Female athlete triad (osteoporosis, amenorrhea, eating disorders.
Max. Marks : 25	**Min. Marks : 08** **Time : 1.30 Hours**
Note for Exam. : ***Students will bring their next day's examination books and notebooks***	

Subject Wise Syllabus (Session: 2024-25) Class – XII (Science)

Second Unit Test (+ First Unit Test)		
English	**Flamingo**	3. Deep Water 4. The Rattrap
	Vistas	4. The Enemy
	Poetry	2. Keeping Quiet
	C.W. Skills	3. Letters (a) Application for a job with bio-data or resume (b) Letter to the Editor
	Reading Skills	1. Unseen Passage (factual, descriptive, literary) 2. Unseen Passage (case-based)
Maths	**Ch-3. Matrices:** Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operation on matrices; Addition, multiplication and scalar multiplication of matrices, simple properties of addition, multiplication and scalar multiplication. Non-commutativity 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). **Ch-4. Determinants:** Determinant of a square matrix (up to 3 x 3 matrices), minors, cofactors 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. **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, derivative of functions expressed in parametric forms. Second order derivatives. **Ch-6. Applications of Derivatives:** Applications of derivatives: rate of change of bodies, 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).	
Biology	**Unit-VII Genetics and Evolution Chapter-5: 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; linkage and crossing over; Sex determination - in human being, birds and honey bee; Mutation, Pedigree analysis, sex linked inheritance - colour blindness; Mendelian disorders in humans, thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes. **Chapter-6: 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, Human and rice genome project; DNA fingerprinting. **Chapter-7: 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; 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. **Practical – Minimum 5**	

Physics	**Chapter–3: Current Electricity-** 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. **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, 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. **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. **Practical:** Any two, **Activities:** Any two
Chemistry	**Unit III: Electrochemistry:** Electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion. **Unit IV: Chemical Kinetics:** Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment), activation energy, Arrhenius equation. **Unit VIII: d and f Block Elements:** General introduction, electronic configuration, occurrence and characteristics of transition metals, 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. **Unit IX: Coordination Compounds:** Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, the importance of coordination compounds (in qualitative analysis, extraction of metals and biological system). **Practical : Minimum 5**
Computer Science	**Unit I: Computational Thinking and Programming – 2:** Using Python libraries: create and import Python libraries. ● File handling: Need for a data file, Types of file: Text files, Binary files and CSV (Comma separated values) files. ● Text File: Basic operations on a text file: Open (filename – absoluteor relative path, mode) / Close a text file, Reading and Manipulation of data from a text file, Appending data into a text file, standard input /output and error streams, relative and absolute paths. ● Binary File: Basic operations on a binary file: Open (filename –absolute or relative path, mode) / Close a binary file, Pickle Module

Subject Wise Syllabus (Session: 2024-25) Class – XII (Science)

Computer Science	–methods load and dump; Read, Write/Create, Search, Append and Update operations in a binary file. ● CSV File: Import csv module, functions – Open / Close a csv file, Read from a csv file and Write into a csv file using csv.reader ( ) and csv.writerow( ).
I.P.	**Unit 1: Data Handling using Pandas and Data Visualization:** Data Handling using Pandas –I Introduction to Python libraries- Pandas, Matplotlib. Data structures in Pandas - Series and Data Frames. Series: Creation of Series from – ndarray, dictionary, scalar value; mathematical operations; Head and Tail functions; Selection, Indexing and Slicing. Data Frames: creation - from dictionary of Series, list of dictionaries, Text/CSV files; display; iteration; Operations on rows and columns: add, select, delete, rename, Head and Tail functions, indexing using labels, Boolean indexing; Importing/Exporting Data between CSV files and Data Frames.
Phy. Edu.	**Unit III: Yoga as Preventive measure for Lifestyle Disease** 1. **Obesity:** Procedure, Benefits & Contraindications for Tadasana, Katichakrasana, Pavanmuktasana, Matsayasana, Halasana, Pachimottansana, Ardha – Matsyendrasana, Dhanurasana, Ushtrasana, Suryabedhan pranayama. 2. **Diabetes:** Procedure, Benefits & Contraindications for Katichakrasana, Pavanmuktasana, Bhujangasana, Shalabhasana, Dhanurasana, Supta-vajarasana, Paschimottanasan-a, Ardha-Mastendrasana, Mandukasana, Gomukasana, Yogmudra, Ushtrasana, Kapalabhati. 3. **Asthma:** Procedure, Benefits & Contraindications for Tadasana, Urdhwahastottansana, UttanMandukasan-a, Bhujangasana, Dhanurasana, Ushtrasana, Vakrasana, Kapalbhati, Gomukhasana Matsyaasana, Anuloma-Viloma. 4. **Hypertension:** Procedure, Benefits & Contraindications for Tadasana, Katichakransan, Uttanpadasana, Ardha Halasana, Sarala Matyasana, Gomukhasana, UttanMandukasan-a, Vakrasana, Bhujangasana, Makarasana, Shavasana, Nadi- shodhanapranayam, Sitlipranayam. 5. **Back Pain and Arthritis:** Procedure, Benefits & Contraindications of Tadasan, Urdhawahastootansana, Ardh-Chakrasana, Ushtrasana, Vakrasana, Sarala Maysyendrsana, Bhujandgasana, Gomukhasana, Bhadrasana, Makarasana, Nadi-Shodhana pranayama. **Unit IV: Physical Education and Sports for CWSN (Children with Special Needs - Divyang)** 1. Organizations promoting Disability Sports (Special Olympics; Paralympics; Deaflympics) 2. Concept of Classification and Divisioning in Sports. 3. Concept of Inclusion in sports, its need, and Implementation; 4. Advantages of Physical Activities for children with special needs. 5. Strategies to make Physical Activities assessable for children with special needs.
Max. Marks : 25	**Min. Marks : 08** **Time : 1.30 Hours**
Note for Exam. : ***Students will bring their next day's examination books and notebooks.***	

First Term Exam (+1st Unit + 2nd Unit)

English	**Flamingo**	5. Indigo 6. Poets and Pancakes
	Vistas	5. On the Face of It
	Poetry	3. A Thing of Beauty 4. A Roadside Stand
	C.W. Skills	4. Article 5. Report writing
	Reading Skills	1. Unseen Passage (factual, descriptive, literary) 2. Unseen Passage (case-based)

Maths	**Ch-7. Integrals:** Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals of the following types and problem based on them. $\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^2 + bx + c}}$ $\int \frac{px + q}{ax^2 + bx + c} dx, \int \frac{px + q}{\sqrt{ax^2 + bx + c}} dx, \int \sqrt{a^2 \pm x^2}\, dx, \int \sqrt{x^2 - a^2}\, dx$ $\int \sqrt{ax^2 + bx + c}\, dx,$ Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals. **Ch-8. Applications of the Integrals:** Applications in finding the area under simple curves, especially lines, circles/parabolas/ellipses (in standard form only), **Ch-9. Differential Equations:** Definition, order and degree, general and particular solutions of a differential equation. Solution of differential equations by method of separation of variables, homogeneous differential equations of first order and first degree. Solutions of linear differential equation of the type: $\frac{dy}{dx} + py = q,$ where p and q are functions of *x* or constant, $\frac{dx}{dy} + px = q,$ where p and q are functions of *y* or constant.
Biology	**Unit-VIII Biology and Human Welfare Chapter-8: Human Health and Diseases** Pathogens; parasites causing human diseases (malaria, dengue, chickengunia, 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. **Chapter-10: Microbes in Human Welfare** In household food processing, industrial production, sewage treatment, energy generation and microbes as biocontrol agents and biofertilizers. Antibiotics; production and judicious use. **Unit-IX Biotechnology Principles and Processes Chapter-11: Biotechnology - Principles and processes** Genetic Engineering (Recombinant DNA Technology). **Chapter-12: Biotechnology and its Application:** 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, bio piracy and biopatents. **Practical – Minimum 3**
Physics	**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: Chapter–9: Ray Optics and Optical Instruments -**

Subject Wise Syllabus (Session: 2024-25) Class – XII (Science)

Physics	Ray Optics: Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and optical fibers, 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: 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). **Practical:** Any two, **Activities :** Any two
Chemistry	**Unit X: Haloalkanes and Haloarenes: 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. **Unit XI: Alcohols, Phenols and Ethers: 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. **Unit XII: Aldehydes, Ketones and Carboxylic Acids: 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. **Practical : Minimum 5**
Computer Science	**Unit III: Database Management:** Database Concepts: Introduction to database concepts and its need. Relational data model: Concept of domain, relation, tuple, attribute, degree, cardinality, key, primary key, candidate key, alternate key and foreign key; Structured Query Language: General Concepts: Advantages of using SQL, Data Definition Language and Data Manipulation Language; Data Types: number / decimal, character / varchar / varchar2, date; SQL commands: CREATE TABLE, DROP TABLE, ALTER TABLE, UPDATE ....SET...., INSERT, DELETE; SELECT, DISTINCT, FROM, WHERE, IN, BETWEEN, LIKE, NULL / IS NULL, ORDER BY,GROUP BY, HAVING; SQL functions: SUM ( ), AVG ( ), COUNT ( ), MAX ( ) and MIN ( ); Joins: 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 use of %s format specifier or format() to perform queries
I.P.	**Data Visualization** :Purpose of plotting; drawing and saving following types of plots using Matplotlib – line plot, bar graph, histogram, Customizing plots: adding label, title, and legend in plots.
Phy.Edu.	**Unit V: Sports & Nutrition** 1. Concept of balanced diet and nutrition 2. Macro and Micro Nutrients: Food sources & functions 3. Nutritive & Non-Nutritive Components of Diet 4. Eating for Weight control – A Healthy Weight, The Pitfalls of Dieting, Food Intolerance, and Food Myths 5. Importance of Diet in Sports-Pre, During and Post competition Requirements **Unit VI: Test & Measurement in Sports** 1. 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 9-18yrs/ class 4-12: BMI, 50mt Speed test, 600mt Run/Walk, Sit & Reach flexibility test, Strength Test (Partial Abdominal Curl Up, Push-Ups for boys, Modified Push-Ups for girls). 2. Measurement of Cardio-Vascular Fitness – Harvard Step Test – Duration of the Exercise in Seconds x100/5.5 X Pulse count of 1-1.5 Min after Exercise. 3. Computing Basal Metabolic Rate (BMR) 4. 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. Johnsen – Methney Test of Motor Educability (Front Roll, Roll, Jumping Half-Turn, Jumping full-turn
Max. Marks : 50	**Min. Marks : 17** **Time : 3.00 Hours**
Note for Exam. : ***Students will bring their next day's examination books and notebooks***	

Second Term Exam. (+ 1st Unit + 2nd Unit + 1st Term)

English	**Flamingo**	7. The Interview 8. Going Places
	Vistas	6. Memories of Childhood
	Poetry	5. Aunt Jennifer's Tigers
	C.W. Skills	All topics
	Reading Skills	1. Unseen Passage (factual, descriptive, literary) 2. Unseen Passage (case-based)
		Project Work
Maths	**Ch-10. 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. **Ch-11. Three - dimensional Geometry:** Direction cosines and direction ratios of a line joining two points. Cartesian and vector equation of a line, skew lines, shortest distance between two lines. Angle between two lines. **Ch-13. Probability:** Conditional probability, multiplication theorem on probability. independent events, total probability, Baye's theorem, Random variable and its probability distribution, mean. **Ch-12. Linear Programming:** Introduction, related terminology such as constraints, objective function, optimization, 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).	

Subject Wise Syllabus (Session: 2024-25) Class – XII (Science)

Biology	**Unit-X Ecology and Environment Chapter-13: Organisms and Populations -** Interactions - mutualism, competition, predation, parasitism, population attributes - growth, birth rate and death rate, age distribution. **Chapter-14: Ecosystem** Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy; **Chapter-15: Biodiversity and its Conservation** Concept of biodiversity; levels patterns of biodiversity; importance of biodiversity; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, sacred grooves biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites. **Practical: Complete Remaining**
Physics	**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. **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 this 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. **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:** Any two, **Activities :** Any two
Chemistry	**Unit XII: Aldehydes, Ketones and Carboxylic Acids: 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. **Unit XIII: 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. **Unit XIV: 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. **Practical: Minimum 5**
Computer Science	**Unit II: Computer Networks:●** Evolution of Networking: ARPANET, Internet, Interspace Different ways of sending data across the network with reference to switching techniques (Circuit and Packet switching). ● Data Communication terminologies: Concept of Channel, Bandwidth (Hz, KHz, MHz) and Data transfer rate (bps, Kbps, Mbps, Gbps, Tbps). ● Transmission media: Twisted pair cable, coaxial cable, optical fiber, infrared, radio link, microwave link and satellite link. ● Network devices: Modem, RJ45 connector, Ethernet Card, Router, Switch, Gateway, WiFi card. ● Network Topologies and types: Bus, Star, Tree, PAN, LAN, WAN, MAN. ● Network Protocol: TCP/IP, File Transfer Protocol (FTP), PPP, HTTP, SMTP, POP3, Remote Login (Telnet) and Internet, Electronic mail protocols such as SMTP, POP3, Protocols for Chat ,and Video Conferencing: VoIP, Wireless technologies such as Wi-Fi and WiMax ● Introduction To Web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML); Hyper Text Transfer Protocol (HTTP); Domain Names; URL; Website, Web browser, Web Servers; Web Hosting
I.P.	**Unit 3: Introduction to Computer Networks:** Introduction to networks, Types of network: PAN, LAN, MAN, WAN. Network Devices: modem, hub, switch, repeater, router, gateway Network Topologies: Star, Bus, Tree, Mesh. Introduction to Internet, URL, 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, browser settings, add-ons and plug-ins, cookies. **Unit 4: Societal Impacts:** 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, overview of Indian IT Act. E-waste: hazards and management. Awareness about health concerns related to the usage of technology.
Phy.Edu.	**Unit VII: Physiology & Injuries in Sport** 1. Physiological factors determining components of physical fitness 2. Effect of exercise on the Muscular System 3. Effect of exercise on the Cardio-Respiratory System 4. Physiological changes due to aging 5. Sports injuries: Classification (Soft Tissue Injuries -Abrasion, Contusion, Laceration, Incision, Sprain & Strain; Bone & Joint Injuries - Dislocation, Fractures - Green Stick, Comminuted, Transverse Oblique & Impacted) **Unit VIII: Biomechanics and Sports** 1. Newton's Law of Motion & its application in sports 2. Types of Levers and their application in Sports. 3. Equilibrium – Dynamic & Static and Centre of Gravity and its application in sports 4. Friction & Sports 5. Projectile in Sports **Unit IX: Psychology and Sports** 1. Personality; its definition & types (Jung Classification & Big Five Theory) 2. Motivation, its type & techniques. 3. Exercise Adherence: Reasons, Benefits & Strategies for Enhancing it 4. Meaning, Concept & Types of Aggressions in Sports 5. Psychological Attributes in Sports – Self-Esteem, Mental Imagery, Self-Talk, Goal Setting **Unit X: Training in Sports** 1. Concept of Talent Identification and Talent Development in Sports 2. Introduction to Sports Training Cycle – Micro, Meso, Macro Cycle. 3. Types & Methods to Develop – Strength, Endurance, and Speed. 4. Types & Methods to Develop – Flexibility and Coordinative Ability. 5. Circuit Training - Introduction & its importance
Max. Marks : 100 (Th: 70 + Pr. 30)	**Min. Marks : 33** **Time : 3.00 Hours**
Note for Exam. : ***Students will bring their next day's examination books and notebooks***	

Subject Wise Syllabus (Session: 2024-25) Class – XII (Science)

Pre-Board Exam. (Whole Syllabus)			
Max. Marks : 100	**(Th: 70 + Pr. 30)**	**Min. Marks : 33**	**Time : 3.00 Hours**

Books Prescribed (XII Science Stream)			
S. No.	**Subject**	**Name of the Book(s)**	**Publishers**
1	**ENG**	**GUIDE - ENGLISH CORE**	**LAXMI Pub.**
2	**ENG**	**FLAMINGO - ENGLISH**	**NCERT**
3	**ENG**	**VISTAS - ENGLISH**	**NCERT**
4	**MATHS**	**MATHEMATICS EXEMPLAR**	**NCERT**
5	**MATHS**	**MATHEMATICS**	**NCERT**
6	**MATHS**	**MATHEMATICS LAB ACTIVITIES WITH RECORD BOOK**	**GOYAL BROTHERS**
7	**PHY.**	**PHYSICS**	**DHANPAT RAI & COMP. (S.L.Arora)**
8	**PHY.**	**PHYSICS - (PART I & II)**	**NCERT**
9	**PHY.**	**LAB MANUAL**	**UNIVERSAL PUBLICATION**
10	**CHEM.**	**CHEMISTRY**	**MODERN ABC**
11	**CHEM.**	**CHEMISTRY (PART -I & II)**	**NCERT**
12	**CHEM.**	**LAB MANUAL**	**UNIVERSAL PUBLICATION**
13	**BIO**	**BIOLOGY**	**MODERN ABC**
14	**BIO**	**BIOLOGY**	**NCERT**
15	**BIO**	**LAB MANUAL**	**UNIVERSAL PUBLICATION**
16	**COMP.**	**COMPUTER SCIENCE - C++ (SUMITA A.)**	**DHANPAT RAI & COMP.**
17	**COMP.**	**PRACTICAL FILE - COMPUTER SCIENCE**	**J.B. PUBLISHING HOUSE**
18	**I.P.**	**INFORMATICS PRACTICES**	**DHANPAT RAI & COMP.**
19	**I.P.**	**PRACTICAL FILE - INFORMATICS PRACTICES**	**J.B. PUBLISHING HOUSE**
20	**P.ED.**	**PHYSICAL EDUCATION**	**SARASWATI PUBLICATION**

***Instructions*:-**

1. *Value Education consists of Moral Values , Manners & Etiquettes.*
2. *Value Education will be taught by the class teacher for10 minutes in zero period every day.*