SYLLABUS (2024-25)
CLASS XII

SUBJECT- ENGLISH CORE (301)		
BOOKS:1**. Flamingo: English Reader published by National Council of Education Research and Training, New Delhi** **2. Vistas: Supplementary Reader published by National Council of Education Research and Training, New Delhi**		
Month	**Syllabus**	**Learning Outcomes**
April	**Flamingo**: 1. The Last Lesson , 2. My Mother at Sixty-six, 3 . Lost Spring **Vistas**: 1. The Tiger King, 2 The Enemy	• Analyzing in detail how a key individual, event or idea is introduced in the text . • Understand Poetry as a literary form and analyze the various elements of poetry. • Application of appropriate reading strategies for interpreting texts & Vocabulary building.
	Note making, Notice writing, Letter to the Editor, Invitation, writing , Advertisement	• Announcements of events/celebrations/instructions through formal notices, invitations and letters written in appropriate format and style. ● express opinions, facts, arguments in the form of articles using a variety of accurate sentence structures
June	**Flamingo:** 1. An Elementary School Classroom in a Slum	• Integrating information as well as words to develop a coherent understanding of the topic. Analyzing and extrapolating the idea e.g. empathy, war ideology, humanity etc • Objective evaluation or analysis of an event; announcement of products, services, events etc.
	Writing Skills: Comprehension Passage, Poster, Speech	● develop greater confidence and proficiency in the use of language skills necessary for social and academic purpose
July	**Flamingo:** 1. Deep Water , 2. The Rattrap Poem: A Thing of Beauty	• Identifying the main ideas in the text and making inferences based on information. • Expressing opinions/ideas in an organized manner using appropriate language and format.
	Writing Skills: Report, Letter to the Editor , Advertisement,	• Ability to write coherently and respond imaginatively to questions

	Article, Speech	
August	**Flamingo:** 1. Indigo 2. Keeping Quiet **Vistas:** 1.Should Wizard hit Mommy 2. On the face of It 3. The Third Level	● make use of contextual clues to infer meanings of unfamiliar vocabulary ● select, compile and collate information for an oral presentation
September	Writing Skills: Invitation & Replies	● express opinions, facts, arguments in the form of articles using a variety of accurate sentence structures
	Flamingo: 1. Poets and Pancakes Revision for Half Yearly Examination/ Half Yearly Examination Assessment of Speaking and Listening	• Perceive the overall meaning and organization of the text ; develop the skills of reasoning
October	**Flamingo:** 1. Going Places 2. The Interview **Vistas** 1. Evans Tries an O-level 2. Memories of Childhood	• Ascertaining the kind of issues raised through someone's life and struggle. • Identifying women as marginalized community, the discrimination they face and their struggle against it. • Figuring out the complexities of human relationships; impact on impressionable minds.
	Writing Skills: Job Application	• Application of appropriate reading strategies for interpreting texts & Vocabulary building
November	**Flamingo** 3. Aunt Jennifer's Tigers 4. Road Side Stand **Vistas**: Journey to the end of the Earth	• Engaging in independent reflection and enquiry
	Writing Skills: Comprehension Passage. Letter of Complaint, Letter of Enquiry, Letter for Placing Orders	● promote advanced language skills with an aim to develop the skills of reason
December	Pre-board Examination-I	

January	Pre-board Examination-I	
February	Revision for AISSCE 2023Board Examination	
March	**Board Exam**	

Syllabus (UT-I)	**Syllabus (HY)**	**Syllabus (UT-II)**	**Syllabus (AE)**
1. The Last Lesson, 2. Lost Spring 3. My Mother at Sixty-six 4. The Enemy 5. The Tiger King Note making, Notice writing, Report writing, Letter to the Editor	1. Deep Water, 2. An Elementary School Classroom in a Slum 3. The Rattrap Invitation, Advertisement, Poster, Article, Speech , Note Making	1. Indigo, 2. Keeping Quiet, 3. A Thing of Beauty 5. Should Wizard hit Mommy, 6? On the face of It, 7. The Third Level 8. Poets and Pancakes Letter of Complaint, Letter of Enquiry, Letter for Placing Orders, Job Application, Debate + Syllabus of PA I and PA2	Whole syllabus as per C.B.S.E

SUBJECT- PHYSICS (042)		
BOOKS: NCERT		
Month	**Syllabus**	**Learning Outcomes**
April **June**	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. Conductors and	. 1. the student will be able to understand from today's blog about the concept of drift velocity of electrons, will be able to derive the relation between the current and drift velocity and Ohm's law. 2. Students will be able to solve numerical problems based on Kirchhoff's laws.

	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).	
July	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 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, 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 Electromagnetic Induction and Alternating Current Chapter–6: Electromagnetic Induction Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction	1. Students will be able to define magnetic flux and solve problems about magnetic flux. 2. State Faraday's Law and solve problems using Faraday's Law. 3. State Lenz's Law and demonstrate the principles and laws of electromagnetic induction. 4. Discuss electromagnetic induction in generators and solve problems about converting between mechanical and electrical energy. 1. Understand the differences between alternating and direct current. Describe how alternating current is generated. Learn the difference between single and three-phase alternating current systems. 1. Students learn the basics of the electromagnetic spectrum and how various types of electromagnetic waves are related in terms of wavelength and energy. 2. In addition, they are introduced to the various types of waves that make up the electromagnetic spectrum including, radio waves, ultraviolet waves, visible light and infrared waves.

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. 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.	1. The student will get an introduction to the discipline of optics and its role in the modern society. 2. The student shall master the geometrical approximation, including thin lens formula, Huygen's principles, and the paraxial matrix formalism for refractive and reflective surfaces.
September	Optics Chapter–9: Ray Optics and Optical Instruments 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.	1. The student will get an introduction to the discipline of optics and its role in the modern society. 2. The student shall master the geometrical approximation, including thin lens formula, Huygen's principles, and the paraxial matrix formalism for refractive and reflective surfaces. .
	Chapter–10: Wave Optics Wave optics: Wave front and Huygens's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygens'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).	1. Student will be learning about Dual Nature of Radiation. 2. Photoelectric Effect; Experimental study of Photoelectric effect; Einstein's Photoelectric equation - Particle nature of light. 3. Hertz and Lenard's Observations. 4. Matter waves - Wave nature of particles, and de Broglie relation.

October	Dual nature of radiation and matter Chapter–11: Dual Nature of Radiation and Mat diation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric ature of light. Experimental study of photoelectric effect Matter waves-wave nature of oglie relation.	1. Student will be learning about atoms and Nuclei. 2. Alphaparticle scattering experiment. 3. Rutherford's model of atom. 4. Velocity and energy of electron in his orbit.
	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).	1. Student will be learning about Nuclei. 2. Mass-energy relation, mass defect. 3. binding energy per nucleon and its variation with mass number.
November	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.	1. Student will be learning about electronic Devices 2. Semiconductor Electronic Materials. 3. Devices and Simple Circuits Energy bands in conductors. 4. Semiconductors-p and n type, p-n junction Semiconductor 5. diode - I-V characteristics in forward and reverse bias. 6. Application of junction diode -diode as a rectifier.
	. 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.	1. Student will be learning about electronic Devices 2. Semiconductor Electronic Materials. 3. Devices and Simple Circuits Energy bands in conductors. 4. Semiconductors-p and n type, p-n junction Semiconductor diode - I-V characteristics in forward and reverse bias. 5. Application of junction diode -diode as a rectifier.
December	REVISION AND PRE BOARD EXAM	

.

PRACTICALS:-

The record, to be submitted by the students, at the time of their annual examination, has to include:

- Record of at least 8 Experiments [with 4 from each section], to be performed by the students.
- Record of at least 6 Activities [with 3 each from section A and section B], to be performed by the students.
- Report of the project carried out by the students.

EVALUATION SCHEME:-

Time 3 hours	Max. Marks: 30 Marks
Two experiments one from each section	7+7 marks
Practical record (experiment and activities)	5 marks
One activity from any section	3 marks
Investigatory Project	3 marks
Viva on experiments, activities and project	5 marks
Total	30 marks

SECTION–A Experiment

1. To determine resistivity of two / three wires by plotting a graph for potential difference versus current.
2. To find resistance of a given wire / standard resistor using a metre bridge.
3. 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. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
5. 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.

6.To find the frequency of AC mains with a sonometer.

January

Activities :-

1. To measure the resistance and impedance of an inductor with or without iron core.
2. To measure resistance, voltage (AC/DC), current (AC) and check continuity of a given circuit using multimeter.
3. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.
4. To assemble the components of a given electrical circuit.
5. To study the variation in potential drop with length of a wire for a steady current.
6. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram

SECTION–B Experiments

1. To find the value of v for different values of u in case of a concave mirror and to find the focal length.
2. To find the focal length of a convex mirror, using a convex lens.
3. To find the focal length of a convex lens by plotting graphs between u and v or between 1/u and 1/v.

	4. To find the focal length of a concave lens, using a convex lens. 5. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation. 6. To determine the refractive index of a glass slab using a travelling microscope. 7. To find the refractive index of a liquid using a convex lens and plane mirror. 8. To find the refractive index of a liquid using a concave mirror and a plane mirror. 9. To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias. **Activities**:- 1. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items **2.** Use a multimeter to see the unidirectional flow of current in case of a diode and an LED and check whether a given electronic component (e.g., diode) is in working order. **3.** To study the effect of intensity of light (by varying distance of the source) on an LDR. **4.** To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab. **5.** To observe diffraction of light due to a thin slit. **6.** To study the nature and size of the image formed by a (i) convex lens, or (ii) concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror). **7.** To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses. **Investigatory Projects :-** 1. To study various factors on which the internal resistance/EMF of a cell depends. 2. To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR. 3. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle. 4. To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer. 5. To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids. 6. To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law. 7. To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency. 8. To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.
February	ANNUAL EXAM

Syllabus (UT-I)	**Syllabus (HY)**	**Syllabus (UT-II)**	**Syllabus (AE)**

Unit-1 Electrostatics, Unit-2 Current Electricity, Unit-3 Magnetic Effects of current and Magnetism,	Unit-1 Electrostatics, Unit-2 Current Electricity, Unit-3 Magnetic Effects of current and Magnetism, Unit-4 Electromagnetic Induction and Alternating Current, Unit-5 Electromagnetic Waves, Unit-6 Optics, Unit-7 Dual Nature of radiation and matter.	Unit-7 Dual Nature of radiation and matter, Unit-8 Atoms and nuclei, Unit-9 Electronic Devices	Whole syllabus as per C.B.S.E

SUBJECT: CHEMISTRY (043)

Month	Syllabus	Learning Outcomes

April	**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
		• illustrate examples from daily life to relate the effect of pressure differences on living system.
		• Employ strategies to overcome the atmospheric condition to deal with a situation like scuba diving, boiling at high altitudes etc
		  • Choose a suitable factor to enhance solubility or decrease the same as per the need
		  • Demonstrate the use of concentrated and dilute solutions in daily life
		• Develop insights into the functioning of cells and batteries in everyday life.

June	**Unit III: Electrochemistry** : **cont…..** Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion.	• They will develop an insight to enhance the efficiency of the cells and batteries by choosing an appropriate cathode and anode.
July	**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	• Correlate the structures of haloalkanes and haloarenes with various types of reactions • Use stereochemistry as a tool for understanding the reaction mechanism • highlight the uses and environmental effects of polyhalogen compounds

	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	• use stereochemistry as a tool for understanding the reaction mechanism Students will be able to understand • the use of phenol as an antiseptic in soaps, lotion and ointments and for treating wounds caused by the bite of mad dogs as a disinfectant, fungicide and bactericide. • To name alcohols, phenols and ethers according to the IUPAC system of nomenclature • Describe the reactions involved in the preparation of alcohols phenol and ether • Use of alcohol as a fuel, as an antiseptic in hospitals, as a preservative for biological specimen. • Students will appreciate the use of phenol in manufacture of drugs like Aspirin, Salol, Phenacitin • use of diethyl ether
August	**Unit IV: Chemical Kinetics** Periods 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 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.	• develop insights wrt importance of speed. • create a logical approach to happenings that take place and the cause that actually leads to the same by studying the collision theory and Arrhenius theory. • Differentiate between the decaying of fruits in different conditions (temperature) • They will develop their logical and critical thinking skills after having discussions on various behaviors of d and f block elements. • Sensitivity towards environmental protection and judicial use of transition metal compounds will be developed. • They will be able to apply the knowledge of use of various transition metals in medicine, biological phenomena, storage, comfortable living, industries and agriculture

September	**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.	Students intending to pursue further studies in the field of science will be able to correlate these concepts with and reason effectively about the cause and effect relationship in a variety of metallurgical processes, industrial catalysis and analyses
October	**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 14 Periods Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.	Students come to know about the • structures of the compounds containing functional groups namely carbonyl and carboxyl groups • understand and become aware of important methods of preparation and reactions of these classes of compounds • know physical properties and chemical reactions of aldehydes, ketones and carboxylic acids, with their structures
November	**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.	Method of preparation of amines and their properties, distinguishing tests for primary, secondary and tertiary amines. • Define the biomolecules like carbohydrates, proteins and nucleic acids • classify carbohydrates, proteins, nucleic acids and vitamins on the basis of their structures • • explain the difference between DNA and RNA;
December	**Revision and pre-board**	

Syllabus	Syllabus	Syllabus	Syllabus

(UT-I)	(HY)	(UT-II)	(AE)
UNIT – 2 & 3,	Unit – ,2,3,10,11,4 & 8	Chapter-9,12,13,14	Whole syllabus as per C.B.S.E.

PRACTICALS: 30 marks /3 Hrs

No of period: 60 periods

Evaluation Scheme for Examination	Marks
Volumetric Analysis	08
Salt Analysis	08
Content Based Experiment	06
Project Work	04
Class record and viva	04
Total	**30**

PROJECTS:

INVESTIGATORY PROJECT

Scientific investigations involving laboratory testing and collecting information from other sources A few suggested Projects.

• Study of the presence of oxalate ions in guava fruit at different stages of ripening

. • Study the quantity of casein present in different samples of milk.

• Preparation of soybean milk and its comparison with natural milk with respect to curd formation, the effect of temperature, etc.

• Study of the effect of Potassium Bisulphate as a food preservative under various conditions (temperature, concentration, time, etc.)

• Study of digestion of starch by salivary amylase and effect of pH and temperature on it.

• Comparative study of the rate of fermentation of the following materials: wheat flour, gram flour, potato juice, carrot juice, etc.

• Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).

• Study of common food adulterants in fat, oil, butter, sugar, turmeric power, chilli powder and pepper.

Note: Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

SUBJECT – MATHEMATICS(041)			
BOOK: Mathematics textbook for class XII; by N.C.E.R.T **REFERENCE BOOK:** Mathematics Exemplar problems For Class XII; by N.C.E.R.T.			
Month	**Syllabus**	**Learning Outcomes**	**Practical**
April	Ch 1 Relations and functions	Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions	To verify that the relation R in the set L of all lines in a plane, defined by R={(l,m):l is perpendicular to m} is symmetric but nether reflexive nor transitive. To verify Equivalence Relation. To demonstrate a function which is not one-one but it is onto.
	Ch 2 Inverse trigonometric functions	Definition, range, domain, principal value branch, Graphs of inverse trigonometric functions	To draw the graph of $\text{Sin}^{-1} x$, using the graph of Sin x and demonstrate the concept of mirror reflection (about the line y=x).
	Ch 5 Continuity and differentiability	Introduction, Continuity, Differentiability, Exponential and Logarithmic Functions, Logarithmic Differentiation, Derivatives of Functions in Parametric Forms, Second Order Derivative, Mean Value Theorem.	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.
June	Ch 3 Matrices	Introduction, Matrix, Types of Matrices, Operations on Matrices, Addition and multiplication and Multiplication with a scalar, Simple properties of Addition, Multiplication and Scalar multiplication. Transpose of a Matrix, Symmetric and Skew Symmetric Matrices. Invertible Matrices .Proof of uniqueness of inverse , if it exists	To find the values of sine and cosine functions in second, third and fourth quadrants using their given values in first quadrant.
	Ch 4 Determinants	Determinant of a square matrix (up to 3 x 3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle, Adjoint and inverse of a	Project.

		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.	
July	Ch 6 Application 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)	To verify that amongst all the rectangles of the same perimeter the square has the maximum area.
	Ch 7 Integrals	Introduction, Integration as an Inverse Process of Differentiation, Methods of Integration, Integrals of some particular functions, Integration by Parts, Definite Integral, Fundamental Theorem of Calculus, Evaluation of Definite Integrals by Substitution, Some Properties of Definite Integrals and evaluation of definite Integrals.	Project.
August	Ch 8 Application of Integrals	Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only)	Project.
	Ch 9 Differential Equation	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: $\frac{dy}{dx} + py = q \; and \frac{dx}{dy} + qy = p$.	To construct an open box of maximum volume from a given rectangular sheet by cutting equal squares from each corner.
September	Ch 10 Vector Algebra	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.	To verify geometrically that $\vec{c}$ x ($\vec{a}$ + $\vec{b}$)= $\vec{c}$ x $\vec{a}$ + $\vec{c}$ x $\vec{b}$ To verify that the angle in a semicircle is a right angle, using vector method.
October	Ch 11 Three Dimensional Geometry	Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation	Project

		of a line, skew lines, shortest distance between two lines, Angle between two lines.	
	Ch 12 Linear Programming	Introduction, related terminology such as constraints, objective function, optimization, graphical method of solution for problems in two variables.	….
	Ch 13 Probability	Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean of random variable.	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 ofdice.
December	**Revision & PB – I**		
January	**Revision & PB – II**		
February	**Revision & Annual Examination 2023 – 24**		
March	**Annual Examination 2023 – 24**		

Syllabus	**UT – I**	**HY**	**PB / UT – II**	**AE**
	Ch 1 to 3	Ch 1 to 6	Ch 1 to 14	Ch 1 to 14

SUBJECT – BIOLOGY (044)
Name of the book – BIOLOGY
Publication – NCERT

Month	Syllabus	Learning Outcome
March	Chapter-2: Sexual Reproduction in Flowering	Flower structure; development of male and female gametophytes; pollination – types, agencies and examples; out breeding devices; pollen-pistil interaction; double fertilization; post fertilization events – development of endosperm and embryo, development of seed and formation of fruit; special modes- apomixis, parthenocarpy, polyembryony; Significance of seed dispersal and fruit formation

April	Chapter-3: Human Reproduction Chapter-4: Reproductive Health	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). 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).
May	Chapter 5 Principles of Inheritance and Variations	Heredity and variation: Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; Sex determination – in humans, birds and honey bee; linkage and crossing over; sex linked inheritance – haemophilia, colour blindness; Mendel an disorders in humans – thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.
June	Chapter 5 Continuation	Heredity and variation: Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; Sex determination – in humans, birds and honey bee; linkage and crossing over; sex linked inheritance – haemophilia, colour blindness; Mendelian disorders in humans – thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.
July	**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 projects; DNA fingerprinting.
August	Chapter-7: Evolution Chapter-8: Human Health and Diseases	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. Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common co amoebiasis, ring worm) and their control; Basic concepts of immunology – vaccines; cancer, HIV and AIDS; Adolescence – drug and alcohol abuse
September	Chapter-10: Microbes in Human Welfare Chapter-11 Biotechnology	Microbes in food processing, industrial production, sewage treatment, energy generation and microbes as bio-control agents and bio-fertilizers. Antibiotics; production and judicious use. Biotechnology – Principles and Processes Genetic Engineering (Recombinant DNA Technology).
October	Chapter-12: Biotechnology and its Application Chapter-13: Organisms and Population	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 patent. Population interactions – mutualism, competition, predation, parasitism; population attributes – growth, birth rate and death rate, age distribution.
November	Chapter-14: Ecosystem Chapter-15: Biodiversity and its Conservation	Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy (Topics excluded: Ecological Succession and Nutrient Cycles 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
December	Revisions and pre board	
January	Revisions and pre board	
February	Revision	
March	Examination	

Syllabus (UT-I)	**Syllabus (HY)**	**Syllabus (UT-II)**	**Syllabus (AE)**
Chapter 2,3 & 4,	Chapter 2,3,4,5,6 &7	Chapter 8,10,11 &12	Whole syllabus as per C.B.S.E.

SUBJECT-PHYSICAL EDUCATION

Month	Syllabus	Learning Outcome
April	**Unit I Management of Sporting Events** • Functions of Sports Events Management (Planning, Organising, Staffing, Directing & Controlling) • Various Committees & their Responsibilities (pre; during & post) • Fixtures and its Procedures – Knock-Out (Bye & Seeding) & League (Staircase & Cyclic)	The students will be able to • Organise and manage the sports events • make Various Committees & distribute the Responsibilities • draw the Fixtures and will define its Procedures
May	**Unit II Children & Women in Sports** • Common Postural Deformities – Knock Knee; Bow Legs; Flat Foot; Round Shoulders; Lordosis, Kyphosis, and Scoliosis and their corrective measures	The students will be able to • identify the Common Postural Deformities • understand the Female Athletes Triad
June	**Unit III Yoga as Preventive measure for Lifestyle Disease** • Obesity, Diabetes, Asthma, Hypertension	The students will be able to • Perform yoga Understand the benefits and yoga to be performed for Obesity, Diabetes, Asthma, Hypertension
July	**Unit IV Physical Education & Sports for CWSN (Children with Special Needs – *Divyang*)** • Organizations promoting Disability Sports (Special Olympics; Paralympics; Deaflympics) • Advantages of Physical Activities for children with special • Strategies to make Physical Activities assessable for children with special	The students will be able to • Understand the Organizations promoting **CWSN** • Make Strategies to assessable physical activities for **CWSN**
August	**Unit V Sports & Nutrition** • Concept of balance diet and nutrition • Macro and Micro Nutrients: Food sources & functions • Nutritive & Non-Nutritive Components of Diet	The students will be able to • understand the Concept of balance diet • understand the Macro and Micro Nutrients • difference between nutritive & non-nutritive components of diet

September	**Unit VI Test & Measurement in Sports** • Fitness Test – SAI Khelo India Fitness Test in school	The students will be able to • Do the SAI Khelo India Fitness Test • Understand the components of physical fitness
October	**Unit VII Unit VII Physiology & Injuries in Sports** • Physiological factors determining components of physical fitness • Effect of exercise on Muscular System • Effect of exercise on Cardio-Respiratory System • Sports injuries: Classification (Soft Tissue Injuries - Abrasion, Contusion, Laceration, Incision, Sprain & Strain; Bone & Joint Injuries – Dislocation, Fractures – Green Stick, Comminuted, Transverse Oblique & Impacted)	• Understand the Effect of exercise on Muscular System • Understand the Effect of exercise Cardio-Respiratory System • Understand the Sports injuries and its classifications
November	**Unit VIII Biomechanics & Sports** • Newton's Law of Motion & its application in sports • Equilibrium – Dynamic & Static and Centre of Gravity and its application in sports • Friction & Sports • Projectile in Sports	The students will be able to • Understand the Newton's Law of Motion, Friction, Projectile
December	**Unit IX Psychology & Sports** • Personality; its definition & types (Jung Classification & Big Five Theory) • Meaning, Concept & Types of Aggressions in Sports • Psychological Attributes in Sports – Self Esteem, Mental Imagery, Self Talk, Goal Setting	The students will be able to • understand the Personality and its definition • understand the concept of Psychological Attributes in Sports
January	**Unit X Training in Sports** • Concept of Talent Identification and Talent Development in Sports • Introduction to Sports Training Cycle – Micro, Meso, Macro • Types & Method to Develop – Strength, Endurance and Speed • Types & Method to Develop – Flexibility and Coordinative	The students will be able to • Do the Talent Identification and process of talent development • Understand the Sports Training Cycle • Perform and understand the Method to Developing the Strength, Endurance and Speed Flexibility and Coordinative Ability

	Ability		
February	Exam Preparation	Students will be get ready for exam	
PROJECT WORK (Any one)	**Record File**		
Syllabus (UT-I)	**Syllabus (HY)**	**Syllabus (UT-II)**	**Syllabus (AE)**
Unit I TO Unit III **Practical's - yogic practices**	**Unit IV TO Unit VI** **Practical's - Physical Fitness Test: SAI Khelo India Test**	**Unit VII TO Unit IX III** **Practical's - Proficiency in Games and Sports**	**Unit I TO Unit X** **Practical's - Viva Voce (Health/ Games & Sports/ Yoga**