

Class – XI (Science)(2022-2023)
English

Ist Term **(July - September)**

July	Familiarization with the course and marking scheme Literature Hornbill: Prose: The Portrait of a Lady The Photograph Writing Skills: Article Writing, Posters Reading Skills: Note Making
August	Writing Skills Classified Advertisements Literature Discovering Tut –The Saga Continues The Voice of the Rain Summer of the Beautiful White Horse
September	Literature- The Address Writing Skills- Speech/ Debate Formal Letters -Business Letters -Letter to the authorities Recapitulation of Integrated Grammar and Writing Skills ASSESSMENT OF LISTENING AND SPEAKING (ASL)

2nd Term **(October – February)**

October	Literature- The Tale of Melon City The Browning Version, Father to Son Writing Skills Invitations and Replies,
November	Literature Childhood, Birth Writing Skills : Speech Debate, Advertisements
December	Mother’s Day
January	Revision

Maths(2022-2023)

Ist Term **(July - September)**

July	1. Sequence and Series
August	1. Trigonometry 2. Complex numbers
September	1. Linear Inequalities 2. Permutations & Combinations

2nd Term **(October – February)**

October	1. Binomial Theorem 2. Straight Lines
November	1. Conic sections 2. Introduction to Three Dimensional Geometry

3. Limits and Continuity

December

1. Statistics
2. Probability

January

1. Sets
2. Relations and functions

February

Revision

PHYSICS (2022-2023)

Ist Term

(July - September)

JULY:

KINEMATICS

Integration and differentiation, Scalars and Vectors.

KINEMATICS AND MECHANICS

Description of motion in one, two and three-dimensional motion. Projectile Motion.

AUGUST:

LAWS OF MOTION

Force and inertia, linear momentum, impulse, laws of motion, equilibrium of concurrent forces, friction. Conservation of linear momentum.

CIRCULAR MOTION AND GRAVITATIONAL MOTION

Circular Motion, motion in a horizontal and vertical circle. Banking of roads. Gravitational force, Gravitational intensity, Gravitational potential and kinetic energy, Orbital energy and escape velocity.

SEPTEMBER:

MOTION OF SYSTEM OF PARTICLES AND RIGID BODY

Rotational Motion, centre of mass, moment of inertia, torque, power, angular momentum.

PHYSICAL WORLD & MEASUREMENT

Units and Dimensions, Significant Figures,

2nd Term

(October – February)

OCTOBER:

WORK, POWER, AND ENERGY

Kinetic and potential energy. Law of Conservation of Energy, Elastic, and Inelastic Collisions ~ oblique and inelastic collisions in one and two dimensions.

BEHAVIOUR OF PERFECT GASES AND KINETIC THEORY

Kinetic theory of gases, degrees of freedom, law of equipartition of energy. Avogadro's number.

NOVEMBER:

PROPERTIES OF BULK MATTER

Solids ~ elasticity, Young's, Bulk and Shear Modulus. Fluids ~ Surface Tension, Viscosity, Archimedes Principle, Equation of Continuity, Bernoulli's Theorem. Heat, specific heat and latent heat, thermal conductivity. Conduction, Convection and Radiation. Newton's Law of cooling.

OSCILLATIONS

Simple harmonic motion. Forced, free, damped and damped oscillations. Resonance. Oscillators – Simple pendulum.

DECEMBER:

WAVES

Principle of Superposition, Interference, Progressive and Stationary Waves,

THERMODYNAMICS

Zeroth, First and Second Law of Thermodynamics, cyclic process,

JANUARY: REVISION**Chemistry(2022-2023)****Ist Term****(July - September)**

July	Unit I	Some Basic Concepts of Chemistry The topics in this unit are: General Introduction: Importance and scope of Chemistry. Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry
July / August	Unit II	Structure of Atom The topics in this unit are: Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals
August	Unit III	Classification of Elements and Periodicity in Properties The topics in this unit are: Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.
September	Revision	Half Yearly Examination

2nd Term**(October – February)**

October	Unit IV	Chemical Bonding and Molecular Structure The topics in this unit are: Valence electrons, ionic bond, covalent bond, bond parameters, Lewis's structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homo nuclear diatomic molecules (qualitative idea only), Hydrogen bond
November	Unit XII	Organic Chemistry -Some Basic Principles and Techniques General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.

Unit XIII Hydrocarbons

Classification of Hydrocarbons Aliphatic Hydrocarbons: Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes - Nomenclature, the structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition. Alkynes - Nomenclature, the structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water

Aromatic Hydrocarbons: Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of the functional group in monosubstituted benzene. Carcinogenicity and toxicity.

December **Unit VIII** Redox Reactions

The topics in this unit are:

Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions.

January **Unit VI** Chemical Thermodynamics

The topics in this unit are:

Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics -internal energy and enthalpy, heat capacity and specific heat, measurement of ΔU and ΔH , Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non- spontaneous processes, criteria for equilibrium. Third law of thermodynamics (brief introduction).

Unit VII Equilibrium

The topics in this unit are:

Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples).

Practical (Projects, experiments, small studies, etc.) 30 marks

February Revision
Annual Examination

BIOLOGY**Botany(2022-2023)**

Ist Term**(July - September)**

July

Chapter 1. The living world
What is living; Diversity in the living world; taxonomic categories.

Chapter 2. Biological classification
Five kingdom classification; Kingdom Monera; Kingdom Protista; Kingdom Fungi;
Viruses, viroids and lichens.

August	Chapter 3. Plant Kingdom Classification of plants into major groups; salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnospermae. Chapter 5. Morphology of flowering plants. Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Description of family Solanaceae. Chapter 6. Anatomy of flowering plant. Anatomy and functions of tissue systems in dicots and monocots. Revision.
September	Half Yearly Examination

2nd Term	(October – February)
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October	Chapter 10. Cell cycle and cell division. Cell cycle; mitosis; meiosis and their significance.
November	Chapter 13. Photosynthesis in higher plants. Photosynthesis as a means of autotrophic nutrition; site of photosynthesis; pigments involved in photosynthesis; photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis.
December	Chapter 14. Respiration in plants. Exchange of gases; cellular respiration-glycolysis, fermentation; TCA cycle and electron transport system(aerobic); energy relations- no. of ATP molecules generated; amphibolic pathways; respiratory quotient.
January	Chapter 15. Plant growth and development. Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation; dedifferentiation; redifferentiation; sequence of developmental processes in a plant cell; growth regulators- auxin, gibberellin, cytokinin, ethylene, ABA. Revision.
February	Annual Examination

Zoology(2022-2023)

Ist Term	(July - September)
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July	1. ANIMAL KINGDOM <ul style="list-style-type: none">• Salient features and classification of animals,• non-chordates up to phyla level and chordates up to class level (salient features and a few examples of each category).
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2. STRUCTURAL ORGANISATION IN ANIMALS
(Anatomy & functions of different systems of frog)

- Morphology,
- Anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of frog

August

3. CELL: THE UNIT OF LIFE

- Cell theory and cell as the basic unit of life
- structure of prokaryotic and eukaryotic cells
- Plant cell and animal cell
- cell envelope; cell membrane, cell wall
- cell organelles - structure and function
- endomembrane system
- endoplasmic reticulum
- golgi bodies
- lysosomes
- vacuoles
- mitochondria
- ribosomes
- plastids
- microbodies
- cytoskeleton
- cilia, flagella
- centrioles (ultrastructure and function)
- nucleus

**August /
September**

5. BREATHING AND EXCHANGE OF GASES

- Respiratory organs in animals (recall only)
- Respiratory system in humans
- mechanism of breathing and its regulation in humans
- exchange of gases
- transport of gases
- regulation of respiration respiratory volume
- disorders related to respiration - asthma, emphysema, occupational respiratory disorder

September

REVISION
HALF YEARLY EXAMINATION

2nd Term

(October – February)

October

5 .BODY FLUIDS AND CIRCULATION

- Composition of blood
- blood groups
- coagulation of blood
- composition of lymph and its function
- human circulatory system - Structure of human heart and blood vessels
- cardiac cycle, cardiac output
- ECG; double circulation
- regulation of cardiac activity

- disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure

5. EXCRETORY PRODUCTS AND THEIR ELIMINATION

- Modes of excretion - ammonotelism, ureotelism, uricotelism
- human excretory system – structure and function;
- urine formation
- osmoregulation
- regulation of kidney function - renin - angiotensin, atrial natriuretic factor
- ADH and diabetes insipidus
- role of other organs in excretion
- disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney
- kidney transplant.

November

3. BIOMOLECULES

- Chemical constituents of living cells
- biomolecules, structure and function of proteins carbohydrates, lipids, nucleic acids
- Enzyme - types, properties
- enzyme action.

**November/
December**

5. LOCOMOTION AND MOVEMENT

- Types of movement - ciliary, flagellar, muscular;
- skeletal muscle
- contractile proteins and muscle contraction
- skeletal system and its functions
- joints
- disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.

December

5. NEURAL CONTROL AND COORDINATION

- Neuron and nerves
- Nervous system in humans
- central nervous system;
- peripheral nervous system
- visceral nervous system
- generation and conduction of nerve impulse

January

5. CHEMICAL COORDINATION AND INTEGRATION

- Endocrine glands and hormones
- human endocrine system - hypothalamus
- pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads
- mechanism of hormone action (elementary idea)
- role of hormones as messengers and regulators
- hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goitre, diabetes, Addison's disease.

Revision

February

Annual Examination

July

Unit I: Computer Systems and Organisation

- **Basic Computer Organisation:** Introduction to computer system, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (Bit, Byte, KB, MB, GB, TB, PB)
- **Types of software:** system software (operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler & interpreter), application software
- **Operating system (OS):** functions of operating system, OS user interface
- **Boolean logic:** NOT, AND, OR, NAND, NOR, XOR, truth table, De Morgan's laws and logic circuits
- **Number system:** Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems.
- **Encoding schemes:** ASCII, ISCII and UNICODE (UTF8, UTF32)

August

Unit II: Computational Thinking and Programming - 1

- **Introduction to problem solving:** Steps for problem solving (analysing the problem, developing an algorithm, coding, testing and debugging). Representation of algorithms using flow chart and pseudo code, decomposition
- **Familiarization with the basics of Python programming:** Introduction to Python, features of Python, executing a simple "hello world" program, execution modes: interactive mode and script mode, Python character set, Python tokens (keyword, identifier, literal, operator, punctuator), variables, concept of l-value and r-value, use of comments
- **Knowledge of data types:** number (integer, floating point, complex), boolean, sequence (string, list, tuple), none, mapping (dictionary), mutable and immutable data types
- **Operators:** arithmetic operators, relational operators, logical operators, assignment operator, augmented assignment operators, identity operators (is, is not), membership operators (in, not in)
- **Expressions, statement, type conversion & input/output:** precedence of operators, expression, evaluation of expression, python statement, type conversion (explicit & implicit conversion), accepting data as input from the console and displaying output
- **Errors:** syntax errors, logical errors, runtime errors

September

- **Flow of control:** introduction, use of indentation, sequential flow, conditional and iterative flow control
- **Conditional statements:** if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number
- **Iterative statements:** for loop, range function, while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number etc
- **Revision**

October

- **Strings:** introduction, indexing, string operations (concatenation, repetition, membership & slicing), traversing a string using loops, built-in functions: len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()

November

- **Lists:** introduction, indexing, list operations (concatenation, repetition, membership & slicing), traversing a list using loops, built-in functions: len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs: finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a list

December

- **Tuples:** introduction, indexing, tuple operations (concatenation, repetition, membership & slicing), built-in functions: len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple, suggested programs: finding the minimum, maximum, mean of values stored in a tuple; linear search on a tuple of numbers, counting the frequency of elements in a tuple
- **Dictionary:** introduction, accessing items in a dictionary using keys, mutability of dictionary (adding a new item, modifying an existing item), traversing a dictionary, built-in functions: len(), dict(), keys(), values(), items(), get(), update(), del, clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), count(), sorted(), copy(); suggested programs : count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them
- Introduction to Python modules: Importing module using 'import ' and using from statement, Importing math module (pi, e,sqrt, ceil, floor, pow, fabs, sin, cos, tan);
- random module (random, randint, randrange), statistics module (mean, median, mode)

January

Unit III: Society, Law and Ethics

- Digital Footprints
 - Digital society and Netizen: net etiquettes, communication etiquettes, social media etiquettes
 - Data protection: Intellectual Property Right (copyright, patent, trademark), violation of IPR (plagiarism, copyright infringement, trademark infringement), open source softwares and licensing (Creative Commons, GPL and Apache)
 - Cyber-crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, preventing cyber crime
 - Cyber safety: safely browsing the web, identity protection, confidentiality, cyber trolls and bullying.
 - Safely accessing web sites: malware, viruses, Trojans, adware
 - E-waste management: proper disposal of used electronic gadgets
 - Indian Information Technology Act (IT Act)
 - Technology & Society: Gender and disability issues while teaching and using computers
- *** Detailed Home Assignment & Project Work for 2nd Term

February

Revision

Psychology(2022 – 2023)

Ist Term

(July - September)

July

UNIT 1 : What is Psychology?

The topics in this unit are:

1. Introduction
2. What is Psychology?
 - Psychology as a Discipline
 - Psychology as a Natural Science
 - Psychology as a Social Science
3. Understanding Mind and Behaviour
4. Popular Notions about the Discipline of Psychology
5. Evolution of Psychology
6. Development of Psychology in India
7. Branches of Psychology
8. Psychology and Other Disciplines
9. Psychology in Everyday Life

August

UNIT II : Methods of Enquiry in Psychology

The topics in this unit are:

1. Introduction
2. Goals of Psychological Enquiry
 - Steps in Conducting Scientific Research
 - Alternative Paradigms of Research
3. Nature of Psychological Data
4. Some Important Methods in Psychology
 - Observational Method
 - Experimental Method
 - Correlational Research
 - Survey Research
 - Psychological Testing
 - Case Study
5. Analysis of Data
 - Quantitative Method
 - Qualitative Method
6. Limitations of Psychological Enquiry
7. Ethical Issues

September

UNIT V: Sensory, Attentional and Perceptual Processes

The topics in this unit are:

The topics in this unit are:

1. Introduction
2. Knowing the world
3. Nature and varieties of Stimulus
4. Sense Modalities
 - Functional limitation of sense organs
5. Attentional Processes
 - Selective Attention
 - Sustained Attention
6. Perceptual Processes
 - Processing Approaches in Perception
7. The Perceiver
8. Principles of Perceptual Organisation
9. Perception of Space, Depth and Distance

- Monocular Cues and Binocular Cues 1
10. Perceptual Constancies
 11. Illusions
 12. Socio-Cultural Influences on Perception

2nd Term

(October – February)

October

UNIT VI : Learning

The topics in this unit are:

1. Introduction
2. Nature of Learning
3. Paradigms of Learning
4. Classical Conditioning
 - Determinants of Classical Conditioning
5. Operant/Instrumental Conditioning
 - Determinants of Operant Conditioning
 - Key Learning Processes
6. Observational Learning
7. Cognitive Learning
8. Verbal Learning
9. Skill Learning
10. Factors Facilitating Learning
11. Learning Disabilities

November

UNIT VII: Human Memory

The topics in this unit are:

1. Introduction
2. Nature of memory
3. Information Processing Approach: The Stage Model
4. Memory Systems: Sensory, Short-term and Long term Memories
5. Levels of Processing
6. Types of Long-term Memory
 - Declarative and Procedural; Episodic and Semantic
7. Nature and Causes of Forgetting

December

UNIT VIII : Thinking

The topics in this unit are:

1. Introduction
2. Nature of Thinking
 - Building Blocks of Thought
3. The Processes of Thinking
4. Problem Solving
5. Reasoning
6. Decision-making
7. Nature and Process of Creative Thinking
 - Nature of Creative Thinking
 - Process of Creative Thinking
8. Thought and Language
9. Development of Language and Language Use

January

UNIT IX : Motivation and Emotion

The topics in this unit are:

1. Introduction
2. Nature of Motivation
3. Types of Motives
 - Biological Motives
 - Psychosocial Motives

4. Maslow's Hierarchy of Needs
5. Nature of Emotions
6. Expression of Emotions
 - Culture and Emotional Expression
 - Culture and Emotional Labelling
7. Managing Negative Emotions
8. Enhancing Positive Emotions

Practical (Projects, experiments, small studies, etc.) 30 marks