

Class – XI (Science)(2010-2011)
English

Month	Literature	Language
April	1. Portrait of a Lady 2. A Photograph	1. Listening Comprehension . 2. Factual Description . 3. Modals .
May	1. We are not afraid to die 2. Laburnum Top	1. Note Making
July	1. The Summer of the Beautiful White Horse 2. The Address	1. Determinars . 2. Tenses 3. Voices 4. Formal Letters – Complaint , Order , asking & giving information Letter to the Editor
August	1. Discovering Tut 2. Voice of the Rain 3. Ranga's Marriage	1. Article Writing 2. Clauses.
September	1. The Ailing Planet	1. Report Writing
October	1. Albert Einstein 2. Childhood	1. Invitations and Reply
November	1. The Browning Version 2. The Silk Road	1. Advertisements
December	1. Mother's Day 2. Father to Son	1. Notice
January	1. Birth 2. Tale of the Melon City	1. Poster
February	Revision	

Maths

Ist Term	(April - September)
April & May	1. Sequence and Series
July	1. Trigonometry 2. Principle of Mathematical Induction
August	1. Complex numbers 2. Permutations

3. Combinations

September 1. Linear Equations

2nd Term**(October – February)**

October 1. Binomial Theorem
2. Calculus.

November 1. Statistics .
2. Co-ordinate-Geometry

December 1. Three Dimensional Geometry

January 1. Sets
2. Relations and functions

February 1. Probability
Revision

PHYSICS

<u>MONTH</u>	<u>TOPIC</u>
<u>FIRST TERM</u>	
APRIL:	PHYSICAL WORLD & MEASUREMENT Introduction, Units and Dimensions, Order of Magnitude, Significant Figures, Rounding off figures, Errors.
MAY:	KINEMATICS Integration and differentiation, Scalars and Vectors.
JULY:	KINEMATICS AND MECHANICS: Description of motion in one, two and three-dimensional motion. Projectile Motion.
JULY:	LAWS OF MOTION Force and inertia, linear momentum, impulse, laws of motion, equilibrium of concurrent forces, friction. Conservation of linear momentum. Rocket Propulsion.
JULY:	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.
AUGUST:	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, examples of two-dimensional rotational motion.
<u>SECOND TERM</u>	
OCTOBER:	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.
NOVEMBER:	BEHAVIOUR OF PERFECT GASES AND KINETIC THEORY Kinetic theory of gases, degrees of freedom, law of equipartition of energy. Avogadro's number.
NOVEMBER:	THERMODYNAMICS Zeroth, First and Second Law of Thermodynamics. Carnot Engine.
DECEMBER:	OSCILLATIONS Simple harmonic motion. Forced, free, damped and damped oscillations. Resonance. Oscillators.
JANUARY:	WAVES: Principle of Superposition, Interference, Progressive and Stationary Waves, Doppler Effect, Beats and Acoustics.
FEBRUARY:	REVISION

Chemistry

Ist Term

(April - September)

April

Unit I : Some Basic concepts of chemistry

General Introduction: Importance and scope of chemistry.
Historical approach to particulate 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 and empirical and molecular formula; chemical reactions, stoichiometry and calculations based on stoichiometry.

May

Unit V: States of Matter: Gases and Liquids

Three states of matter, intermolecular interactions, type of bonding, melting and boiling points, role of gas laws in elucidating the concept of the molecule, Boyle's law, Charles' law, Gay Lussac's law, Avogadro's law, ideal behaviour, empirical derivation of gas equation, Avogadro's number, ideal gas equation, deviation from ideal behaviour, liquefaction of gases, critical temperature.
Liquid State – Vapour pressure, viscosity and surface tension (qualitative idea only, no mathematical derivations).

July

Unit II: Structure of Atom

Discovery of electron, proton and neutron; atomic number, isotopes and isobars. Thompson's model and its limitations, Rutherford's model and its limitations, Bohr's model and its imitations, 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 exclusion principle and Hund's rule, electronic configuration of atoms, stability of half filled and completely filled orbitals.

Unit III: Classification of Elements and Periodicity in Properties

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, valence.

Unit IV: Chemical Bonding and Molecular Structure

Valence electrons, ionic bond, covalent bond, bond parameters, Lewis 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 homonuclear diatomic molecules (qualitative idea only), hydrogen bond.

August

Unit VI: Thermodynamics

Concepts of system, 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, and dilution. Introduction of entropy as a state function, free energy change for spontaneous and nonspontaneous process, equilibrium.

September

Unit IX: Hydrogen

Position of hydrogen in periodic table, occurrence, isotopes, preparation, properties and uses of hydrogen; hydrides – ionic, covalent and interstitial; physical and chemical properties of water, heavy water; hydrogen peroxide – preparation, reactions and structure; hydrogen as a fuel.

Unit X: s-Block Elements (Alkali and Alkaline Earth Metals)

Group 1 and Group 2 elements:

General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group, diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen, water, hydrogen and halogens; uses.

Preparation and properties of some important compounds:

Sodium carbonate, sodium chloride, sodium hydroxide and sodium hydrogen carbonate, biological importance of sodium and potassium. CaO, CaCO₃, and industrial use of lime and limestone, biological importance of Mg and Ca.

2nd Term

(October – February)

October

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 XI: Some p-Block Elements

General Introduction to p-Block Elements

Group 13 elements: General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group; Boron – physical and chemical properties, some important compounds: borax, boric acids, boron hydrides. Aluminium: uses, reactions with acids and alkalis.

Group 14 elements: General introduction, electronic configuration,

occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behaviour of first element. Carbon – catenation, allotropic forms, physical and chemical properties; uses of some important compounds: oxides.
Important compounds of silicon and a few uses: silicon tetrachloride, silicones, silicates and zeolites.

November

Unit XIII: Hydrocarbons

Classification of hydrocarbons

Alkanes: Nomenclature, isomerism, conformations (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.

Alkenes: Nomenclature, 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, 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 functional group in mono-substituted benzene; carcinogenicity and toxicity.

December

Unit VII: Equilibrium

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, concept of pH. Hydrolysis of salts (elementary idea), buffer solutions, solubility product, common ion effect (with illustrative examples).

January

Unit VIII: Redox Reactions

Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, applications of redox reactions.
Redox Reactions

February

Unit XIV: Environmental Chemistry

Environmental pollution : Air, water and soil pollution, chemical reactions in atmosphere, smogs, major atmospheric pollutants; acid rain, ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming – pollution due to industrial wastes; green chemistry as an alternative tool for reducing pollution, strategy for control of environmental pollution.

BIOLOGY

Botany

Ist Term

(April - September)

April & May	CHAPTER-1 - The Living World
July	CHAPTER 2 – Biological classification . Kingdom Monera K.Protista , K.Fungi , K.Plantae , Viruses , Viroids and lichens . CHAPTER 3 – The Plant Kingdom – Algae , Bryophyta , Pteridophyta , Gymnosperms , Angiosperms . Plant life cycles & alternation of generations .
August	CHAPTER 5 – Morphology of flowering plants . The root , the stem , the leaf , the inflorescence , the flower , the fruit, the seed .Semi technical description of a typical flowering plant. Description of some important families.
September	CHAPTER 6 – Anatomy of flowering plants – The tissues, & tissue system anatomy of dicot & monocot root , stem & leaf . Secondary growth. CHAPTER 10 – Cell Cycle & Cell division Cell Cycle , M-Phase , Significance of mitosis . Meiosis & its significance.

2nd Term

(October – February)

October	CHAPTER 11 – Transport in Plants Means of transport , plant water relations , long distance transport of water. Transpiration, Uptake & transport of mineral nutrients . Phloem transport flow from source to sink . CHAPTER 12 – Mineral Nutrition Methods to study the mineral requirements of plants. Essential mineral elements.Mechanism of absorption of elements , translocation of solutes. Soil as a reservoir of essential elements. Metabolism of nitrogen.
November	CHAPTER 13 – Photosynthesis in higher plants .Early Experiments , site of photosynthesis , pigments involved in photosynthesis . Light & dark reactions. CH cycle. Photorespiration , factors affecting photosynthesis .

CHAPTER 14 – Respiration in plants.

Do plants breathe ? Glycolysis , fermentation . Aerobic respiration . The respiratory balance sheet. Amphibolic pathway . R-Q .

December	CHAPTER 15 – Plant growth & Development. Growth , differentiation , dedifferentiation and redifferentiation . Development , plant growth regulators , photoperiodism . Vernalisation.
January	Plant growth & development continued
February	Revision

Zoology

Ist Term	(April - September)
April & May	CHAPTER 4 – Animal Kingdom – Basis of classification, Levels of organization , symmetry , Diploblastic and Triploblastic organisms , coelom , segmentation , Notochord , classification of animals , Phylum – Porifera , Coelenterata , Ctenophora , Platyhelminthes , Archelminthes , Annelida , Arthropoda , Mollusca , Echinodermata , Chordata , Class – Pisces , Amphibia , Reptilia , Aves and Mammalia .
July	CHAPTER 7 – STRUCTURAL ORGANISATION IN ANIMALS Animal Tissue – Epithelial tissue , Connective tissue, Muscle tissue , Neural tissue , organ and organ system , Earthworm – Morphology & Anatomy , Cockroach – Morphology and Anatomy , Frog – Morphology and Anatomy.
August	CHAPTER 8 – CELL THE UNIT OF LIFE What is a cell ? Cell theory , Prokaryotic cell , Eukaryotic Cell . Cell membrane , Cell wall , Mitochondria , plastids , Ribosome , Cilia and flagella , Centrosome and Centriole , Nucleus , Microbodies .
September	CHAPTER 9 – BIOMOLECULES – How to analyse chemical Composition ? Primary and Secondary metabolites , Biomacro molecules , Proteins , Polysaccharides , Nucleic acids , structure of proteins , Nature of bond linking monomers and polymers , concepts of metabolism , Metabolic bases for living , Enzymes .

2nd Term	(October – February)
October	<p>CHAPTER 16 – DIGESTION AND ABSORPTION Digestive system , Alimentary canal , Digestion of food , Absorption of digested food , Digestive disorders.</p> <p>CHAPTER 17 – BREATHING AND EXCHANGE OF GASES . Respiratory organs , Mechanism of breathing , Exchange of gases , Transport of gases , Regulation of Respiration, Disorders of respiratory system.</p>
November	<p>CHAPTER 18 – BODY FLUIDS AND CIRCULATION Blood , Lymph , Circulatory pathway , Double circulation , Regulation of cardiac activity , Disorders of Circulatory system .</p> <p>CHAPTER 19 – EXCRETORY PRODUCTS AND THEIR ELEMINATION – Human excretory system , Urine formation , Functions of tubules , Concentration of filtrate , Regulation of kidney function , Micturition , Role of other organs in excretion , Disorders of excretory system.</p>
December	<p>CHAPTER 20 – LOCOMOTION AND MOVEMENT Types of movements , Muscle , Skeletal system , joints , Disorders of muscular and skeletal system.</p> <p>CHAPTER 21 – NEURAL CONTROL AND COORDINATION . Human neural system , Neuron , Central Neural System , Reflex action and Reflex arc , sensory reception and processing.</p>
January	<p>CHAPTER 22 – CHEMICAL COORDINATION & INTEGRATION Endocrine glands and Hormones , Human Endocrine System , Hormones of heart , Kidney & gastro intestinal tract , Mechanism of Hormone action.</p>
February	Revision

Computer Science

1st Term

(April-September)

April-May UNIT – 1 : COMPUTER FUNDAMENTALS

Evolution of computers; Basics of computer and its operation: Functional Components and their inter- connections, concept of Booting,

Software concepts :

Types of software - System Software, Utility Software and Application Software;
System Software : Operating System, Compilers, Interpreters and Assembler;

Utility Software : Anti Virus , File Management tools , Compression tools and Disk Management tools

(Disk Cleanup , Disk Defragmenter , Backup) ;

Application Software as a tool : Word Processor , Presentation tools , Spreadsheet Package , Database Management System , Business software (for example : School Management System , Inventory Management System , Payroll System , Financial Accounting , Hotel Management and Reservation System) ;

Operating System: Need for operating system ,Functions of Operating System(Processor Management ,Memory Management ,File Management and Device Management),Types of operating system-Interactive(GUI based),Time sharing ,Real Time and Distributed;

Commonly used operating systems : LINUX , Windows , BhartiOO , Solaris , UNIX;

Illustration and practice of the following tasks using any one of the above Operating Systems :

- Opening / Closing Windows
- Creating / Moving / Deleting Files / Folders
- Renaming Files / Folders
- Switching between Tasks

Number system: Binary, Octal, Decimal and Hexadecimal. and conversion between two different number systems ;

Internal Storage encoding of Characters : ASCII ,ISCII (Indian scripts Standard Code for Information Interchange) , and UNICODE;

Microprocessor: Basic concepts, Clock speed (MHz, GHz),16 bit , 32 bit , 64 bit processors ; Types –CISC , RISC ;;

Memory Concepts :

Units : Byte , Kilo Byte , Mega Byte , Giga Byte , Tera Byte , Peta Byte

Primary Memory : Cache , RAM , ROM ,

Secondary Memory : Hard Disk Drive , CD / DVD Drive , Pen Drive , Blue Ray Disk ;

Input Output Ports / Connections : Serial , Parallel and Universal Serial Bus , PS-2 Port , Infrared port , Bluetooth .

Detailed Home Assignment On the taught topics

July

UNIT – 2 : PROGRAMMING METHODOLOGY

General Concepts; Modular approach; Clarity and Simplicity of Expressions, Use of proper Names for identifiers, Comments, Indentation; Documentation and Program Maintenance; Running and Debugging programs, Syntax Errors, Run-Time Errors ,Logical Errors; Problem Solving Methodology and Techniques; Understanding of the problem , Identifying minimum number of inputs required for output ,Step by Step solution for the problem , breaking down solution into simple steps, Identification of arithmetic and logical operations required for solution ,Using Control Structure :Conditional control and looping (finite and infinite);

UNIT – 3 : Introduction To Programming In C++

Programming By Example In C++ Language:

Getting Started :

C++ character set, C++ Tokens (Identifiers, Keywords, Constants and Operators), Structure of C++ Program (includes files , main ()function) ;Header files-iostream.h , iomanip.h ; **cout, cin** ; use of I/O operators (<< and >>) , Use of setw () and endl , Cascading of I/O operators , Error messages; Use of editor, basic commands of editor ,compilation ,linking and execution;standard input/output operations from C language:gets(),puts() of **stdio.h** header file.

Data Types ,Variables And Constants:

Concept of data types: Built in data types: void, char, int, float and double. Constants: Integer constants ,Character constants (Backslash character constants or escape

sequences, \n , \t), Floating Point Constants, String Constants. Access modifier:const;Variables of built-in data types, Declaring / Initialisation of variables. Assignment statement ; Type modifier;signed, unsigned, long ;

August

Operators And Expressions

Operators: Arithmetic operators (-,+,*,/,%), Unary operator:minus (-), Increment and Decrement operators (-- ,++), Relational operators (>,>=,<,<=,=,!=), Logical operators (&&,||,!),Conditional operator:<condition>? <if true>:<else>;Precedence of Operators; Expressions;

Automatic type conversion in expressions, Type casting;;C++ shorthands (+=,- =,+ =,/ =,% =) ;

September

UNIT – 4 PROGRAMMING IN C++

Flow Of Control:

Conditional statements: if-else, Nested if,switch....case....default, Nested switch....case, break statement (to be used in switch....case only); Loops: while, do-while, for and Nested loops ;

Character Functions :

Header File : ctype.h

Function : isalnum() , isalpha() , isdigit() , islower() , isupper() , tolower() , toupper() ;

String Functions :

Header File : string.h

Function : strcpy() , strcat() , strlen() , strcmp() , strcmpi() ;

Mathematical Functions:

Header File : math.h , stdlib.h ;

Functions : fabs() , log() , log(10) , pow() , sqrt() , sin() , cos() , abs() ,

Other Functions :

Header File – stdlib.h

Functions : randomize() , random() ;

2nd Term

(October–February)

October

User Defined Functions

Defining a function ;function prototype ,Invoking /calling a function, passing arguments to function, specifying argument data type, default argument,constant argument, call by value and call by reference, returning values from a function ,calling functions with arrays ,scope rules of functions and variables ;local and global variables ; Recursive function.

November

Structured Data Type: Array

Declaration /Initialization of One dimensional Array ,Inputting array elements, Accessing array elements, Manipulation of Array elements (sum of elements, product of elements ,average of elements ,linear search, finding maximum /minimum value); Declaration /Initialization of a String, string manipulations (counting Vowels / consonants/digits/special characters, case conversion, reversing a string, reversing each word of a string);

Two Dimensional Array :Declaration /Initialization of a two dimensional array ,inputting array elements Accessing array elements, Manipulation of Array elements (sum of row elements ,column elements, diagonal elements, finding maximum and minimum values patterns);

December

User Defined Data Types

Need for User defined data type :

Defining a symbol name using typedef keyword and defining a macro using #define directive ;

January

Structures :

Defining a structure , Declaring structure variables , Accessing structure elements , Passing structure of Functions as value and reference argument / parameter , Function returning structure , Array of structures , passing an array of structure as an argument / a parameter to a function .

February **Revision**

Home Science

Ist Term

(April - September)

April & May	Concept of Home Science & its scope. Know Myself-Understanding Adolescents,Cognitive,Social and emotional Development .
July	Heredity & Environment. Problems of Adolescents.
August	Preparing for Career. Population Edn. Nutrition for self & family. Role of Nutrients.
September	Food Groups . Balanced Diet. Selection & Storage of food. Principles , Reasons and Methods of Cooking food. Food Preservation Deficiency Diseases.

2nd Term

(October – February)

October	My Resources – Community Resources & their Conservation . Mgt Process , Decision Making , Mgt of Time & Energy
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November	Organisation of space & work at Home . Work Ethics .
December	My Apparel – An Introduction to Fibre Science . Yarn making and fabric construction. Weaves.
January	Fabric Finishes Basic & Novelty finishes.
February	Revision & Annual Practical Exams.

Economics

April	I	Statistics in economic analysis.
May	II	Functions , Importance & distrust of Statistics .
July	III IV V	Types of Data . Census and sampling . Organisation of Data
August	VI VII VIII IX	Tabulation . Diagrammatic Presentation . Graphic presentation . Mean .
September	X	Median and Mode Measure of Dispersion .
October	XI	Correlation
November	XII	Index Numbers .
December	XIII	Project Work .
January & February		Revision