AVB ADARSH VIDYA BHAWAN

SYLLABUS

CLASS - XII

SESSION

2025-2026

ENGLISH CORE (301)

Time - 3HRS.	M.M. - 80
THEORY 80 MARKS	
TYPOLOGY	**MARKS**
Reading Skills	22
Writing Skills	18
Literature	40
Total	**80**
PRACTICAL – 20 MARKS	
Assessment of Speaking and Listening Skills	10 (5+5)
Project Work	10
Total	**100**

APRIL - MAY

Flamingo - The Last Lesson, Lost Spring, Deep Water
Poetry - My Mother At Sixty - six, Keeping Quiet
Vistas - The Third Level, The Tiger King
Writing - Notice, Letter to the Editor, Invitation and Reply

JULY

Flamingo - The Rattrap, Indigo, The Interview(Part-I,II)
Poetry - A Thing of Beauty, Aunt Jennifer's Tigers
Vistas - Journey to the End of the Earth, The Enemy
Writing - Job Application, Article Writing

AUGUST

Flamingo - The Interview
Poetry - Aunt Jennifer's Tigers
Vistas - The Enemy

SEPTEMBER

Flamingo - Poets and Pancakes

Poetry - A Roadside Stand
Vistas - On the Face of It
Writing - Job Application, Report Writing

OCTOBER - NOVEMBER

Flamingo - Going Places
Poetry - Aunt Jennifer's Tigers
Vistas - Memories of Childhood

- The Cutting of My Long Hair
- We Too are Human Beings

Writing - Invitation and Reply

DECEMBER - JANUARY

Revision of the syllabus and Practical

PERIODIC TEST 1 (MAY)

Flamingo - The Last Lesson, Lost Spring
Poetry - My Mother At Sixty - six
Vistas - The Third Level
Writing - Notice

Reading - Unseen Comprehension

MID TERM EXAMINATION (AUGUST)

Flamingo - The Last Lesson, Lost Spring, Deep Water, The Rattrap, Indigo, The Interview(Part-I,II)
Poetry - My Mother At Sixty - six, Keeping Quiet, A Thing of Beauty, Aunt Jennifer's Tigers
Vistas - The Third Level, The Tiger King, Journey to the End of the Earth, The Enemy
Writing - Notice, Letter to the Editor, Invitation and Reply, Job Application, Article Writing, Report Writing

Reading - Unseen Comprehension

PRE - BOARD I (NOVEMBER)

ENTIRE SYLLABUS AS PER CBSE GUIDELINES

PRE - BOARD II (DECEMBER)

ENTIRE SYLLABUS AS PER CBSE GUIDELINES

PHYSICS (042)

Unit	Unit's detail (name of chapter)	Marks
Unit–I	**Electrostatics**	16
	Chapter–1: Electric Charges and Fields	
	Chapter–2: Electrostatic Potential and Capacitance	
Unit-II	**Current Electricity**	
	Chapter–3: Current Electricity	
Unit-III	**Magnetic Effects of Current and Magnetism**	17
	Chapter–4: Moving Charges and Magnetism	
	Chapter–5: Magnetism and Matter	
Unit-IV	**Electromagnetic Induction and Alternating Currents**	
	Chapter–6: Electromagnetic Induction	
	Chapter–7: Alternating Current	
Unit–V	**Electromagnetic Waves**	18
	Chapter–8: Electromagnetic Waves	
Unit–VI	**Optics**	
	Chapter–9: Ray Optics and Optical Instruments	
	Chapter–10: Wave Optics	
Unit–VII	**Dual Nature of Radiation and Matter**	12
	Chapter–11: Dual Nature of Radiation and Matter	
Unit-VIII	**Atoms and Nuclei**	
	Chapter–12: Atoms	
	Chapter–13: Nuclei	
Unit–IX	**Electronic Devices**	7
	Chapter–14: Semiconductor Electronics: Materials, Devices and Simple Circuits	
Total		70

APRIL & MAY

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, 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)

JULY

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), 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.

AUGUST

Unit IV:

Electromagnetic Induction and Alternating Currents

Chapter–6: Electromagnetic Induction

Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction.

Chapter–7: Alternating Current

Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LCR series circuit (phasors only), resonance, power in AC circuits, power factor, wattless current. AC generator, Transformer.

Unit V: Electromagnetic waves

Chapter–8: Electromagnetic Waves

Basic idea of displacement current, Electromagnetic waves, their characteristics, their transverse nature (qualitative idea only).

Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

SEPTEMBER

Unit VI: 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.

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).

OCTOBER

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.

NOVEMBER

Unit VIII: Atoms and Nuclei

Chapter–12: Atoms

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model of hydrogen atom, Expression for radius of nth possible orbit, velocity and energy of electron in his orbit, of hydrogen line spectra (qualitative treatment only).

Chapter–13: Nuclei

Composition and size of nucleus, nuclear force

Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.

Unit IX: Electronic Devices

Chapter–14: Semiconductor Electronics: Materials, Devices and Simple Circuits

Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Intrinsic and extrinsic semiconductors- p and n type, p-n junction

Semiconductor diode - I-V characteristics in forward and reverse bias, application of junction diode -diode as a rectifier.

Periodic Test -1(MaY)

Unit I **Electric Charges and Fields**
Electrostatic Potential and Capacitance

Mid Term Examination (August)

Unit I **Electric Charges and Fields**

Electrostatic Potential and Capacitance

Unit II **Current Electricity**

Unit III **Magnetic Effects of current and Magnetism**

Unit IV **Electromagnetic Induction and Alternating Current**

Unit V **Electromagnetic Waves**

Pre Board Examination-1(November- 2025)

Complete syllabus in both preboards
including NCERT TEXT EXERCISE & EXEMPLAR PROBLEMS'

Pre Board Examination-2(December- 2025)

Complete syllabus in both preboards
including NCERT TEXT EXERCISE & EXEMPLAR PROBLEMS'

List of Practical for academic session 2025-2026

General Instructions:

***Every one has to perform 8 practical from the both sections A and B (with minimum of 4 from one section)**

***A record of at least 6 activities to be prepared by all the students.**
(Activities will be demonstrated in extra classes)

***** Report of one investigatory project to be completed by every individual during the academic session.**

PRACTICAL SECTION –A

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 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.

PRACTICAL SECTION –B

1. To find the focal length of a convex mirror, using a convex lens.
2. To find the focal length of a concave lens, using a convex lens
3. To find the focal length of convex lens by plotting graph between u and v or 1/u and 1/v.
4. To determine angle of minimum deviation for a given prism by plotting graph between the angle of incidence and angle of deviation,

Activities (SECTION–A & B)

1. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.
2. To assemble the components of a given electrical circuit.
3. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items.
4. To study effect of intensity of light (by varying distance of the source) on an LDR.
5. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
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).

CHEMISTRY (043)

Theory: 70 Marks **TIME ALLOWED: 3 Hours**
Practical: 30 Marks

	UNITS	MARKS
PART A	**CHEMISTRY BOOK 1**	
Unit 1	Solutions	7
Unit 2	Electrochemistry	9
Unit 3	Chemical Kinetics	7
Unit 4	d- and –f Block Elements	7
Unit 5	Coordination Compounds	7
PART B	**CHEMISTRY BOOK 2**	
Unit 6	Haloalkanes and Haloarenes	6
Unit 7	Alcohols, Phenols and Ethers	6
Unit 8	Aldehydes, Ketones and Carboxylic acids	8
Unit 9	Amines	6
Unit 10	Biomolecules	7
	Theory (Part A + Part B)	70
PART C	**Practical Work**	30
	Total	100

PRACTICAL EVALUATION SCHEME	**MARKS**
Volumetric Analysis	08
Salt analysis	08
Content based experiment	06
Project work	04
Class record and viva	04
Total marks	30

APRIL - MAY

Unit 1: Solutions - 1.Solutions, Types of solutions, Concentration terms, Solubility of gases in liquids (Henry's law),

2. Raoult's law

3.Colligative properties- Relative lowering of vapour pressure , Elevation in boiling point, Depression in freezing point,

Osmotic pressure. Determination of molecular masses using colligative properties.

4. van't hoff factor

Unit 2: Electrochemistry- 1. Redox reactions, EMF of a cell, standard electrode potential

2. Nernst equation and its application to chemical cells

3. Relation between Gibbs energy change and EMF of a cell

4. Conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration

5. Kohlrausch's Law

6. Electrolysis and law of electrolysis(elementary idea)

7. Dry cell-electrolytic cells and Galvanic cells

8. Lead accumulator

9. fuel cells

10. Corrosion

JULY

Unit 3: Chemical kinetics- 1. Rate of a reaction(Average and instantaneous)

2. Factors affecting rate of reaction: concentration, temperature, catalyst;

3. Order and molecularity of a reaction

4. Rate law and specific rate constant

5. Integrated rate equations and half life (zero order and first order)

6. Concept of collision theory

7. Activation energy

8. Arrhenius equation.

Unit 4: d- and f Block elements-

1.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, color, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$.

2.Lathanoids – electronic configuration, oxidation states, Chemical reactivity and lanthanoid contraction and its consequences.

3. Actinoids –Electronic configuration, oxidation states and comparison with lanthanoids

August- September

Unit 5: Coordination Compounds

1.Introduction of coordination compounds, ligands, coordination number, color, magnetic properties and shapes.

2. IUPAC nomenclature of mononuclear coordination compounds.
3. Bonding

4. Werner's theory, VBT and CFT; structure and stereoisomerism

5. The importance of coordination compounds (in qualitative analysis, extraction of metals and biological system).

Unit 6: Haloalkanes and Haloarenes – 1. Haloalkanes : Nomenclature, nature of C-X bond, physical and chemical properties, optical rotation mechanism of substitution reactions.

2. Haloarenes : Nature of C-X bond, substitution reactions, Uses and environmental effects of – dichloromethane, Trichloro methane ,tetrachloromethane, iodoform, freons,DDT.

Unit 7: Alcohols, Phenols, Ethers- 1. 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.

2. Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reaction

October- November

Unit 8: Aldehydes, ketones and carboxylic Acids- 1.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.

2. Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

Unit 9: Amines- 1.Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, use, identification of primary, secondary and tertiary amine. Diazonium salts: Prepartion, chemical reactions and importance in synthetic organic chemistry.

Unit 10: Biomolecules- 1. Carbohydrates: Classification (aldoses and ketoses) monosaccharides (Glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen) Importance of carbohydrates.

2.Proteins-Elementary idea of : amino acids, peptide bond, polypeptide, proteins, structure of proteins- primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones – Elementary idea excluding structure.

3.Vitamins: Classification and function

4.Nucleic acid: DNA and RNA.

DECEMBER

- **SAMPLE PAPERS FOR CHAPTERS OF BOOK1 AND BOOK2**
- **REVISION FOR TERM1 & TERM2**

JANUARY

- **COMPLETION OF PRACTICAL WORK AND REVISION FOR TERM 2**

PRACTICAL SYLLABUS

PRACTICAL	MONTHS
1. PREPARATION OF STANDARD SOLUTION OF OXALIC ACID	APRIL
2. TITRATION OF $KMnO_4$ VS OXALIC ACID	APRIL
3. PREPARATION OF STANDARD SOLUTION OF MOHR'S SALT	APRIL
4. TITRATION OF $KMnO_4$ VS MOHR'S SALT	APRIL
5. SALT ANALYSIS	MAY
6. SALT ANALYSIS	MAY
7. SALT ANALYSIS	JULY
8. SALT ANALYSIS	JULY
9. DETECTION OF FUNCTIONAL GROUPS	AUGUST
10. PREPARATION OF INORGANIC COMPOUNDS (ALUM)	SEPTEMBER
11. REVISION OF ALL PRACTICALS	SEPTEMBER-OCTOBER
12. MOCK PRACTICALS + DOUBTS	NOVEMBER-DECEMEBER

ASSESSMENTS

PERIODIC TEST 1(MAY)

UNIT 1: SOLUTIONS

UNIT 2: ELECTROCHEMISTRY

MID TERM EXAMINATION (A U G U S T)

UNIT1: SOLUTIONS

UNIT 2: ELECTROCHEMISTRY

UNIT 3: CHEMICAL KINETICS

UNIT 4: d and f BLOCK ELEMENTS

UNIT 5: COORDINATION COMPOUNDS

UNIT 6: HALOALKANES AND HALOARENES.

PRACTICAL ASSESSMENT:

Titration + salt analysis

PREBOARD 1(N O V E M B E R)

COMPLETE SYLLABUS AS PER CBSE GUIDELINES

PREBOARD 2(DECEMBER)

COMPLETE SYLLABUS AS PER CBSE GUIDELINES

MATHEMATICS (041)

THEORY - 80 **TIME: 3 HOURS**
PRACTICAL - 20

EVALUTION SCHEME

UNITS	UNIT NAME	MARKS
I	RELATIONS AND FUNCTIONS	08
II	ALGEBRA	10
III	CALCULUS	35
IV	VECTORS AND THREE-DIMENSIONAL GEOMETRY	14
V	LINEAR PROGRAMMING	05
VI	PROBABILITY	08
	INTERNAL ASSESSMENT	20
	TOTAL	100

APRIL – MAY

Unit I: Relations and Functions

Relations and Functions: Types of relations: reflexive, symmetric, transitive, and equivalence relations. One to one and onto functions.

Inverse Trigonometric Functions: Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions.

Unit II: Algebra

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 andmultiplication and multiplication with a scalar. Simple properties of addition, multiplication, and scalar multiplication. Oncommutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrices (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

Determinants: Determinants 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 square matrix. Consistency, inconsistency, and the number of solutions of the system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using the inverse of a matrix.

JULY

Unit III: Calculus

Continuity and Differentiability: Continuity and differentiability, chain rule, the 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 is the derivative of functions expressed in parametric forms. Second-order derivatives.

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).

AUGUST

Integrals: Integration is an 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 problems 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.

Applications of the Integrals: Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only)

SEPTEMBER

Differential Equations: Definition, order, and degree, general and particular solutions of a differential equation. Solution of differential equations by the method of separation of variables, solutions of homogeneous differential equations of the first order and first degree. Solutions of linear differential equation of the type:

dy/dx + py = q, where p and q are functions of x

or constants. dx/dy + px = q, where p and q are

functions of y or constants. **Unit IV: Vectors and**

Three-Dimensional Geometry

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, the 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.

OCTOBER- NOVEMBER

Three-dimensional Geometry: Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, skew lines, the shortest distance between two lines. The angle between two lines.

Unit V: Linear Programming

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).

Unit VI: Probability

Probability: Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable, and its probability distribution, mean of the random variable.

DECEMBER - JANUARY

REVISION OF THE SYLLABUS AND PRACTICAL.

ASSESSMENT:

PERIODIC TEST 1(MAY):

CHAPTER 1: RELATION AND

FUNCTION CHAPTER 3: MATRICES

CHAPTER 4: DETERMINANT

MID TERM

EXAMINATION(AUGUST):

CHAPTER 1: RELATION AND FUNCTION CHAPTER 2: INVERSE TRIGNOMETRIC FUNCTION CHAPTER 3: MATRICES

CHAPTER 4: DETERMINANT

CHAPTER 5: CONTINUITY AND DIFFERENTIABILITY CHAPTER 6: APPLICATION OF DERIVATIVE

PREBOARD- I(NOVEMBER):

COMPLETE SYLLABUS AS PER CBSE

PREBOARD- II

COMPLETE SYLLABUS AS PER CBSE

INTERNAL ASSESSMENT	20 MARKS
Periodic Tests (Best 2 out of 3 tests conducted)	10 Marks
Mathematics Activities	10 Marks

Note: For activities NCERT Lab Manual may be referred.

PRACTICALS:

Activity 1: To verify that the relation R in the set L of all lines in a plane, defined by R = {(l, m): l ⊥ m} is symmetric but neither reflexive nor transitive

Activity 2: To demonstrate a function which is one-one but is onto.

Activity 3: To sketch the graph of a^x and $\log_a x$,a>0, a≠0 and to examine that they are mirror images of each other.

Activity 4: To find analytically the limit of the function f(x)at x=c and also to check the continuity of the function at that point.

Activity 5: To construct an open box of maximum volume from a given rectangular sheet by cutting equal squares from each corner

Activity6: To understand the concepts of decreasing and increasing functions.

Activity7: To understand the concept of absolute maximum and minimum values of a function in a given closed interval through its graph.

Activity 8: To verify that amongst all the rectangles of the same perimeter, the squares has the maximum area.

Activity 9: To verify that angles in a semi -circle is a right angle, using vector method

Activity 10: To explain the computation of conditional probability of a given event A, when event B has already occurred, through an example of throwing a pair of dice.

The weightage is as under:

- **The activities performed by the student throughout the year and record keeping: 5 marks**
- **Assessment of the activity performed during the year end test: 3 marks**
- **Viva-voce: 2 marks**

COMPUTER SCIENCE (083)

Learning Outcomes

Student should be able to

a) apply the concept of function.

b) explain and use the concept of file handling.

c) use basic data structure: Stacks

d) explain basics of computer networks.

e) use Database concepts, SQL along with connectivity between Python and SQL.

Distribution of Marks:

THEORY (70 MARKS)

Unit No.	Unit Name	Marks
I	Computational Thinking and Programming	40
II	Computer Networks	10
III	Database Management	20

PRACTICAL (30 MARKS)

S.No	Unit Name	Marks (Total=30)
1	Lab Test: 1. Python program (60% logic + 20% documentation + 20% code quality)	8
	2. SQL queries (4 queries based on one or two tables)	4
2	Report file: • Minimum 15 Python programs. • SQL Queries – Minimum 5 sets using one table / two tables. • Minimum 4 programs based on Python - SQL connectivity	7
3	Project (using concepts learnt in Classes 11 and 12)	8
4	Viva voce	3

APRIL -MAY

Chapter-1 Python Revision Tour

Introduction , tokens , variables, keywords, mutable and immutable datatypes, Operators & Operands

Chapter-2 Python Revision Tour-II

Strings operations ,List operations and List slicing , built in List functions and methods , Tuples and tuples built in functions , dictionary

Chapter- 10 Relational Databases

● Database concepts: introduction to database concepts and its need

Chapter-11 Simple Queries in SQL

● Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)

● Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables,

Chapter -12 Table Creation and Data Manipulation Commands

create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command, aggregate functions (max, min, avg, sum, count)

Chapter 13 Grouping Records , Joins In SQL

group by, having clause, joins: cartesian product on two tables, equi-join and natural join

Chapter-14 Interface Python with MYSQL

● Interface of python with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using connect(), cursor(), execute(), commit(), fetchone(), fetchall(), rowcount, creating database connectivity applications, use of %s format specifier or format() to perform queries

JULY

Chapter-3 Working with Functions

Functions: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope)

Chapter 5 File Handling

Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file

Binary file: basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab, ab+), close a binary file, import pickle module, dump() and load() method, read, write/create, search, append and update operations in a binary file

CSV file:import csv module, open / close csv file, write into a csv file using writer(),writerow(),writerows() and read from a csv file using reader()

AUGUST -SEPTEMBER

Chapter 4 Using Python Libraries

Library , Module ,Packages

Chapter-6 Exception Handling

Exception Handling: Introduction, handling exceptions using try-except-finally blocks

OCTOBER -NOVEMBER

Chapter-7 Data Structures

Data Structure: Stack, operations on stack (push & pop), implementation of stack using list.

Chapter 8 – Computer Networks-1

● Evolution of networking: introduction to computer networks, evolution of networking(ARPANET, NSFNET, INTERNET)

● Data communication terminologies: concept of communication, components of data communication (sender,receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching)

Chapter 9 – Computer Networks-II

● Transmission media: Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves)

● Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card)

● Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree)

● Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP

● Introduction to web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting

DECEMBER-JANUARY

Revision & Completion of Project Work

Suggested Practical List:

Python Programming

● Read a text file line by line and display each word separated by a #.

● Read a text file and display the number of vowels/consonants/uppercase/lowercase characters in the file.

● Remove all the lines that contain the character 'a' in a file and write it to another file.

● Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.

● Create a binary file with roll number, name and marks. Input a roll number and update the marks.

● Write a random number generator that generates random numbers between 1 and 6 (simulates a dice). ● Write a Python program to implement a stack using list.

● Create a CSV file by entering user-id and password, read and search the password for given userid.

Database Management

● Create a student table and insert data. Implement the following SQL commands on thestudent table:

a. ALTER table to add new attributes / modify data type / drop attribute
b. UPDATE table to modify data
c. ORDER By to display data in ascending / descending order
d. DELETE to remove tuple(s) , GROUP BY and find the min, max, sum, count and average

- Similar exercise may be framed for other cases.
- Integrate SQL with Python by importing suitable module.

PERIODIC TEST -1 (MAY)

Chapter-1 Review of Python Basics-1
Chapter-2 Review of Python Basic-2
Chapter- 10 Relational Databases
Chapter-11 Simple Queries in SQL

MID TERM EXAMINATION (AUGUST)

Chapter-1 Review of Python Basics-1

Chapter-2 Review of Python Basic-2

Chapter-3 Working with Functions

Chapter 5 File Handling

Chapter- 10 Relational Databases

Chapter-11 Simple Queries in SQL
Chapter -12 Table Creation and Data Manipulation Commands
Chapter 13 Grouping Records , Joins In SQL
Chapter-14 Interface Python with MYSQL

PREBOARD EXAMINATION -1(NOVEMBER)

Complete syllabus as per CBSE guidelines

PREBOARD EXAMINATION -2(DECEMBER)

Complete syllabus as per CBSE guidelines

PHYSICAL EDUCATION (048)

THEORY-70 **DURATION = 3HOURS**

PRACTICAL-30

APRIL-MAY

UNIT 1 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 2 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.

Unit 4 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.

Unit 5 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

JULY-AUGUST

Unit 8 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 10 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

Unit 3 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,Bh ujangasana, Shalabhasana, Dhanurasana, Supta vajarasana, Paschimottanasan-a, Ardha Mastendrasana, Mandukasana, Gomukasana, Yogmudra, Ushtrasana, Kapalabhati.

3. Asthma: Procedure, Benefits & Contraindications for Tadasana, Urdhwahastottansan a, 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, Urdhawahastootansa na, Ardh Chakrasana, Ushtrasana, Vakrasana, Sarala Maysyendrsana, Bhujandgasana, Gomukhasana, Bhadrasana, Makarasana, Nadi Shodhana pranayama.

SEPTEMBER-OCTOBER

Unit 6 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

Unit 7 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 9 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

NOVEMBER

Revision of complete syllabus

Practical **Max. Marks: 30**

- Physical Fitness Test: SAI Khelo India Test, Brockport Physical Fitness Test (BPFT)* 6 Marks
- Proficiency in Games and Sports (Skill of any one IOA recognized Sport/Game of Choice)** 7 Marks
- Yogic Practices 7 Marks
- Record File *** 5 Marks
- Viva Voce (Health/ Games & Sports/ Yoga) 5 Marks

➢ *Test for CWSN (any 4 items out of 27 items. One item from each component: Aerobic Function, Body Composition, Muscular strength & Endurance, Range of Motion or Flexibility)

➢ **CWSN (Children With Special Needs – Divyang): Bocce/Boccia , Sitting Volleyball, Wheel Chair Basketball, Unified Badminton, Unified Basketball, Unified Football, Blind Cricket, Goalball, Floorball, Wheel Chair Races and Throws, or any other Sport/Game of choice.

➢ **Children with Special Needs can also opt any one Sport/Game from the list as alternative to Yogic Practices. However, the Sport/Game must be different from Test - 'Proficiency in Games and Sports'

***Record File shall include:

➢ Practical-1: Fitness tests administration. (SAI Khelo India Test)

➢ Practical-2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.

➢ Practical-3: Anyone one IOA recognized Sport/Game of choice. Labelled, diagram of Field & Equipment. Also, mention its Rules, Terminologies & Skills.

ASSESSMENTS

PERIODIC TEST-I (MAY)

UNIT 1 Management of Sporting Events

Unit 2 Children & Women in Sports

Unit 4 Physical Education and Sports for CWSN (Children with Special Needs - Divyang)

Unit 5 Sports & Nutrition

MID TERM EXAMINATION (AUGUST)

UNIT 1 Management of Sporting Events

Unit 2 Children & Women in Sports

Unit 4 Physical Education and Sports for CWSN (Children with Special Needs - Divyang)

Unit 5 Sports & Nutrition

Unit 8 Biomechanics and Sports

Unit 10 Training in Sports

PRACTICAL WORK

PRE-BOARD 1 (NOVEMBER)

COMPLETE SYLLABUS AS PER CBSE GUIDELINES

PRE-BOARD 2 (DECEMBER)

COMPLETE SYLLABUS AS PER CBSE GUIDELINES

BUSINESS STUDIES(054)

Theory: 80 Marks **TIME ALLOWED: 3 Hours**

Project: 20 Marks

	Units	Marks
Part A	**Principles and Functions of Management**	
1	Nature and Significance of Management	16
2	Principles of Management	
3	Business Environment	
4	Planning	14
5	Organizing	
6	Staffing	20
7	Directing	
8	Controlling	
Part B	**Business Finance and Marketing**	
9	Financial Management	15
10	Financial Markets	
11	Marketing Management	15
12	Consumer Protection	
	Theory (Part A + Part B)	**80**
Part C	**Project Work (ONE)**	**20**
	Total	**100**

APRIL - MAY

Part A: Principles and Functions of Management

Unit I: Nature and Significance of Management

Management - concept, objectives and importance
Meaning of 'Effectiveness and Efficiency
Management as Science, Art and Profession
Levels of Management
Management functions-planning, organizing, staffing, directing and controlling
Coordination- concept and imp

Unit 2: Principles of Management

Principles of Management- concept and significance
Fayol's principles of management
Taylor's Scientific Management

Unit 3: Management and Business Environment

Concept and importance
Dimensions of Business Environment
Demonetisation

Unit 4: Planning

Concept, importance and limitations
Planning process
Single use and standing plans. Objectives, Strategy, Policy, Procedure, method Rule, budget and Programme

 # PROJECT WORK AS PER CBSE GUIDELINES.

JULY

Unit 5: Organising

Organising: Concept and importance
Organising Process
Structure of organisation- functional and divisional. Formal and informal organisation
Delegation: concept, elements and importance
Decentralization: concept and importance

Unit 6: Staffing

Concept and importance of staffing
Recruitment process
Staffing process
Training and Development-Concept and importance, Methods of training - on the job and off the job - vestibule training, apprenticeship training and internship training

Unit 7: Directing

Directing: Concept and importance
Elements of Directing
Motivation - concept, Maslow's hierarchy of needs, Financial and non-financial incentives
Leadership - concept, styles - authoritative, democratic and laissez faire
Communication - concept, formal and informal; barriers to effective communication, how to overcome the barriers

August- September

Unit 8: Controlling

Concept, Nature, process and importance
Relationship between planning and controlling

Part B: Business Finance and Marketing

Unit 9: Financial Management

Financial Management: Concept, role and objectives
Financial decisions: investment, financing and dividend- Meaning and factors affecting
Financial Planning - concept and importance
Capital Structure – concept and factors affecting capital structure
Fixed and Working Capital - Concept and factors affecting their requirements

Unit 10: Financial Markets

Financial Markets: Concept, Functions and types
Money market and its instruments
Capital market: Concept, types (primary and secondary), methods of floatation in the primary market
Distinguish between primary and secondary markets.
Stock Exchange – Meaning, Functions and trading procedure
Securities and Exchange Board of India (SEBI) - objectives and functions

 # REVISION TERM 1

October- November

Unit 11: Marketing Management

Marketing - concept and functions.
Marketing management philosophies.
Marketing Mix – concept and elements
Product - concept, branding, labeling and packaging.

Price- concept ,factors determining price
Physical distribution concept, components and channels of distribution
Promotion - advertising, personal selling , sales promotion, public relations

Unit 12: Consumer Protection

Consumer Protection Act 2019
Meaning of consumer Rights and responsibilities of consumers Who can file a complaint?
Redressal machinery
Remedies available

December and January

Completion of project work and Revision

ASSESSMENTS

PERIODIC TEST 1 (MAY)
Unit 1: Nature and Significance of Management
Unit 2: Principles of Management
Unit 3: Management and Business Environment

MID TERM EXAMINATION (AUGUST)
Unit 1: Nature and Significance of Management
Unit 2: Principles of Management
Unit 3: Management and Business Environment
Unit 4: Planning
Unit 5: Organising
Unit 6: Staffing
Unit 7 : Directing
Unit 8: Controlling

PREBOARD 1 (NOVEMBER)
Unit 1: Nature and Significance of Management
Unit 2: Principles of Management
Unit 3: Management and Business Environment
Unit 4: Planning
Unit 5: Organising
Unit 6: Staffing
Unit 7 : Directing
Unit 8: Controlling
Unit 9: Financial Management
Unit 10: Financial Markets

PREBOARD 2 (DECEMBER)

WHOLE SYLLABER AS PER CBSE GUIDELINES

.*PROJECT ASSESSEMENT

PROJECT WORK TOTAL 20 MARKS (ONLY ONE PROJECT)

ASSESSMENT RUBRICS	MARKS
Initiative, cooperativeness and participation	2
Creativity in presentation	2
Content, observation and research work	4
Analysis of situations	4
Viva based on the project	8
TOTAL	**20**

ECONOMICS(030)

THEORY: 80 **DURATION: 3 HRS**

PRACTICAL: 20

Units		Marks
PartA	Introductory Macroeconomics	
1	National Income and Related Aggregates	10
2	Money and Banking	06
3	Determination of Income and Employment	12
4	Government Budget and the Economy	06
5	Balance of Payments	06
	Total	40
Part B	Indian Economic Development	
6	Development Experience(1947-1990) and Economic Reforms since1991	12
7	Current Challenges Facing Indian Economy	20
8	Development Experience of India-A Comparison with Neighbours	08
	Total	40
Part C	Project Work	20
Grand Total	A+B+C Theory Paper=80Marks Project = 20 Marks	100

April -May

- **Macro Economics**

UNIT -2 Money and Banking

Money – meaning and functions, supply of money- Currency held by the public and net demand deposits held by commercial banks. Money creation by the commercial banking system. Central bank and its functions (example of the Reserve Bank of India): Bank of issue, Govt. Bank, Banker's Bank, Control of Credit through Bank Rate, CRR, SLR, Repo Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

UNIT-4 Government Budget and the Economy

Governmentbudget-meaning,objectives and components.Classification of receipts
- revenue receiptsand capital receipts; Classification ofexpenditure– revenue expenditure and capital expenditure. Balanced, Surplus and Deficit Budget – measures of government deficit.

UNIT-1 National Income and Related Aggregates

What is Macroeconomics? Basic concepts in macroeconomics: consumption goods, capital goods, final goods, intermediate goods; stocks and flows; gross investment and depreciation. Circular flow of income(two sector model); Methods of calculating National Income - Value Added or Product method, Expenditure method, Income method. Aggregates related to National Income: Gross National Product (GNP), Net National Product (NNP), Gross Domestic Product (GDP) and Net Domestic Product (NDP) - at market price, at factor cost; Real and Nominal GDP.GDP and Welfare

- **Indian Economy**

UNIT-6 Development Experience(1947-90)

A brief introduction of the state of Indian economy on the eve of independence. Indian economic system and common goals of Five-Year Plan.

#Project work

July

- **Macro Economics**

UNIT-5 Balance of Payments

Balance of payments account- meaning and components; Balance of payments– Surplus and Deficit.

- **Indian Economy**

UNIT-6 Development Experience (1947-90)and Economic Reforms since 1991

Main features, problems and policies of agriculture (institutional aspects and new agricultural strategy), industry(IPR1956;SSI–role &importance)and foreign trade.

Economic Reforms since1991 Featuresand appraisals of liberalization ,globalization and privatization (LPG policy); Concepts of demonetization and GST

August and September

- **Macro Economics**

UNIT-5Balance of Payments

Foreign exchange rate - meaning of fixed and flexible rates and managed floating. Determination of exchange rate in a free market, Merits and demerits of flexible and fixed exchange rate. Managed Floating exchange rate system.

- **Indian Economy**

UNIT-7 Current Challenges facing Indian Economy

Human Capital Formation: How people become resource; Role of human capital in economic development; Growth of Education Sector in India.
Rural development: Key issues- credit and marketing – role of cooperatives; agricultural diversification; alternative farming - organic farming.
Employment: Growth and changes in work force participation rate in formal and informal sectors; problems and policies.

October and November

- **Macro Economics**

UNIT-3 Determination of Income and Employment

Aggregate demand and its components .Propensity to consume and propensity to save (average and marginal). Short-run equilibrium output; investment multiplier and its mechanism. Meaning of full employment and involuntary unemployment. Problems of excess demand and deficient demand; measures to correct them - changes in government spending, taxes and money supply

- **Indian Economy**

UNIT-7CurrentChallengesfacingIndianEconomy

Sustainable Economic Development: Meaning, Effects of Economic Development on Resources and Environment, including global warming.

- **Indian Economy**

UNIT-8 Development Experience of India–A Comparison with Neighbours

A comparison with neighbours India and Pakistan,India and China .**Issues**:economic growth,population, sectoral development and other Human Development Indicators.

December &January-:Revision

PeriodicTest1(MAY)

- Macro Economics
  - Money and Banking
  - Government Budget and the Economy
- Indian Economy
  - Indian Economy on the eve of Independence
  - Five years Plan in India

Mid Term Examination(AUGUST)

- Macro Economics
  - National Income
  - Money and Baking
  - Government Budget
  - Balance of Payment
  - Foreign Exchange Rate
  - Determination of Income and Employment
- Indian Economy
  - Indian Economy o the eve of Independence
  - Five Year Plan in India
  - Features,Problems and Policies of Agriculture
  - Strategyof IndustrialGrowth
  - India's Foreign Trade
  - EconomicReformsSince1991 or New EconomicPolicy
  - Human Capital Formation
  - Rural development
  - Employment

Pre-Board Examination I (NOVEMBER)

Complete syllabus as per CBSE

Pre-Board Examination II(DECEMBER)

Complete syllabus as per CBSE

ACCOUNTANCY (055)

Theory : 80 MARKS **Duration :3Hrs**
Practical: 20 MARKS

UNITS		MARKS
	ACCOUNTING FOR-PARTNERSHIP FIRMS :	
Part A	**Accounting for partnership firms and companies**	
	Unit : 1 Accounting for Partnership Firms	36
	Unit : 2 Accounting for Companies	24
	TOTAL	**60**
Part B	**Financial statements analysis**	
	Unit : 3 Analysis of Financial Statements	12
	Unit : 4 Cash Flow Statement	8
	TOTAL	**20**
Part C	**Practical Work**	
	Practical File 12 Marks	12
	Viva 8 Marks	8
	TOTAL (A+B+C)	**100**

APRIL AND MAY

- **PART -A: Accounting for Partnership Firms**

UNIT 1: INTRODUCTION TO PARTNERSHIP: FUNDAMENTALS

Partnership features, Partnership deed
Provisions of the Indian Partnership Act 1932
Preparation of Profit and Loss Appropriation Account
Past adjustments, Guarantee to a partner

UNIT 2: METHODS OF GOODWILL VALUATION

Methods of valuation of goodwill: Average Profit Method, Super Profit, Capitalization

UNIT 3: CHANGE IN EXISTING PROFIT SHARING RATIO(PSR)

Change in profit sharing ratio among the existing partners

Accounting for revaluation of assets and liabilities and treatment of accumulated reserves and profits.

UNIT 4 : ADMISSION OF A PARTNER

Admission of a Partner: Effects of admission of a partner
Sacrificing and Gaining ratio
Accounting for revaluation of assets and liabilities
Preparation of Revaluation Account and Balance sheet

 # SPECIFIC PROJECT AS PER CBSE GUIDELINES.

JULY

UNIT 5 & 6: RETIREMENT AND DEATH OF A PARTNER

Treatment of Goodwill and Revaluation of assets and liabilities
Preparation of Revaluation, Partner's Capital account and balance sheet Dissolution of a Partnership firm
Preparation of Executor's A/c

UNIT 7: DISSOLUTION OF A PARTNERSHIP FIRM

Meaning of dissolution of partnership and partnership firm
Preparation of Realisation, Partner's capital account and Cash/Bank A/c

AUGUST AND SEPTEMBER

- **Part B: Analysis of Financial Statements**

UNIT 1 & 2 : FINANCIAL STATEMENTS: ANALYSIS & TOOLS

Meaning, objective, Significance and Limitations
Format of Balance Sheet
Comparative statements, common-size statements, ratio analysis, cash flow statement

PART A: Accounting for Companies

UNIT 7: Accounting for Share Capital

Share and share capital: Nature and Types
Allotment of share capital: Issue and allotment of equity and Preference shares
Concept of Private Placement and Employees stock option
Accounting treatment of forfeiture and reissue of shares
Disclosure of share capital in the Balance sheet of a company

UNIT 8: ACCOUNTING FOR DEBENTURES

Accounting for Debentures
Issue of debentures at Par, at premium or at discount
Issue of debentures other than cash
Writing off discount / loss on issue of debenture account

OCTOBER AND NOVEMBER

- **Part B: Analysis of Financial Statements**

UNIT 3: ACCOUNTING RATIOS

Meaning and accounting of Ratio
Objective and advantages of ratio analysis, Limitations of ratio
Classification of Ratio: Activity Ratio, Liquidity ratio, Solvency ratio, Profitability ratio

UNIT 4: CASH FLOW STATEMENT

Meaning, Objectives Cash and Cash equivalents, Classification of Activities and Preparation of Cash flow Statement.

DECEMBER: Revision of Whole Syllabus

ASSESSMENT

Periodic Test 1 (MAY)

* Fundamentals of Partnership
* Methods of valuation of goodwill
* Change in Profit Sharing Ratio

Mid Term Examination (AUGUST)

* Fundamentals of Partnership
* Methods of valuation of Goodwill
* Admission of a Partner

* Retirement and Death of a Partner
* Dissolution of Partnership
* Change in Profit Sharing Ratio

PREBOARD -1 (NOVEMBER)

COMPLETE SYLLABUS AS PER CBSE GUIDELINES.

SPREBOARD 2 (DECEMBER)

COMPLETE SYLLABUS AS PER CBSE GUIDELINES.

PROJECT WORK

PARTICULARS	MAXIMUM MARKS
Practical file (Specific Projects)	12
Viva (Cash Flow Statement and Ratio Analysis)	8

PSYCHOLOGY (037)

THEORY – 70 **TIME: 3 HOURS**

PRACTICAL – 30

Units	Topics	Marks
I	Variations in Psychological Attributes	13
II	Self and Personality	13
III	Meeting Life Challenges	9
IV	Psychological Disorders	12
V	Therapeutic Approaches	9
VI	Attitude and Social Cognition	8
VII	Social Influence and Group Processes	6
	Total	**70**

COURSE CONTENT

Unit I	**APRIL-MAY** **Variations in Psychological Attributes** *The topics in this unit are:* 1. Introduction 2. Individual Differences in Human Functioning 3. Assessment of Psychological Attributes 4. Intelligence 5. Psychometric Theories of Intelligence, Information Processing Theory: Planning, Attention-arousal and Simultaneous successive Model of Intelligence, Triarchic Theory of Intelligence; Theory of Multiple Intelligences. 6. Individual Differences in Intelligence

	7. Culture and Intelligence 8. Emotional Intelligence 9. Special Abilities: Aptitude: Nature and Measurement 10. Creativity
Unit II	**Self and Personality** The topics in this unit are: 1. Introduction 2. Self and Personality 3. Concept of Self 4. Cognitive and Behavioural aspects of Self 5. Culture and Self 6. Concept of Personality 7. Major Approaches to the Study of Personality • Type Approaches • Trait Approaches • Psychodynamic Approach and Post Freudian Approaches • Behavioural Approach • Cultural Approach • Humanistic Approach 8. Assessment of Personality • Self-report Measures • Projective Techniques • Behavioural Analysis
Unit III	**JULY** **Meeting Life Challenges**

	The topics in this unit are: 1. Introduction 2. Nature, Types and Sources of Stress 3. Effects of Stress on Psychological Functioning and Health • Stress and Health • General Adaptation Syndrome • Stress and Immune System • Lifestyle 4. Coping with Stress • Stress Management Techniques 5. Promoting Positive Health and Well-being • Life Skills • Positive Health
Unit IV	**Psychological Disorders** The topics in this unit are: 1. Introduction 2. Concepts of Abnormality and Psychological Disorders • Historical Background 3. Classification of Psychological Disorders 4. Factors Underlying Abnormal Behaviour 5. Major Psychological Disorders • Anxiety Disorders • Obsessive-Compulsive and Related Disorders • Trauma-and Stressor-Related Disorders • Somatic Symptom and Related Disorders

	• Dissociative Disorders • Depressive Disorder • Bipolar and Related Disorders • Schizophrenia Spectrum and Other Psychotic Disorders • Neurodevelopmental Disorders • Disruptive, Impulse-Control and Conduct Disorders • Feeding and Eating Disorders • Substance Related and Addictive Disorders
Unit V	**AUGUST-SEPTEMBER** **Therapeutic Approaches** The topics in this unit are: 1. Nature and Process of psychotherapy • Therapeutic relationship 2. Types of Therapies • Behaviour Therapy • Cognitive Therapy • Humanistic-Existential Therapy • Alternative Therapies • Factors contributing to healing in Psychotherapy • Ethics in Psychotherapy 3. Rehabilitation of the Mentally Ill
Unit VI	**OCTOBER** **Attitude and Social Cognition** The topics in this unit are: 1. Introduction

	2. Explaining Social Behaviour 3. Nature and Components of Attitudes 4. Attitude Formation and Change • Attitude Formation • Attitude Change • Attitude-Behaviour Relationship 5. Prejudice and Discrimination 6. Strategies for Handling Prejudice
Unit VII	**NOVEMBER** **Social Influence and Group Processes** The topics in this unit are: 1. Introduction 2. Nature and Formation of Groups 3. Type of Groups 4. Influence of Group on Individual Behaviour • Social Loafing • Group Polarisation **DECEMBER-JANUARY** REVISION OF THE SYLLABUS AND PRACTICAL.

Practical 30 Marks

A. Development of case profile:

Using appropriate methods like interview, observation & psychological tests.

B. Test administration:

Students are required to administer and interpret five psychological tests related to various psychological attributes like intelligence, aptitude, attitude, personality, etc.

C. In the Practical examination, the student will be required to administer and interpret two psychological tests.

Distribution of Marks:

• Practical File and Case Profile	10 Marks
• Viva Voce (Case Profile & Two Practicals)	05Marks
• Two Practicals (5 marks for conduct of practicals and 10 marks for reporting)	15 Marks
Total	**30 Marks**

ASSESSMENTS

PERIODIC TEST 1(MAY)

UNIT 1: Variations in Psychological Attributes

UNIT 2: Self and Personality

MID TERM EXAMINATION (AUGUST)

UNIT1: Variations in Psychological Attributes

UNIT 2: Self and Personality

UNIT 3: Meeting Life Challenges

UNIT 4: Psychological Disorders

UNIT 5: Therapeutic Approaches

PREBOARD 1 (NOVEMBER)

COMPLETE SYLLABUS AS PER CBSE GUIDELINES

PREBOARD 2 (DECEMBER)

COMPLETE SYLLABUS AS PER CBSE GUIDELINES

ARTIFICIAL INTELLIGENCE (SUBJECT CODE - 843)

Total Marks: 100 (Theory-50 + Practical-50)

	UNITS	NO. OF HOURS		MAX MARKS
PART A	**EMPLOYABILITY SKILLS**			
	Unit 1: Communication Skills-IV	15		2
	Unit 2: Self-Management Skills-IV	10		2
	Unit 3: ICT Skills-IV	15		2
	Unit 4: Entrepreneurial Skills-IV	10		2
	Unit 5: Green Skills-IV	10		2
	TOTAL	**60**		**10**
PART B	**SUBJECT SPECIFIC SKILLS**	**Th.**	**Prac.**	
	Unit 1: Python Programming – II* (practical only)	6	18	
	Unit 2: Data Science Methodology: An Analytic Approach to Capstone Project	8	12	8
	Unit 3: Making Machines See	6	12	6
	Unit 4: AI with Orange Data Mining Tool* (practical only)	4	18	
	Unit 5: Introduction to Big Data and Data Analytics	7	12	6
	Unit 6: Understanding Neural Networks	8	12	8
	Unit 7: Generative AI	6	12	7
	Unit 8: Data Storytelling	5	4	5
	TOTAL	**50**	**100**	**40**
PART C	**PRACTICAL WORK / PROJECT WORK**			
	Capstone Project + Project Documentation (As per the process given in "Project Guidelines", on page 2 of CBSE IBM Projects Cookbook) • Capstone Project =15 Marks • Project Documentation = 6 Marks • Video= 4 Marks			25
	Practical File			10
	Lab Test (Python and Orange Data Mining)			10
	Viva Voce (based on Capstone Project + Practical File)			5
	TOTAL			**50**
	GRAND TOTAL (THEORY + PRACTICAL)			**100**

APRIL – MAY

UNIT 1: PYTHON PROGRAMMING - II

SUB-UNIT	LEARNING OUTCOMES	ACTIVITY/PRACTICALS
• Recap of NumPy library • Recap of Pandas Library • Importing and Exporting Data between CSV Files and DataFrames • Handling missing value • Linear Regression algorithm	• Apply the fundamental concepts of the NumPy and Pandas libraries to perform data manipulation and analysis tasks • Import and export data between CSV files and Pandas Data Frames, ensuring data integrity and consistency.	• Import and Export Data between CSV Files and DataFrames • Implement Linear Regression algorithm on Google Colab or any Python IDE.

UNIT 2: DATA SCIENCE METHODOLOGY: AN ANALYTIC APPROACH TO CAPSTONE PROJECT

SUB-UNIT	LEARNING OUTCOMES	ACTIVITY/PRACTICALS
• Introduction to Data Science Methodology • Steps for Data Science Methodology • Model Validation Techniques • Model Performance-Evaluation Metrics	• Integrate Data Science Methodology steps into the Capstone Project. • Identify the best way to represent a solution to a problem. • Understand the importance of validating machine learning models • Use key evaluation metrics for various machine learning tasks	• Calculate MSE and RMSE values for the data given using MS Excel • Calculate Precision, Recall, F1 score, and Accuracy from the given confusion matrix • Python Code to Evaluate a Model

EMPLOYBILITY SKILLS : **Unit 1: Communication Skills-IV**
Unit 5: Green Skills-IV

JULY – AUGUST

UNIT 3: MAKING MACHINES SEE

SUB-UNIT	LEARNING OUTCOMES	ACTIVITY/PRACTICALS
• How Machines See • Working of Computer Vision • Computer Vision Process • Applications of Computer Vision • Challenges of Computer Vision • The Future of Computer Vision	• Explain computer vision and its significance in visual data analysis. • Understand key stages of computer vision, including acquisition, preprocessing, feature extraction, and analysis. • Identify real-world applications in fields like healthcare, surveillance, and autonomous vehicles. • Analyze challenges such as ethics, privacy, and technical limitations. • Explore future advancements and transformative potential of computer vision. • Develop basic skills in using OpenCV and deploying machine learning models online.	• Binary Art - Recreating Images with 0s and 1s • Creating a Website Containing an ML Model • Working with OpenCV to load, display and resize images

UNIT 5: INTRODUCTION TO BIG DATA AND DATA ANALYTICS

SUB-UNIT	LEARNING OUTCOMES	ACTIVITY/PRACTICALS
• Introduction to Big Data • Types of Big Data • Advantages and Disadvantages of Big Data • Characteristics of Big Data • Big Data Analytics • Working on Big Data Analytics • Mining Data Streams • Future of Big Data Analytics	• Understanding Big Data, its types, advantages and disadvantages. • Recognize the characteristics of Big Data. • Explain the concept of Big Data Analytics and its significance. • Analyze the future trends in the field of Big Data Analytics. • Understanding the term Mining Data Streams.	*Performing Big Data analytics with Orange Data mining tool. (*to be evaluated in practicals only)

UNIT 7: GENERATIVE AI

SUB-UNIT	LEARNING OUTCOMES	ACTIVITY/PRACTICALS
● Introduction to Generative AI ● Working of Generative AI ● Generative and Discriminative models ● Applications of Generative AI ● LLM- Large Language Model ● Future of Generative AI ● Ethical and Social Implications of Generative AI	● How Generative AI works. ● Differentiate between Generative AI and Discriminative AI and identify their use cases. ● Explore ethical, social, and legal concerns. ● Gain hands-on experience using AI tools to generate creative and analytical outputs, such as images, texts, and videos. ● Use the Gemini API to design and deploy a functional chatbot.	• Signing up for Canva Activity. • Animaker's AI Video Generation tool. • Use Google Gemini to craft prompts and generate text outputs. • Explore ChatGPT for conversational text generation and creative tasks. • Write Python code to initialize the Gemini API and create a chat bot.

EMPLOYBILITY SKILLS : Unit 2: Self-Management Skills-IV
Unit 4: Entrepreneurial Skills-IV

SEPTEMBER – OCTOBER

UNIT 4: AI WITH ORANGE DATA MINING TOOL

SUB-UNIT	LEARNING OUTCOMES	ACTIVITY/PRACTICALS
● What is Data Mining? ● Introduction to Orange Data Mining Tool ● Beneficiaries of Orange data mining ● Getting started with Orange tool ● Components of Orange ● Default Widget Catalogue ● Key domains of AI with ORANGE DATA MINING TOOL	● Develop proficiency in utilizing the Orange Data Mining tool, enabling them to navigate its interface, employ its features, and execute data analysis tasks effectively. ● Demonstrate the ability to apply Orange in real-world scenarios across diverse domains of artificial intelligence, including data science, computer vision, and natural language processing (NLP), through hands-on projects and case studies.	● Load and visualize the Iris dataset using Scatter Plot and other widgets. ● Use classification widgets ● Evaluating the Classification Model with Orange ● Computer Vision with Orange ● Natural Language Processing with Orange

NIT 6: UNDERSTANDING NEURAL NETWORKS

SUB-UNIT	LEARNING OUTCOMES	ACTIVITY/PRACTICALS
• Parts of a Neural Network • Components of a Neural Network • Working of a Neural Network • Types of Neural Networks • Future of Neural Networks and Societal Impact	• Explain the basic structure and components of a neural network. • Identify different types of neural networks and their respective applications. • Understand machine learning and neural networks through handson projects, interactive tools, and Python programming.	• Explore Machine Learning for Kids to create a neural network for identifying animals and birds. • Build a TensorFlow model to convert Celsius to Use Python Keras to create and train a neural network predicting

NOVEMBER –DECEMBER

UNIT 8: DATA STORYTELLING

SUB-UNIT	LEARNING OUTCOMES	ACTIVITY/PRACTICALS
• Introduction to Storytelling • Elements of a Story • Introduction to Data Storytelling • Why is Data Storytelling Powerful? • Essential Elements of Data Storytelling • Narrative Structure of a Data Story (Freytag's Pyramid) • Types of Data and Visualizations for Different Data • Steps to Create a Story Through Data • Ethics in Data Storytelling	• Understand the benefits of storytelling. • Appreciate the role of data storytelling in data analysis, data science, and AI. • Learn to combine data, visuals, and narrative to present complex information effectively. • Gain skills to draw meaningful insights from data stories.	• Create an effective data story using given data.

EMPLOYBILITY SKILLS : **Unit 3: ICT Skills-IV**

PERIODIC TEST – 1

UNIT 2: DATA SCIENCE METHODOLOGY: AN ANALYTIC APPROACH TO CAPSTONE PROJECT

Unit 1: Communication Skills-IV (EMPLOYBILITY SKILLS)

MIDTERM EXAMINATION (AUGUST)

UNIT 2: DATA SCIENCE METHODOLOGY: AN ANALYTIC APPROACH TO CAPSTONE PROJECT
UNIT 3: MAKING MACHINES SEE
UNIT 5: INTRODUCTION TO BIG DATA AND DATA ANALYTICS
UNIT 7: GENERATIVE AI
EMPLOYBILITY SKILLS :
Unit 1: Communication Skills-IV
Unit 2: Self-Management Skills-IV
Unit 4: Entrepreneurial Skills-IV
Unit 5: Green Skills-IV

PREBOARD EXAMINATION – 1(NOVEMBER)

COMPLETE SYLLABUS AS PER CBSE GUIDELINES

PREBOARD EXAMINATION – II (DECEMBER)

COMPLETE SYLLABUS AS PER CBSE GUIDELINES

BIOLOGY (CodeNo.044)

(THEORY)

Time: 03 Hours **Max.Marks:70**

Unit	Title	Marks
VI	Reproduction	**16**
VII	Genetics and Evolution	**20**
VIII	Biology and Human Welfare	**12**
IX	Biotechnology and its Applications	**12**
X	Ecology and Environment	**10**
	Total	**70**

APRIL

Unit VI - Reproduction

Chapter- 1: Sexual Reproduction in Flowering Plants

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.

Chapter- 2: 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- 3: Reproductive Health

Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); birth control - need and methods, contraception and medical termination of pregnancy (MTP); amniocentesis; infertility and assisted reproductive technologies - IVF, ZIFT, GIFT (elementary idea for general awareness).

MAY

Unit-VII Genetics and Evolution

Chapter- 4: Principles of Inheritance and Variation

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.

Chapter- 5: 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.

Chapter- 6: 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.

JULY

Unit-VIII Biology in Human Welfare

Chapter- 7: Human Health and Diseases

Pathogens; parasites causing human diseases(malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology-vaccines; cancer, HIV and AIDS; Adolescence-drug and alcohol abuse.

Chapter- 8: Microbes in Human Welfare

Microbes in food processing, industrial production, sewage treatment, energy generation and microbes as bio-control agents and bio-fertilizers. Antibiotics; production and judicious use.

SEPTEMBER

Unit- IX Biotechnology and its Applications

Chapter- 9: Biotechnology - Principles and Processes

Genetic Engineering (Recombinant DNA Technology).

Chapter- 10: Biotechnology and its Applications

Application of biotechnology in health and agriculture: Human insulin and vaccine production, stem cell technology, gene therapy; genetically modified organisms - Bt crops; transgenic animals; biosafety issues, biopiracy and patents.

OCTOBER

Unit X - Ecology and Environment

Chapter- 11: Organisms and Populations

Population interactions- mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution. (Topics excluded: Organism and its Environment, Major Abiotic Factors, Responses to Abiotic Factors, Adaptations)

Chapter- 12: Ecosystem

Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy (Topics excluded: Ecological Succession and Nutrient Cycles).

Chapter- 13 Biodiversity and its Conservation

Biodiversity-Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.

PRACTICALS

Time allowed: 3Hours **Max.Marks:30**

<table>
<tr><th colspan="2">Evaluation Scheme</th><th>Marks</th></tr>
<tr><td colspan="2">One Major Experiment 5</td><td>5</td></tr>
<tr><td colspan="2">One Minor Experiment 2 & 3</td><td>4</td></tr>
<tr><td colspan="2">Slide Preparation 1 &4</td><td>5</td></tr>
<tr><td colspan="2">Spotting</td><td>7</td></tr>
<tr><td>Practical Record + Viva Voce</td><td rowspan="2">(Credit to the student's Work over the academic session may be given)</td><td>4</td></tr>
<tr><td>Investigatory Project and its Project Record + Viva Voce</td><td>5</td></tr>
<tr><td colspan="2">Total</td><td>30</td></tr>
</table>

A. List of Experiments

1. Prepare a temporary mount to observe pollen germination.
2. Study the plant population density by quadrat method.
3. Study the plant population frequency by quadrat method.
4. Prepare a temporary mount of onion root tip to study mitosis.
5. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.

B. Study and observe the following (Spotting):

1. Flowers adapted to pollination by different agencies (wind, insects, birds).
2. Pollen germination on stigma through a permanent slide or scanning electron micrograph.

3. Identification of stages of gamete development ,i.e. ,T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).
4. Meiosis in onion bud cell or grasshopper testis through permanent slides.
5. T.S. of blastula through permanent slides (Mammalian).
6. Mendelian inheritance using seeds of different colour/sizes of any plant.
7. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness.
8. Controlled pollination-emasculation, tagging and bagging.
9. Common disease causing organisms like *Ascaris, Entamoeba, Plasmodium*, any fungus causing ringworm through permanent slides, models or virtual images or specimens. Comment on symptoms of diseases that they cause.
10. Models specimen showing symbolic association in root modules of leguminous plants, *Cuscuta* on host, lichens.
11. Flash cards models showing examples of homologous and analogous organs.

Assessments	**Syllabus**
Periodic Test 1 (May)	1. Sexual Reproduction in Flowering Plants 2. Human Reproduction
Mid Term Examination (August)	1. Sexual Reproduction in Flowering Plants 2. Human Reproduction 3. Reproductive Health 4. Principles of Inheritance and Variation 5. Molecular Basis of Inheritance 6. Evolution 7. Human Health and Disease
Pre board 1 (November)	Whole Syllabus As Per CBSE Guidelines
Pre board 2 (December)	Whole Syllabus As Per CBSE Guidelines