

BAL BHARATI PUBLIC SCHOOL, NTPC SIPAT

Syllabus Plan for the Session 2023-24

CLASS XII

Subject- ENGLISH CORE(Code-301)

LEARNING OBJECTIVES

Through the study of English, the students will:

1. Gain an introductory knowledge of some of the issues explored in influential works of the English-language tradition, and of some of the stylistic strategies writers have used to explore those issues.
2. Read and interpret complex texts actively: recognize key passages; raise questions; appreciate complexity and ambiguity; comprehend the literal and figurative uses of language.
3. Practice writing as a process of motivated inquiry, engaging other writers' ideas through the use of quotations, paraphrase, allusions and summary.
4. Increase confidence in speaking publicly; articulate clear questions and ideas in class discussion; listen thoughtfully and respectfully to others' ideas; and prepare, organize, and deliver engaging oral presentations.
5. Attend to a wider range of voices within and across cultures.
6. Enjoy the experience of reading challenging literature: appreciate literature's ability to elicit feeling, cultivate the imagination, and call us to account as humans.

TEXT BOOKS

Main Textbook: FLAMINGO

Supplementary Reader: VISTAS

SUGGESTED READINGS

Oxford Advanced Learner's Dictionary, Oxford Thesaurus, Longman Advanced Grammar

MONTH	WORKING DAYS	COURSE CONTENT
APRIL	20	READING- Unseen Passage WRITING- Notice LITERATURE: FLAMINGO: The Last Lesson, Lost Spring, My Mother at Sixty-Six, Deep Water VISTAS: The Third Level
JUNE	12	READING: Unseen passage WRITING: Invitation Letter Writing LITERATURE: FLAMINGO: The Rattrap VISTAS: The Tiger King
JULY	23	READING: Unseen passage WRITING: Article LITERATURE: FLAMINGO: Indigo,Going Places, Keeping Quiet VISTAS: Journey to the end of the earth, The Enemy
AUGUST	23	READING: Unseen passage WRITING: Report Writing LITERATURE: FLAMINGO: A Thing of Beauty, Aunt Jennifer's Tigers,The Roadside Stand VISTAS: On the face of it

SEPTEMBER	21	Revision
OCTOBER	18	READING: Unseen passage WRITING: Letter Writing LITERATURE: <i>FLAMINGO</i> Poets and Pancakes, The interview,
NOVEMBER	18	READING: Unseen passage WRITING: Report Writing LITERATURE: <i>VISTAS:</i> Memories of Childhood
DECEMBER	18	<i>Revision</i>
JANUARY	23	<i>Revision</i>
FEBRUARY	23	<i>Revision</i>
SYLLABUS FOR EXAMS	UT1	Unseen passage, Article, My mother at sixty-six, Lost Spring, The Last Lesson, The Third Level, Deep Water
	Half Yearly-Theory	Entire syllabus covered until August
	Half Yearly-Practical/Project	<i>Assessment of Speaking and Listening</i>
	Pre-Board	Whole syllabus as per C.B.S.E
	Mock Test	Whole syllabus as per C.B.S.E

SUGGESTIONS TO PARENTS:

1. Encourage your child to read magazines and books in English
2. Engage your child in some writing tasks regularly (eg. writing emails/ letters/ creative writing)
3. Keep regular contact with the teacher to monitor your child's progress

SUBJECT - MATHEMATICS

LEARNING OBJECTIVES

1. To enable the students to reinforce mathematical skills and reasoning through clear arguments.
2. To strengthen the concepts developed at the secondary stage to provide firm foundation for further learning in the subject.
3. To enable students enhance their mental calculations.
4. To promote problem solving abilities and creative thinking in learners.

RECOMMENDED BOOK: MATHEMATICS NCERT Part I and II Together with mathematics R.D. Sharma

Month	No. of Working Days	Course Content
March	20	Chapter 1: Relations and Functions Chapter 2: Inverse Trigonometric Functions
April	20	Chapter 5: Continuity and Differentiability Chapter 6: Application of Derivatives
June	12	Chapter 7: Integrals

July	23	Chapter 8: Application of Integrals Chapter 9: Differential Equations
August	23	Chapter 3: Matrices Chapter 4: Determinants
September	21	Chapter 11: Three Dimensional Geometry Chapter 10: Vectors
October	18	Half yearly Examination
November	18	Chapter 13: Probability Chapter 12: Linear Programming
December	18	Revision (I-Pre - Board)
January	23	Revision (II-Pre - Board)
February	23	Revision
	UT-1	Continuity and Differentiability, Application of Derivatives
	Half Yearly- Theory	Chapter no 1 to 12
	Half Yearly Practical/Projects	10 Activities from NCERT Lab Manual
	Pre-Boards/Mock Test	Whole syllabus as per C.B.S.E.

Sub . - Physics

LEARNING OBJECTIVES-

1. To develop reasoning abilities in a systematic manner,
2. To develop scientific stand attitude.
3. To enable students to be more creative and develop skills for solving scientific problems.
4. To sharpen observations and inculcate the spirit of exploration.
5. To develop the ability to apply knowledge of science in day-to-day life

RECOMMENDED BOOKS-

1. NCERT
2. S.LARORA
3. PRADEEP

MONTH	NO. OF WORKING DAYS	COURSE CONTENT
March	19	<p>Chapter–3: Current Electricity</p> <p>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</p> <p>Practical:1 To determine resistivity of two / three wires by plotting a graph for potential difference versus current.</p>
April	20	<p>Chapter–1: Electric Charges and Fields</p> <p>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)</p> <p>Chapter–2: Electrostatic Potential and Capacitance</p> <p>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).</p>
June	12	<p>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</p> <p>Practical: 2 To find resistance of a given wire / standard resistor using meter bridge.</p> <p>Practical: 3 To verify the laws of combination (series) of resistances</p>

		<p>using a meter bridge.</p> <p>OR</p> <p>To verify the laws of combination (parallel) of resistances using a meter bridge</p>
July	23	<p>Chapter–5: Magnetism and Matter :</p> <p>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</p> <p>Practical :3 Half deflection method,</p> <p>Chapter–6: Electromagnetic Induction</p> <p>Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction</p>
August	23	<p>Chapter7 Alternating Current</p> <p>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.</p> <p>Chapter–8 Electromagnetic Waves</p> <p>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</p> <p>Practical :4. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.</p> <p>Practical :5. To convert the given galvanometer (of known</p>

		<p>resistance and figure of merit) into a voltmeter of desired range and to verify the same.</p> <p>OR</p> <p>To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.</p> <p>Practical :6.To find the frequency of AC mains with a sonometer</p>
September	21	<p>Chapter–9RAYOPTICS Chapter–10 WAVE OPTICS, Practical :7 To find the value of v for different values of u in case of a concave mirror and to find the focal length.</p> <p>Practical :8 To find the focal length of a convex mirror, using a convex lens.</p> <p>Chapter–11Dual Nature of Radiation and Matter</p> <p>Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light. Experimental study of photoelectric effect .</p> <p>Matter waves-wave nature of particles, de-Broglie relation</p>
October	18	<p>Chapter–12: Atoms</p> <p>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 nth orbit, hydrogen line spectra (qualitative treatment only).</p> <p>Chapter–13: Nuclei</p> <p>Composition and size of nucleus, nuclear force</p> <p>Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.</p>
November	18	Chapter–14: Semiconductor Electronics: Materials, Devices and

		<p>Simple Circuits</p> <p>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</p>
December	18	<p>Practical :9 To find the focal length of a convex lens by plotting graphs between u and v or between $1/u$ and $1/v$.</p> <p>Practical :10 To find the focal length of a concave lens, using a convex lens.</p> <p>To determine angle of minimum deviation for a given prism by</p> <p>Practical :11 Plotting a graph between angle of incidence and angle of deviation.</p> <p>Practical :12 To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias</p>
January	23	<p>Activities Section A (Any two)</p> <ol style="list-style-type: none"> 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 study the variation in potential drop with length of a wire for a steady current. 4. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram <p>Activities Section B (Any two)</p> <ol style="list-style-type: none"> 1. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items, 2.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). 2. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses
February	23	Revision
SYLLABUS	I Unit Test	Chapter–1: Electric Charges and Fields Chapter–2: Electrostatic Potential and Capacitance Chapter–3: Current Electricity
	Half yearly -Theory	Chapter–1: Electric Charges and Fields, Chapter–2: Electrostatic Potential and Capacitance, Chapter–3: Current Electricity . Chapter–4: Moving Charges and Magnetism Concept of magnetic field Chapter–5: Magnetism and Matter : Chapter–6: Electromagnetic Induction, Chapter 7 Alternating Current
	Half yearly –Practical/Project	Practical: 2 To find resistance of a given wire / standard resistor using meter bridge. Practical: 3 To verify the laws of combination (series) of resistances using a meter bridge. OR To verify the laws of combination (parallel) of resistances using a meter bridge 1. To study various factors on which the internal resistance/EMF of a cell depends. 2. To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance) .
	PreBoard Exam	Whole Syllabus
	Mock Test	Whole Syllabus

Subject-Chemistry

LEARNING OBJECTIVES

1. To enhance scientific approach and attitude in students mind.
2. To grasp the concepts and ideas related to science.

RECOMMENDED BOOKS -

- 1.Ncert Chemistry Vol.1 and 2
- 2.Refresher Chemistry Pradeep.
- 3.NCERT Exemplar Chemistry
- 4.Practical Manual Comprehensive.

MONTH	WORKING DAYS	COURSE CONTENT
March	19	Unit-6 Halo alkane and Halo arenes
APRIL	20	Unit-7 Alcohol Phenol and ethers
JUNE	12	Unit-8 Aldehyde ketones and carboxylic acids
JULY	23	Unit-9 Organic compound containing Nitrogen Unit10- Biomolecules
AUGUST	23	Unit4-Chemical Kinetics Unit-3 Electro Chemistry
SEPTEMBER	21	Unit 8-d and f block elements
OCTOBER	18	Unit-9 Co-ordination Chemistry
NOVEMBER	18	Revision
DECEMBER	18	Revision
JANUARY	23	Revision
FEBRUARY	23	Annual Exam
SYLLABUS FOR EXAMS	UT-I	Unit 6 and 7
	Half Yearly Th and Project	Unit 6 to 10
	Pre Board exam	Unit1 to 10
	Mock Test	Unit 1 to 10

Subject-Biology

LEARNING OBJECTIVES

- 1.To enhance scientific approach and attitude in students mind.
- 2.To grasp the concepts and ideas related to science.

RECOMMENDED BOOKS-

- 1.NCERT Biology
- 2.Veer BalaRastogi.
- 3.NCERT Exemplar Biology
- 4.Practical Manual Comprehensive.

MONTH	WORKING DAYS	COURSE CONTENT
March	19	<p>Unit-VI Reproduction Chapter-2: 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</p>
APRIL	20	<p>Chapter-3: Human Reproduction Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis - spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea).</p> <p>Chapter-4: Reproductive Health Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); birth control - need and methods, contraception and medical termination of pregnancy (MTP); amniocentesis; infertility and assisted reproductive technologies - IVF, ZIFT, GIFT (elementary idea for general awareness).</p> <p>Chapter-5: 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.</p> <p>Chapter-6: Molecular Basis of Inheritance Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central Dogma; transcription, genetic code, translation; gene expression and regulation - lac operon; Genome, Human and rice genome projects; DNA fingerprinting.</p>
JUNE	12	<p>Chapter-7: Evolution Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, embryology and molecular evidences); Darwin's contribution, modern synthetic theory of evolution; mechanism of evolution - variation (mutation and recombination) and natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy - Weinberg's principle; adaptive radiation; human evolution.</p>
JULY	23	<p>Exam PT-I Unit-VIII Biology and Human Welfare</p>

		Chapter-8: 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.
AUGUST	23	Chapter-10: 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.
SEPTEMBER	21	Exam PT-II
OCTOBER	18	Unit-IX Biotechnology and its Applications Chapter-11: Biotechnology - Principles and Processes Genetic Engineering (Recombinant DNA Technology). Chapter-12: 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.
NOVEMBER	18	Unit-X Ecology and Environment Chapter-13: 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)
DECEMBER	18	Chapter-14: Ecosystem Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy (Topics excluded: Ecological Succession and Nutrient Cycles). Chapter-15: 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.
JANUARY	23	Revision for the Pre- Board Exam
FEBRUARY	23	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.
SYLLABUS FOR EXAMS	UT-I	Chapter 2,3 and 4.
	Half Yearly Theory and Project	Chapter 5,6,7,8.9 & 10.
	Pre Board exam	Chapter 2 to 15
	Mock Test	Sample papers

SUBJECT- Computer Science

LEARNING OBJECTIVES-

- 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.

RECOMMENDED BOOKS -

Computer Science with Python TextBook for Class XII

Author:- Sumita Arora

MONTH	NO. OF WORKING DAYS	COURSE CONTENT
March	19	Database Management- <ul style="list-style-type: none">● Database concepts: introduction to database concepts and its need● Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)
April	20	<ul style="list-style-type: none">● 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, 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,
June	12	aggregate functions (max, min, avg, sum, count), group by, having clause, joins: cartesian product on two tables, equi-join and natural join
July	23	Computational Thinking and Programming – 2 <ul style="list-style-type: none">● Revision of Python topics covered in Class XI.● 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) • Exception Handling: Introduction, handling exceptions using try-except-finally blocks
August	23	<ul style="list-style-type: none"> • Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths • 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() • Data Structure: Stack, operations on stack (push & pop), implementation of stack using list.
September	21	Revision for Half Yearly Examination
October	18	<p>Computer Networks</p> <ul style="list-style-type: none"> • 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) • 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

November	18	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
December	18	Revision of Entire Syllabus
January	23	Revision of Entire Syllabus
February	23	Revision of Entire Syllabus
SYLLABUS	I Unit Test	Database Management
	Half yearly - Theory	Database Management, Computational Thinking and Programming – 2
	Half yearly – Practical/Project	Lab Test: 1. Python program (60% logic + 20% documentation + 20% code quality) 2. SQL queries (4 queries based on one or two tables) Report file: • Minimum 15 Python programs. • SQL Queries – Minimum 5 sets using one table / two tables. Viva voce
	PreBoard Exam	Entire Syllabus
	Mock Test	Entire Syllabus

Sub. – Physical Education

LEARNING OBJECTIVES-

1. To develop reasoning abilities in a systematic manner,
2. To develop scientific spirit and attitude.
3. To enable students to be more creative and develop skills for solving scientific problems.
4. To sharpen observations and inculcate the spirit of exploration.
5. To develop the ability to apply knowledge of science in day-to-day life

RECOMMENDED BOOKS-

1. NCERT
2. S.LARORA
3. PRADEEP

MONTH	NO. OF WORKING DAYS	COURSE CONTENT
March	19	<p>Chapter–3: Current Electricity</p> <p>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, Kirchoff's rules, Wheatstone bridge</p> <p>Practical:1 To determine resistivity of two / three wires by plotting a graph for potential difference versus current.</p>
April	20	<p>Chapter–1: Electric Charges and Fields</p> <p>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)</p> <p>Chapter–2: Electrostatic Potential and Capacitance</p> <p>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).</p>
June	12	<p>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</p>

		<p>conversion to ammeter and voltmeter</p> <p>Practical: 2 To find resistance of a given wire / standard resistor using meter bridge.</p> <p>Practical: 3 To verify the laws of combination (series)of resistances using a meter bridge.</p> <p>OR</p> <p>To verify the laws of combination (parallel) of resistances using a meter bridge</p>
July	23	<p>Chapter–5: Magnetism and Matter :</p> <p>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</p> <p>Practical :3 Half deflection method,</p> <p>Chapter–6: Electromagnetic Induction</p> <p>Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction</p>
August	23	<p>Chapter7 Alternating Current</p> <p>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.</p> <p>Chapter–8 Electromagnetic Waves</p> <p>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</p>

		<p>Practical :4. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.</p> <p>Practical :5. To convert the given galvanometer (of known resistance and figure of merit) into avoltmeter of desired range and to verify the same.</p> <p>OR</p> <p>To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.</p> <p>Practical :6.To find the frequency of AC mains with a sonometer</p>
September	21	<p>Chapter–9RAYOPTICS Chapter–10 WAVE OPTICS,</p> <p>Practical :7 To find the value of v for different values of u in case of a concave mirror and to find the focal length.</p> <p>Practical :8 To find the focal length of a convex mirror, using a convex lens.</p> <p>Chapter–11Dual Nature of Radiation and Matter</p> <p>Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light. Experimental study of photoelectric effect .</p> <p>Matter waves-wave nature of particles, de-Broglie relation</p>
October	18	<p>Chapter–12: Atoms</p> <p>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 nth orbit, hydrogen line spectra (qualitative treatment only).</p> <p>Chapter–13: Nuclei</p> <p>Composition and size of nucleus, nuclear force</p> <p>Mass-energy relation, mass defect; binding energy per nucleon</p>

		and its variation with mass number; nuclear fission, nuclear fusion.
November	18	<p>Chapter–14: Semiconductor Electronics: Materials, Devices and Simple Circuits</p> <p>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</p>
December	18	<p>Practical :9 To find the focal length of a convex lens by plotting graphs between u and v or between $1/u$ and $1/v$.</p> <p>Practical :10 To find the focal length of a concave lens, using a convex lens.</p> <p>To determine angle of minimum deviation for a given prism by</p> <p>Practical :11 Plotting a graph between angle of incidence and angle of deviation.</p> <p>Practical :12 To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias</p>
January	23	<p>Activities Section A (Any two)</p> <ol style="list-style-type: none"> 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 study the variation in potential drop with length of a wire for a steady current. 4. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram <p>Activities Section B (Any two)</p> <ol style="list-style-type: none"> 1. To identify a diode, an LED, a resistor and a capacitor from a

		<p>mixed collection of such items,</p> <p>2.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).</p> <p>2. To obtain a lens combination with the specified focal length by using two lenses</p> <p>from the given set of lenses</p>
February	23	Revision
SYLLABUS	I Unit Test	Chapter–1: Electric Charges and Fields Chapter–2: Electrostatic Potential and Capacitance Chapter–3: Current Electricity
	Half yearly -Theory	Chapter–1: Electric Charges and Fields, Chapter–2: Electrostatic Potential and Capacitance,Chapter–3: Current Electricity . Chapter–4: Moving Charges and Magnetism Concept of magneticfieldChapter–5: Magnetism and Matter :Chapter–6: Electromagnetic Induction, Chapter7 Alternating Current
	Half yearly –Practical/Project	Practical: 2 To find resistance of a given wire / standard resistor using meter bridge. Practical: 3 To verify the laws of combination (series)of resistances using a meter bridge. OR To verify the laws of combination (parallel) of resistances using a meter bridge 1. To study various factors on which the internal resistance/EMF of a cell depends. 2.To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance) .
	PreBoard Exam	Whole Syllabus
	Mock Test	Whole Syllabus