

**ANNUAL
CURRICULUM PLAN
CLASS: XII-SCIENCE**

SESSION 2023-24

ASSESSMENT STRUCTURE FOR THE ACADEMIC SESSION 2023-24 (CLASS-XII-SCIENCE)

SCHOLASTIC AREA:

ENGLISH

Month	Lesson & Topics	No. of Periods	Learning Objectives	Methodology/Activities	Teaching Aids / Resources	Experiential Learning	Assessment Tools	Learning Outcomes
April	The last lesson	3	Learning how patriotism also means love for one's language and other aspects of culture.	Reading/explanation . Group discussion	chart/dictionary/NCERT text book	Will enhance the communication skill	presentation of characters from story studied, pen paper test /mcq/oral test	Students will be able understand the Importance of Education in one's life
	The third level	3	To understand the complexities of modern world	lecture method/Group Discussion	NCERT text book	Will enhance the critical thinking of the students	pen paper test /mcq/oral test	students will be able to overcome adverse circumstances in life
	My mother at 66	2	To recognize the place of mother	Reading/explanation method.Role play	NCERT text book	Will enhance the communication skill	pen paper test /mcq/oral test	To accept the reality of lifeand also that death is inevitable
June	Lost spring	3	To understand the importance of childhood	Lecture method/Group Discussion	NCERT text book	Will enhance the critical thinking of the students	pen paper test /mcq/oral test	To understand the plight of slum children
	The tiger king	3	Encourages readers with the ability to fight and overcome tough situations and overwhelming terror	Lecture method/smart boardQuiz	NCERT text book	Will enhance the communicative skill and critical thinking	pen paper test /mcq/oral test	steps to be taken to preserve tigers as they are becoming extinct
	An elementary school in a slum	3	Sensitization towards the critical issue of child labor and deprivation of the basic right to education in slum area.	Reading/explanation method. Group Discussion	NCERT text book	Will enhance the critical thinking of the students	pen paper test /mcq/oral test	To understand the pathetic condition of slum children
	Writing Skills Notice/Advertisement	2	Learn new forms of advertising techniques	Format explanation/smart board.Wat test	chart/formats based on topics/NCERT text books	will enhance the creative thinking	pen paper test /mcq/oral test	students vocabulary will be enhanced.
July	Deep water	2	How to overcome any kind of fear	Reading,Explanatory method/Quiz	chart/formats based on topics/NCERT text books	Will help the students in building confidence	pen paper test	To analyze own strength and weakness
	Journey to the end of the earth	3	To understand the damage caused by human impact on earth	Lecture method/Group Discussion	NCERT text book	Will help the students to understand the affect of global warming	Pen paper test/Mcq's	The students will be understanding the true condition of mother earth
	Keeping Quiet	2	To understand the concept of introspection	lecture method/Group Discussion	NCERT text book	Will help the students to understand themselves in a better way	Pen paper test,oralquestions,Mcq's	will help the students to understand the purpose of living in this World
	Writing Skills Poster/formal invitation and reply	2	Will enable the learners to express their ideas cohesively	Drawing posters for various reasons	Chart paper	Will help the students in showcasing their creative aspects	Drawing completion	Students will be able to portray their thoughts through creative medium

	The Rattrap	3	To understand the life of a vagabond	Explanatory method/Group Discussion	NCERT text book	students will understand the value of god's blessings in their life	Pen paper test,oralquestions,Mcq's	Students will be able to understand the concept of kindness, and humanity
	The Enemy	3	To understand the value of patriotism and duty in one's life	Task based learning/Quiz	NCERT text book	students will learn to perform their duty towards their country as well society with utmost sincerity	oral test/Mcq's	To take firm decisions even in adverse circumstances
AUGUST	A thing of beauty	2	To understand our surroundings with reference to Nature	Reading/explanation . /quiz	NCERT text book	Students will be able to understand the environment in a better way	oral test/Mcq's	students will be able to appreciate the free gifts given to human beings in the form of nature by god
	Business or official letter	2	To enhance the vocabulary of the students	Format explanation/Wat test	NCERT text book	students will be able to express their thoughts in more creative way	Pen paper test/Mcq's	students will be able to enhance their writing skills
	Indigo	3	To understand the sacrifices done by our countrymen to attain the freedom for our country	lecture method/Quiz	NCERT text book	Students will be able to understand the struggle done by the freedom fighters to attain freedom	Penpapertest,oralquestions, Mcq's	Students will be able to acknowledge the sacrifices done by our countrymen to attain freedom
	Should Wizard hit Mommy	3	To enable the students to respect generation gap.	Reading/Explanation/Role play	NCERT text book	To understand the difference between the outlook of a child in comparison to a mature individual	Pen paper test,oralquestions,Mcq's	To understand that the decisions taken by the grown up person are based on their real life experiences
	A road side stand	2	To understand the plight of people who are not economically sound	Reading,Explanation/Quiz	NCERT text book	Students will be able to understand the plight of under privileged people	Pen paper test,oralquestions,Mcq's	Students will be able to understand the condition faced by the people who earn their living on daily basis
SEPTEMBER	Writing skill letter to the editor/job application	2	Will enhance the creative Skill	Format explanation/Wat test	NCERT text book	students will be able to express their thoughts in more creative way	Half yearly examination	students vocabulary will get enhanced
OCTOBER	Poets and Pancakes	3	students will learn the art of time management	Lecture method/Skit	NCERT text book	Students will be able to value time and not waste it unnecessarily	pen paper,oraltest,Mcq's	Students will utilize their time in fruitful manner
	On the face of it	3	to enable the learners to view others by removing the glasses of prejudice,hatred and dislike.	Reading,explanation /Group Discussion	NCERT text book	Students will learn to treat handicapped people equally	PenPapertest,oral-questions,Mcq's	students will learn to be kind towards disabled
	Aunt Jennifer Tiger	2	the learners will know about the constraints a married woman faces in her	Explanatory method/Group Discussion	NCERT text book	Will enhance the critical thinking of the students	Penpapertest,oralquestions, Mcq's	students will be able to analyze the condition of women in society

			life					
November	Article Writing	2	to enable the learners to express their ideas fluently, chronologically and concisely	Format explanation/group discussion	NCERT text book	Their creative writing would be analysed. The interpreting and evaluative skills would be strengthened	class test	The Students would develop an interest towards writing. Their planning and organizing techniques would be enhanced
	Debate	2	to enable the learners to express their ideas fluently, chronologically and concisely	The format, rules, technique would be discussed/group activity	NCERT text book	will enhance the communication skill	Debate to be conducted in the classroom on the given topic.	Public speaking skill will be developed.
	The Interview I & II	3	the learners will learn to manage time in a better way	peer to peer teaching/group discussion	NCERT text book	Students will learn to manage time to pursue their creative work	Penpapertest, oral questions, Mcq's	General public will understand that celebrities also need time and space to live their life.
	Evan's tries "O" level	4	To enable the learners, identify the complexities which comes with teenage	Lecture method/group discussion	NCERT text book	learn to appreciate the ingenuity and the mechanism of a sharp and intelligent mind	Penpapertest, oral questions, Mcq's	The learners will be able to familiarize themselves with specific background of the cat and mouse role of the police and the criminal.
December	Speech	2	to enable the learners to express their ideas fluently, chronologically and concisely	Format explanation/group discussion	NCERT text book	will enhance the creative skill	class test	Writing Skill of the learners will get enhanced
	Report Writing	2	to enable the learners to express their ideas fluently, chronologically and concisely	Format explanation/group discussion	NCERT text book	will enhance the creative skill	class test	critical and creative thinking skill of the students will be enhanced.
	Going Places	3	students will be able to understand their responsibility and devote their attention towards their duties	Explanatory method/debate	NCERT text book	will enhance the communication skill	Pen-papertest, oral questions, Mcq's	Students will learn the difference between real and imaginary world
	Memories of Childhood	3	students will be able to understand the problems related to Casteism and racial discrimination	Reading, Explanatory method/peer to peer teaching	NCERT text book	will enhance the critical thinking	Pen-papertest, oral questions, Mcq's	The learners would be able to sensitize themselves to the issues of estranged cultural ties.
Revision for Annual Exam								

MATHEMATICS

Month	Lesson & Topics	No. of Periods	Learning Objectives	Methodology/ Activities	Teaching Aids / Resources	Experiential Learning	Assessment tools	Learning Outcomes
APRIL	1. Relation and Functions [Equivalence Relation Types of Function] 2. Inverse Trigonometric Functions 3. Matrices 4. Determinants & One Activity (I-Equivalence-Relation)	8+7+6+8+2=31	(a) Introduction (b) Learning about basic concept of sets, Relation and Function (a) Introduction (b) Learning about basic concept of Matrices & determinant (c) To increase the level of understanding about Relation and Functions, Inverse Trigonometric functions, Matrices and Determinants and its application	Explanation, Questioner, Problem solving, Induction and Deduction Method. And demonstration	Smart Board, Chart, model Modules, Internet, Lesson Plan, Text Book, Ref. books and Competitive Exams Books and Lab manual etc.	Different Practical Examples connecting in our daily life.	Pen-paper Test, Oral Test, Class Test, Lab work, Quiz, and Model Presentation etc.	Students will be able to solve all related problems (general & practical) from different sources. They will be also developed higher order thinking skills.
JUNE	5. Continuity and Differentiability	4 + 11 = 15	(a) Introduction (b) Learning about basic concept of Continuity and Differentiability (c) To increase the level of understanding about Continuity and Differentiability and its application	Explanation, Questioner, problem solving method, Induction and deduction Method.	Smart Board, Chart, model Teach Next Modules CD, Internet, Lesson Plan, Text Book, books, Competition books	Examples of different Practical Examples jessing in daily life.	Pen-paper test, Oral test, Class test, Lab work, Quiz, Model Presentation	Students will be able to solve the problem-based questions and develop higher thinking order skills.
JULY	6. Application of Derivatives & Two Activities (I-Inverse Trigonometric Functions Application of Derivatives) II-	16 + 4 = 20	(a) Introduction (b) Learning about Application of Derivatives To increase the level of understanding about Application of derivative and its different use in our daily life.	Explanation, Questioner, problem solving method, Induction and deduction Method.	Smart Board, Chart, model Teach Next Modules CD, Internet, Lesson Plan, Text Book, ref. books, Competition books Pen-paper test, Oral test, Class test, Lab work, Quiz, Model Presentation	Examples of different Practical Examples jessing in daily life.	Pen-paper test, Oral test, Class test, Lab work, Quiz, Model Presentation	Students will be able to solve the problem based questions and develop higher thinking order skills.
AUGUST	7. Integrals 8. Application of Integrals	16 + 4 = 20	(a) Introduction (b) Learning about basic concept of Integrals and Application of Integrals (c) To increase the level of understanding about Integrals and its application and practical use in our daily life.	Explanation, Questioner, problem solving method, Induction and deduction Method.	Smart Board, Chart, model Teach Next Modules CD, Internet, Lesson Plan, Text Book, Ref. books, Competition books	Examples of different Practical Examples jessing in daily life.	Pen-paper test, Oral test, Class test, Lab work, Quiz, Model Presentation	Students will be able to solve the problem based questions and develop higher thinking order skills.
SEPTEMBER	Revision Only							
OCTOBER	9. Differential Equations & One Activity [Vectors]	8+5+2=15	(a) Basic Concept of Differential Equations & Vectors (b) Application of differential Equations and Vectors	Explanation, Questioner, problem solving method, Induction and deduction Method.	Smart Board, Chart, model Teach Next Modules CD, Internet, Examples Lesson Plan, Text	Examples of different Practical Examples existing in	Pen-paper test, Oral test, class test, Lab work, Quiz, Model Presentation	Students will be able to solve the problem-based questions and develop higher thinking order skills.

					Book,ref. books, Competition books	daily life.		
NOVEMBER	11. Three-Dimensional Geometry 12. Linear Programming	$10 + 5 = 15$	(a Introduction (b) Learning about basic concept of 3D Geometry & Linear Programming And its application in Daily life.	Explanation, Questioner, problem solving method, Induction and deduction Method.	Smart Board, Chart, model Teach Next Modules CD, Internet, Lesson Plan. Text Book, Ref. books, Competition books	Examples of different Practical Examples existing in daily life.	Pen-paper test, Oral test, Class test, Lab work, Quiz, Model	Students will be able to solve the problem based questions and develop higher thinking order skills.
DECEMBER	13. Probability & One Activity [I- Three Dimensional geometry] Revision for Pre-Board-2022	$8+2+2=12$	(a) Introduction (b) Learning about basic concept of Probability and its application in our practical life.	Explanation, Questioner, problem solving method, Induction and deduction Method.	Smart Board, Chart, model Teach Next Modules CD, Internet, Lesson Plan. Text Book, Ref. books, Competition books	Examples of different Practical Examples existing in daily life.	Pen-paper test, Oral test, Class test, Lab work, Quiz, Model Presentation	Students will be able to solve the problem-based questions and develop higher thinking order skills.

BIOLOGY CURRICULUM

S.No	UNIT	NAME OF UNIT	NO. OF PERIODS	MONTH	WORKING DAYS
1.	I	Reproduction	30	March -April	14
2	II	Genetics and Evolution	40	April-June	22+14=46
3	III	Biology in human welfare	30	July	27
4	IV	Biotechnology	30	August	22
5	V	Ecology and Environment	30	October- November	20+10=30
			160		139
No. of working days is counted with the instructions to complete the syllabus by November 15th.					

Month	Topics & Sub -Topics	No of Periods	Learning Objective	Methodology	Teaching tools/Resources	Experiential Learning	Assessment Tools	Learning outcome
April	01. Reproduction in organism Reproduction, characteristic feature of all organisms for continuation of species; modes of reproduction - asexual and sexual reproduction; asexual reproduction - binary fission, sporulation, budding, gemmule formation, fragmentation; vegetative propagation in plants.	6	It would enable student to understand: <ul style="list-style-type: none"> Learning about the integrated definition of reproduction, Its types, various modes. Types of asexual reproduction their example-based learning and comparison 	<ul style="list-style-type: none"> Lecture Interaction demonstration of models, group assignment brainstorming discussion case-study field exercise projects seminars 	<ul style="list-style-type: none"> Smart Board, videos diagrams (NCERT, mind maps charts specimens, models pictures, actual objects flash cards slides chalk-board books & references NCERT Text book 	Students would: <ul style="list-style-type: none"> Able to make nutritive media for germination by using boric acid and observe it under microscope. Identify various types of asexual modes of reproduction takes place. 	<ul style="list-style-type: none"> Observations Testing & Records Practical approach Checklist & Rating scale Quiz in class In class activity Homework records. 	Student would be able to: <ul style="list-style-type: none"> Acquire the concept of internal & external fertilization. Concept of seed and fruit formation will be developed. Would acquire the concept of various vegetative propagation and their types.
	02. Sexual Reproduction in Flowering Plant Flower structure; development of male and	12	It would enable student to understand: <ul style="list-style-type: none"> Pollen Pistil interaction 	Activity:	For the Activity Pen Paper	Students would: <ul style="list-style-type: none"> Demonstrate the properties of various 	<ul style="list-style-type: none"> Observations Testing & Records 	Student would be able to: <ul style="list-style-type: none"> Acquire the knowledge to identify various flowers pollinated by various agencies.

	<p>female gametophytes; pollination - types, agencies and examples; outbreeding 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> <p>PRACTICALS: 1. Study of pollen germination on slide. 2. Adaptations of flowers to wind pollination and insect pollination. 3. Pollen germination on stigma 4. Mitosis in onion root tip.</p>	08	<ul style="list-style-type: none"> • Pollination-types agencies and example, • outbreeding devices • double fertilization • Post fertilization events-development of endosperm and embryo special modes of reproduction – apomixes, parthenocarpy, polyembryony. 	<p>Make two groups in the class defending sexual and asexual reproduction respectively. Make a comparative study of both.</p>		<p>flowers pollinated by different agencies such as wind, water, insect etc.</p> <ul style="list-style-type: none"> ➤ Concept of endosperm formation and its importance. 	<ul style="list-style-type: none"> • Practical approach • Checklist & Rating scale • Quiz in class • In class activity • Homework records 	<ul style="list-style-type: none"> ➤ Conceptualize the need and observe pollen tube formation. ➤ Identify parthenocarpic, polyembryonic plant. ➤ Recognize male & female reproductive part of plants.
June	<p>03.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>	10	<p>It would enable student to understand:</p> <ul style="list-style-type: none"> • Study of Male and female reproductive systems and then role of each part. • Microscopic anatomy of testis and ovary. • Concept of gametogenesis-spermatogenesis & oogenesis. • Menstrual cycle and various events of it. • Fertilisation- blastocyst formation, implantation, pregnancy and placenta formation. • Concept of parturition, lactation and hormonal changes in the body. 	<ul style="list-style-type: none"> • Lecture • Interaction • demonstration of models, • group assignment brainstorming • discussion • case-study • field exercise • projects • seminars <p>Activity: Observe the slide of human ovary, blastula under microscope.</p>	<ul style="list-style-type: none"> ➤ Smart Board, ➤ videos ➤ diagrams (NCERT, mind maps ➤ charts ➤ specimens, ➤ models ➤ pictures, ➤ actual objects ➤ flash cards ➤ slides ➤ chalk-board ➤ books & references ➤ NCERT Text book 	<p>Students would:</p> <ul style="list-style-type: none"> ➤ Identify the various parts of testis and ovary with the help of various slides. ➤ Get the concept of blastula formation with the help of various slides. ➤ Aware of various methods which are developed to combat infertility. 	<ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach • Checklist & Rating scale • Quiz in class • In class activity • Homework records 	<p>Student would be able to:</p> <ul style="list-style-type: none"> ▪ Understand the concept of spermatogenesis and oogenesis and various hormonal changes occurring during it. ▪ Know the various stages of implantation and its affect on uterus. ▪ Understand the role of placenta and placental hormones during pregnancy. ▪ identify the various parts of testis and ovary with the help of various slides.

<p>04.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>PRACTICALS: 5. Identification of stages in Meiosis in onion buds 6. Observation of Ts of mammalian Ovary and TS of testis , TS of blastula microscopic slides 7. emasculation and bagging(controlled pollination) 8.Mendelian inheritance, Pedigree Charts 9. Salivary amylase experiments.</p>	<p>04</p> <p>10</p>	<p>It would enable student to understand:</p> <ul style="list-style-type: none"> • Need for reproductive health and prevention of STDs. Concept of birth control needs and methods. • Concept of contraception and MTPs, Amniocentesis. • Methods to cure infertility and assisted reproductive technologies- IVF, ZIFT, GIFT, IUDs. 	<p>Activity: Discussion on MTP and STD and making a chart of different STD's their means and pathogens.</p>	<p>For the Activity Pen Paper Case study</p>	<p>Students would:</p> <ul style="list-style-type: none"> • Know the use of contraception's and their effect on body. • Understand the projects on various ART techniques used in today's generation where there are so many complications regarding pregnancy • Understand artificial mode of fertilization 	<ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach • Checklist & Rating scale • Quiz in class • In class activity • Homework records 	<p>Student would be able to:</p> <ul style="list-style-type: none"> ▪ Understand the concept of blastula formation with the help of various slides. ▪ Understand sexually transmitted diseases and its preventive measures.
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July	<p>05. Principal 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>	10	<p>It would enable student to :</p> <ul style="list-style-type: none"> • Concept building of mendelian • Inheritance, Deviations from Mendelism, • Incomplete dominance, Co-Dominance, multiple alleles. • Concept building about various blood groups and their inheritance. • Concept of pleiotropy and polygenic inheritance. • Chromosomal theory of inheritance. • Sex determination in-Humans, Birds and honey bees • Concept of linkage and crossing over. • Sex linked inheritance- Haemophilia, colour Blindness. • Chromosomal and Mendelian • Disorders in Humans. • Family diseases can be studied with the help of pedigree analysis chart. 	<ul style="list-style-type: none"> • Lecture • Interaction • demonstration of models, • group assignment brainstorming • discussion • case-study • field exercise • projects • seminars <p>Activity: Make a list of sex linked diseases and chromosomal disorders.</p>	<ul style="list-style-type: none"> ➤ Smart Board, ➤ videos ➤ diagrams (NCERT, mind maps ➤ charts ➤ specimens, ➤ models ➤ pictures, ➤ actual objects ➤ flash cards ➤ slides ➤ chalk-board ➤ books & references ➤ NCERT Text book <p>For the Activity Pen Paper</p>	<p>Students would:</p> <ul style="list-style-type: none"> ➤ Conceptualize Mendelian laws of inheritance in different traits. ➤ Be able to find out diseases associated with chromosome or genes. ➤ Be able to find out diseases with pedigree analysis charts. ➤ Able to conceptualize role of mutation and its affect can be studied. 	<ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach • Checklist & Rating scale • Quiz in class • In class activity • Homework records 	<p>Student would be able to:</p> <ul style="list-style-type: none"> ▪ Conceptualize building on mendelian genetics ▪ Understand various attributes of mendelian and chromosomal disorders. ▪ Conceptualize blood groups and their role in various organisms. ▪ Understand the role of mutation and its affect can be studied. ▪ Conceptualize that family diseases can be studied with the help of pedigree analysis chart
	<p>06. 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</p>	15	<p>It would enable student to understand:</p> <ul style="list-style-type: none"> • Search(s) for genetic & structure of DNA and RNA • DNA replication and packaging. • Central Dogma. 	<ul style="list-style-type: none"> • Lecture • Interaction • demonstration of models, • group assignment brainstorming 	<ul style="list-style-type: none"> ➤ Smart Board, ➤ videos ➤ diagrams (NCERT, mind maps ➤ charts ➤ specimens, ➤ models ➤ pictures, ➤ actual objects 	<p>Students would:</p> <ul style="list-style-type: none"> ➤ Able to conceptualize role of mutation and its affect can be studied ➤ Able to prepare a chart on salient features of DNA. 	<ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach • Checklist & Rating scale • Quiz in class 	<p>Student would be able to:</p> <ul style="list-style-type: none"> • To prepare a sequence of DNA fingerprinting and its techniques Understand the concept of DNA and its structure is developed. • Conceptualize DNA packaging and its applications. • Conceptualize Genetic code

	<p>and regulation - lac operon; genome and human and rice genome projects; DNA fingerprinting</p> <p>07. 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> <p>Practicals: 10. Observation of disease-causing organisms/symptoms 11. DNA isolation 12. Soil experiments</p>		<ul style="list-style-type: none"> • Transcription • Genetic code • Translation • Gene expression and regulation-lac operon. • Genome and Human and rice genome projects • DNA fingerprinting. <p>It would enable student to understand:</p> <ul style="list-style-type: none"> • Concept of origin of life • Biological evolution and its evidences. • Darwin's contribution with respect of modern synthetic theory of evolution. • Concept of natural selection and its types. • Gene flow and genetic drift. • Hardy Weinberg's principle its application. • Adaptive radiation and human evolution. 	<ul style="list-style-type: none"> • discussion • case-study • field exercise • projects • seminars <p>Activity: Discussion on the structure and function of DNA.</p> <ul style="list-style-type: none"> • Lecture • Interaction • demonstration of models, • group assignment brainstorming • discussion • case-study • field exercise • projects • seminars <p>Activity: Make a list on different type of mutation and mutagens.</p>	<ul style="list-style-type: none"> ➤ flash cards ➤ slides ➤ chalk-board ➤ books & references ➤ NCERT Text book <p>For the Activity Pen Paper</p> <ul style="list-style-type: none"> ➤ Smart Board, ➤ videos ➤ diagrams (NCERT, mind maps ➤ charts ➤ specimens, ➤ models ➤ pictures, ➤ actual objects ➤ flash cards ➤ slides ➤ chalk-board ➤ books & references ➤ NCERT Text book <p>For the Activity Pen Paper</p>	<ul style="list-style-type: none"> ➤ Able to prepare a chart on various contrasting feature on eukaryotic and prokaryotic transcription and translation. <p>Students would:</p> <ul style="list-style-type: none"> ➤ Able to summaries various theories of evolution on a chart. ➤ Observe the differences between homologous and analogous organs. ➤ Demonstrate the differences between Mendelian & Darwinian theories of evolution. 	<ul style="list-style-type: none"> • In class activity • Homework records <ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach • Checklist & Rating scale • Quiz in class • In class activity • Homework records 	<p>and its relation with protein synthesis.</p> <p>Student would be able to</p> <ul style="list-style-type: none"> ▪ Concept building on various theories of evolution ▪ Gain Knowledge about evolution, its patterns and evidences of evolution ▪ Understand strategies of hardy Weinberg principal Deviations from Hardy Weinberg principle. ▪ Knowledge of evolution of plants and animals.
Aug	<p>11. Biotechnology: Principal and Processes Genetic Engineering (Recombinant DNA Technology).</p>	11	<p>It would enable student to understand:</p> <ul style="list-style-type: none"> • The concept of biotechnology and its applications. 	<ul style="list-style-type: none"> • Lecture • Interaction • demonstration of models, • group 	<ul style="list-style-type: none"> ➤ Smart Board, ➤ videos ➤ diagrams (NCERT, mind maps ➤ charts 	<p>Students would:</p> <ul style="list-style-type: none"> ➤ Be able to – Know the concept of biotechnology and its applications. 	<ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach 	<p>Student would be able to:</p> <ul style="list-style-type: none"> • Know the concept of Genetic Engineering. • How this can be used in different methodologies

	<p>Upstream processing Downstream Processing</p> <p>12. Biotechnology and Its Application 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, bio piracy and patents.</p>	08	<ul style="list-style-type: none"> Principles and processes. Method of genetic engineering Formation of rDNA. <p>It would enable student to understand:</p> <ul style="list-style-type: none"> Concept of human insulin and vaccine production. Stem cell technology Gene Therapy Genetically modified organisms-Bt crops, Transgenic animals Biosafety issues Biopiracy and patents. 	<p>assignment brainstorming</p> <ul style="list-style-type: none"> discussion case-study field exercise projects seminars <p>Activity: Make a list of vectors.</p> <ul style="list-style-type: none"> Lecture Interaction demonstration of models, group assignment brainstorming discussion case-study field exercise projects seminars <p>Activity: Using dry yeast make alcohol by the process of fermentation.</p>	<ul style="list-style-type: none"> specimens, models pictures, actual objects flash cards slides chalk-board books & references NCERT Text book <p>For the Activity Pen Paper</p> <ul style="list-style-type: none"> Smart Board, videos diagrams (NCERT, mind maps charts specimens, models pictures, actual objects flash cards slides chalk-board books & references NCERT Text book <p>For the Activity Pen Paper</p>	<ul style="list-style-type: none"> Understand how this can be used in different methodologies Prepare a project on recombinantDNA technology <p>Students would:</p> <ul style="list-style-type: none"> Prepare a project on artificial insulin production by Eli liy technology. To make a chart on various GMOs both plants and animals. 	<ul style="list-style-type: none"> Checklist &Rating scale Quiz in class In class activity Homework records <ul style="list-style-type: none"> Observations Testing & Records Practical approach Checklist &Rating scale Quiz in class In class activity Homework records 	<ul style="list-style-type: none"> Formation and implications of rDNA. <p>Student would be able to:</p> <ul style="list-style-type: none"> Understand the concept of gene therapy and its applications in various diseases. Conceptualize use of various GMOs and their benefit of organisms.
Sept	REVISION FOR FIRST TERM							

Oct	<p>08. Human Health and Disease Strategies for Pathogens; parasites causing human diseases (malaria, dengue, chickengunia, 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.</p>	07	<p>It would enable student to understand:</p> <ul style="list-style-type: none"> • Concept of diseases and their causative agents. • Common communicable diseases their causes symptoms and cure. • Basic concepts of immunology vaccines. • Concept of HIV and AIDS. • Adolescence –drug and alcohol abuse. 	<ul style="list-style-type: none"> • Lecture • Interaction • demonstration of models, • group assignment brainstorming • discussion • case-study • field exercise • projects seminars 	<ul style="list-style-type: none"> ➤ Smart Board, ➤ videos ➤ diagrams (NCERT, mind maps ➤ charts ➤ specimens, ➤ models ➤ pictures, ➤ actual objects ➤ flash cards ➤ slides ➤ chalk-board ➤ books & references ➤ NCERT Text book 	<p>Students would:</p> <ul style="list-style-type: none"> ✚ Identify & make a chart on various diseases. ✚ Make a ppt on various awareness program on malaria ✚ Conceptualize and describe the process of allergy and its solution. ✚ Make a project on HIV and cancer. 	<ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach • Checklist &Rating scale • Quiz in class • In class activity • Homework records 	<p>Student would be able to:</p> <ul style="list-style-type: none"> • Develop knowledge of how diseases are spread. • Get concept of personal hygiene and its importance will be developed. • Understand drugs and misuse will be administered
	<p>09. Enhancement in Food Production Improvement in food production: Plant breeding, tissue culture, single cell protein, Biofortification, Apiculture and Animal husbandry.</p>	07	<p>It would enable student to understand :</p> <ul style="list-style-type: none"> • Concept of Plant breeding techniques. • Tissue culture process and importance. • Single cell protein, its use and affect. • Biofortification & its advantages • Apiculture and animal husbandry 	<p>Activity: Make a list of microbes as pathogens.</p> <ul style="list-style-type: none"> • Lecture • Interaction • demonstration of models, • group assignment brainstorming • discussion • case-study • field exercise • projects seminars 	<p>For the Activity Pen Paper</p> <ul style="list-style-type: none"> ➤ Smart Board, ➤ videos ➤ diagrams (NCERT, mind maps ➤ charts ➤ specimens, ➤ models ➤ pictures, ➤ actual objects ➤ flash cards ➤ slides ➤ chalk-board ➤ books & references ➤ NCERT Text book 	<p>Students would:</p> <ul style="list-style-type: none"> ✚ Able to prepare a project on tissue culture and its various attributes. ✚ identify various exotic and indigenous species of animals 	<ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach • Checklist &Rating scale • Quiz in class • In class activity • Homework records 	<p>Student would be able to:</p> <ul style="list-style-type: none"> • Know different strategies of food production . • Strategies for food production and Hybridization • Importance of animal husbandry.
	<p>10. Microbes in Human Welfare In household food processing, industrial production, sewage treatment, energy generation and microbes as biocontrol agents and biofertilizers. Antibiotics;</p>	07	<p>It would enable student to understand</p> <ul style="list-style-type: none"> • Importance of microbes in everyday life. • Importance in agricultural production. • Sewage treatment and energy generation. 	<p>Activity: Visit near by shelter or farm and observe the way of animals husbandry.</p> <ul style="list-style-type: none"> • Lecture • Interaction • demonstration of models, 	<ul style="list-style-type: none"> ➤ Smart Board, ➤ videos ➤ diagrams (NCERT, mind maps ➤ charts ➤ specimens, ➤ models ➤ pictures, ➤ actual objects ➤ flash cards 	<p>Students would:</p> <ul style="list-style-type: none"> ✚ Able to make a project on various useful microbes. ✚ Understand management techniques for solid, water and waste . ✚ Detect and work on over use of 	<ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach • Checklist &Rating scale • Quiz in class • In class 	<p>Student would be able to:</p> <ul style="list-style-type: none"> • Know the importance of microbes in day to day life. • Know role of antibiotics, its use and its manufacture. • Know role of microbes and biocontrol agents.

	production and judicious use. PRACTICALS: 13. suspended particulate matter in the air expt 14. Water pH, texture, solubility experiments	05	<ul style="list-style-type: none"> • Role of microbes as biocontrol agents and biofertilizers. • Production of antibiotics and its judicious use. 	<ul style="list-style-type: none"> • group assignment brainstorming • discussion • case-study • field exercise <p>Activity: Visit nearby municipality so that they could see secondary water treatment.</p>	<ul style="list-style-type: none"> ➤ slides ➤ chalk-board ➤ books & references ➤ NCERT Text book 	fertilizers and promote use of bio fertilizers & biocontrol methods.	<ul style="list-style-type: none"> • activity • Homework records 	
Nov	<p>13. Organisms and Populations: Organisms and environment: Habitat and niche, population and ecological adaptations; population interactions - mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution.</p> <p>14. Ecosystem Organisms and environment: Habitat and niche, population and ecological adaptations; population interactions - mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution.</p>	08	<p>It would enable student to understand:</p> <ul style="list-style-type: none"> • Concept of habitat and niche. • Populations and ecological adaptations (types) • Population interactions- Mutualism, competitions, predation, parasitism. • Population attributes- growth, birth rate, death rate, age distribution. 	<ul style="list-style-type: none"> • Lecture • Interaction • demonstration of models, • group assignment brainstorming • discussion • case-study • field exercise <p>Activity: Make a pie chart on Birth rate and death rate on Indian population.</p>	<ul style="list-style-type: none"> ➤ Smart Board, ➤ videos ➤ diagrams (NCERT, mind maps ➤ charts ➤ specimens, ➤ models ➤ pictures, ➤ actual objects ➤ flash cards ➤ slides ➤ chalk-board ➤ books & references ➤ NCERT Text book 	<p>Students would:</p> <ul style="list-style-type: none"> ➤ Able to prepare a project on various population interactions ➤ Calculate the population density using quadrant method. 	<ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach • Checklist & Rating scale • Quiz in class • In class activity • Homework records 	<p>Student would be able to:</p> <ul style="list-style-type: none"> • Relate the various kinds of population interactions • Know population characteristics and estimation. • Broadened the concept of habitat a niche.
		08	<p>It would enable student to understand:</p> <ul style="list-style-type: none"> • Concept of ecosystem- Patterns & components. • Productivity and decomposition • Concept of energy flow. • Ecological pyramids- no., energy and biomass. • Types of nutrient 	<ul style="list-style-type: none"> • Lecture • Interaction • demonstration of models, • group assignment brainstorming • discussion • case-study • field exercise <p>Activity:</p>	<ul style="list-style-type: none"> ➤ Smart Board, ➤ videos ➤ diagrams (NCERT, mind maps ➤ charts ➤ specimens, ➤ models ➤ pictures, ➤ actual objects ➤ flash cards ➤ slides ➤ chalk-board ➤ books 	<p>Students would:</p> <ul style="list-style-type: none"> ➤ Able to prepare a model on energy transmission through various ecosystems. ➤ Diagrammatically explain various pyramids. 	<ul style="list-style-type: none"> • Observations • Testing & Records • Practical approach • Checklist & Rating scale • Quiz in class • In class activity • Homework records 	<p>Student would be able to:</p> <ul style="list-style-type: none"> • Understand the concept of primary and secondary productivity will be developed. • Understand ecological succession and its application. • Understand nutrient cycling and its impact on environment. • Understand Energy flow and its estimation via 10% law.

	<p>15. Biodiversity and Conservation Concept of biodiversity; patterns of biodiversity; importance of biodiversity; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, biosphere reserves, national parks, sanctuaries and Ramsar sites.</p> <p>PRACTICALS: 15. Adaptations of plants to xeric and aquatic conditions. 16. Population density and Population frequency expts</p>	<p>08</p> <p>05</p>	<p>cycling –carbon and phosphorus.</p> <ul style="list-style-type: none"> Ecological succession- Hydrarch and xerarch. Ecological services- carbon fixation, pollination, seed dispersal. <p>It would enable student to understand:</p> <ul style="list-style-type: none"> Concept of biodiversity Importance of biodiversity Loss of biodiversity; reasons and solutions. Conservation of biodiversity. Biodiversity hotspots. Concept of endangered, extinct and vulnerable organisms Red data book Ex-situ and in-situ conservation 	<p>Make a pie chart on Birth rate and death rate on Indian population.</p> <ul style="list-style-type: none"> Lecture Interaction demonstration of models, group assignment brainstorming discussion case-study field exercise <p>Activity: Make a list of endangered species in Madhya Pradesh.</p>	<p>& references</p> <ul style="list-style-type: none"> NCERT Text book <p>Smart Board, videos diagrams (NCERT, mind maps charts specimens, models pictures, actual objects flash cards slides chalk-board books & references NCERT Text book</p>	<p>Students would:</p> <ul style="list-style-type: none"> Able to calculate frequency and density of biodiversity nearby. Make a project on various ex situ and in situ conservation strategies. Conceptualize biodiversity its pattern, and loss. 	<ul style="list-style-type: none"> Observations Testing & Records Practical approach Checklist & Rating scale Quiz in class In class activity Homework records 	<p>Student would be able to:</p> <ul style="list-style-type: none"> Differentiate between various conservation strategies. Enhance the knowledge of red data book. Identify hotspots of biodiversity.
Dec	<p>16. Environmental Issues: Air pollution and its control; water pollution and its control; agrochemicals and their effects; solid waste management; radioactive waste management; greenhouse effect and climate change; ozone layer depletion; deforestation; any one case study as success story addressing environmental issue(s).</p>	<p>08</p>	<p>It would enable student to understand:</p> <ul style="list-style-type: none"> Pollution and its types. Methods and control of pollution. Agrochemicals and their effects. Solid waste management. Radioactive waste management. Greenhouse effect and climate change Ozone layer depletion 	<ul style="list-style-type: none"> Lecture Interaction demonstration of models, group assignment brainstorming discussion case-study field exercise <p>Activity: Make a list of 10 environmental</p>	<p>Smart Board, videos diagrams (NCERT, mind maps charts specimens, models pictures, actual objects flash cards slides chalk-board books & references</p>	<p>Students would:</p> <ul style="list-style-type: none"> Able to work on water management system. Understand different environmental issues and could stop it with small projects. Able to check the pollution in different polluted and non-polluted areas 	<ul style="list-style-type: none"> Observations Testing & Records Practical approach Checklist & Rating scale Quiz in class In class activity Homework records 	<p>Student would be able to:</p> <ul style="list-style-type: none"> Know the various kinds of wastes and their modes of disposal. Understand greenhouse effect and its impact. Understand the management of radioactive wastes.

		<ul style="list-style-type: none">• Reasons of deforestation and solution.• Case study as success story addressing environmental issues.	issues.	➤ NCERT Text book			
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CHEMISTRY

Month	Lesson & Topics	No. of Periods	Learning Objectives	Methodology/ Activities	Teaching Aids / Resources	Experiential Learning	Assessment tools	Learning Outcomes
April	1. Solid state	10	Students will study about the properties of crystalline and amorphous solids, types of crystalline solids, crystal lattice and types of unit cell, Density of unit cell, packing efficiency, close packing in 1,2,3-dimension crystal lattice, imperfection in solids, electrical properties and semiconductors, magnetic properties.	Lecture method, Discussion method, Collaborating, classroom action research Question-answer method Activity- work sheet based on types of solids	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	They will differentiate between the properties of solids and will categorise them.	Class test, practical work with viva.	They will learn about types of solids, their properties, their structure, electrical and magnetic properties.
June	2. Solution	12	Concentration terms to express the concentration of solution, Types of solutions, Solubility, and Henry's law Raoult's law, ideal and non-ideal solution, colligative properties, relative lowering Vapour pressure, elevation in boiling point, depression in F.P., osmotic pressure, vant-hoff factor,	Lecture method, Discussion method, Demonstration, Question-answer method Activity- To analyse the acid and basic radical in the given salt. (NH₄Cl) & (NH₄Br).	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	Students will analyse the confirmation of Acid radical and basic radical by performing their individual test	Class test, practical work with viva.	They will learn about the different types of solution, their solubility and their colligative properties with abnormal behaviour.
July	3. Electrochemistry	10	Student will study about the working of Daniell cell, electrode potential, measurement of E ⁰ value, electrochemical series, strong and weak electrolyte, effect of dilution, Kohlrausch law, functioning of primary and secondary cell with reactions, Corrosion.	Lecture method, Discussion method, Demonstration, Question-answer method Activity- To analyse the acid and basic radical in the given salt. Ammonium acetate and oxalate.	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	Students will analyse the confirmation of Acid radical and basic radical by performing their individual test	class observation and pen paper test, Lab experiment with viva	They will learn about the working of electrolytic and electrochemical cell with chemical reactions.
	4. Chemical kinetics	10	Student will learn about the rate of reaction, molecularity & order of reaction, integrated rate equation for zero and first order reaction, Arrhenius theory and its mathematical rate expression, effect of catalyst on the rate of reaction, numerical	Lecture method, Discussion method, Question-answer method Activity- To analyse the acid and basic radical in the given salt. Lead acetate & Aluminum sulphate.	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	Students will analyse the confirmation of Acid radical and basic radical by performing their individual test	Pen-paper test laboratory experiment with viva.	Student will learn about the rate of chemical reaction and order of reaction and its determination.

	5. Surface chemistry	8	They will study about the adsorption, its mechanism, types of adsorption with their properties, Freundlich adsorption isotherm, colloids, classification of colloids, properties and its applications	Lecture method, Discussion method, Demonstration, Question-answer method Activity- To analyse the acid and basic radical in the given salt. Barium chloride and calcium carbonate.	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	Students will analyse the confirmation of Acid radical and basic radical by performing their individual test		They will understand the concept of adsorption and types different types, colloids and their properties.
August	6. Extraction and isolation of metals	6	students will learn the different steps to extract the metals from ores, its thermodynamic principle, extraction of iron, silver, zinc etc; different methods for purification of metals.	Lecture method, Discussion method, Demonstration, Question-answer method Activity- Prepare M/20 Mohr's salt solution. With the help of this solution, find the molarity and strength of given unknown KMnO_4 solution.	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	. They will evaluate the molarity and strength of KMnO_4 solution by M/20 solution of Mohr's salt solution by volumetric analysis.	Class test, practical work with viva.	Student will learn about extraction and purification of metal from its ores with reactions.
	7. p-block elements	12	Students will learn about the occurrence of elements, physical and chemical properties of group 15, 16, 17 & 18 with chemical reaction, properties of their compounds, oxoacids & their formula, uses	Lecture method, Discussion method, Demonstration, Question-answer method Activity- To analyse the acid and basic radical in the given salt. Magnesium sulphate and copper sulphate	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	Students will analyse the confirmation of Acid radical and basic radical by performing their individual test	Work sheet Class test, practical work with viva.	Student will learn about the chemistry of group 15, 16, 17 & 18 elements with their properties.
	8. d & f-block elements	10	Definition of transition elements & their series, Physical and chemical properties of d and f-block elements, their chemical reactions, chemistry of $\text{K}_2\text{Cr}_2\text{O}_7$ and KMnO_4 compounds, uses.	Lecture method, Discussion method, Demonstration, Question-answer method Activity- To identify the presence of functional group in the given sample of organic compound. Alcohol, phenol, carboxylic acid.	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	Students will analyse the confirmation of functional group by performing their individual test.	Work sheet Class test, practical work with viva.	Student will learn about the chemistry of transition and inner transition elements with their properties.
September	9. Co-ordination compounds	9	Double and complex salt, Werner theory, terms of complex compounds, IUPAC name, isomerism, bonding in complex compound, valence bond theory, crystal field theory for tetrahedral and octahedral compounds, its applications.	Lecture method, Discussion method, Demonstration, Question-answer method Activity- To analyse the acid and basic radical in the given salt. (NH_4Cl)	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	Students will analyse the confirmation of Acid radical (Cl^-) and basic radical (NH_4^+) by performing their individual test	Work sheet Class test, practical work with viva.	They will understand the concept of complex compounds with bonding and properties.

I-TERM EXAM								
October	10. Alkyl and aryl halides	10	Classification of alkyl and aryl halides, nomenclature, Nature of compounds, preparations of compounds, physical and chemical properties with reactions, SN1 & SN2 reactions with mechanism, polyhalogen compounds.	Lecture method, Discussion method, Demonstration, Question-answer method Activity-	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.		Work sheet Class test, practical work with viva.	They will understand the properties of alkyl and aryl halides and apply the knowledge in every day life
	11. Alcohol, phenol and ethers	12	Classification of alcoholic and phenolic group, nomenclature, Nature of compounds, preparations of alcohol, phenol and ether, physical and chemical properties with reactions, mechanism, properties of ethanol uses of these compounds	Lecture method, Discussion method, Demonstration, Question-answer method Activity- To identify the presence of functional group in the given sample of organic compound. Alcohol, phenol, carboxylic acid	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	Students will analyse the confirmation of functional group by performing their individual test.	Work sheet Class test, practical work with viva.	They will understand the properties of alcohol, phenol and ethers functional group and apply the knowledge in everyday life.
November	12. Aldehyde, ketone and carboxylic acid	12	Common and IUPAC nomenclature of aldehyde, ketons and carboxylic acid functional group, Nature of compounds, chemical reactions for their preparations, physical and chemical properties with reactions, mechanism, uses of these compounds	Lecture method, Discussion method, Demonstration, Question-answer method Activity- To identify the presence of functional group in the given sample of organic compound. Aldehyde, ketone and amines	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	Students will analyse the confirmation of functional group by performing their individual test.	Work sheet Class test, practical work with viva.	They will understand the preparation and properties of Aldehyde, ketone and carboxylic acid functional group and apply the knowledge in everyday life
	13. Nitrogen compounds	10	Common and IUPAC nomenclature of amine functional group, Nature of compounds, chemical reactions for their preparations, physical and chemical properties with reactions, mechanism, Diazonium compounds, their properties & uses of these compounds	Lecture method, Discussion method, Demonstration, Question-answer method Activity- Investigative project work.	Smart board modules, Atomic models, Periodic table chart, NCERT text books, chemistry lab manual.	Student will perform the experiment on the given topic and will analyse the result with the conclusion.	Work sheet Class test, practical work with viva.	They will understand the preparation and properties of amine functional group and apply the knowledge in everyday life
December	14. Biomolecules	8	Definition of carbohydrate, classification, monosaccharides, glucose and fructose, their structure & properties, disaccharides and polysaccharides, proteins,	Lecture method, Discussion method, Demonstration, Question-answer	Smart board modules, Atomic models,	Students will analyse the confirmation of Acid radical and	Work sheet Class test, practical work with viva.	They will learn about the composition and functions of carbohydrates, proteins and nucleic acid.

			classification and properties, fibrous and globular proteins, primary, secondary, tertiary structure of protein, enzyme, vitamins, nucleic acid DNA & RNA, their composition and bonding, their biological function.	method Activity- To analyse the acid and basic radical in the given salt. Zinc sulphate, lead nitrate.	Periodic table chart, NCERT text books, chemistry lab manual.	basic radical by performing their individual test		
	15. Polymers	6	Classification of polymers based on sources, mode, attractions between the particles, mechanism of free radical polymerization, types of polymers, their preparation with reactions and uses.	Lecture method, Discussion method, Activity- Solve the work-sheet				They will learn about the classification and preparation of different polymers and their uses.
	16. Chemistry in everyday life	4	Chemistry in medicines, chemicals in food, cleansing agents, soap & detergents.	Lecture method, Discussion method Activity – Solve the work-sheet				They will compresence the knowledge of chemical used in daily life.
December	Revision & I-preboard							
January	Revision & II-preboard							

PHYSICS

Month	Lesson & Topics	No. of Periods	Learning Objectives	Methodology/ Activities	Teaching Aids / Resources	Experiential Learning	Assessment tools	Learning Outcomes
APR	Unit-1 a) Electrostatic charges b) Electric field c) Electrostatic potential and flux d) Capacitance	23	Student will be able to learn the concept of electric force, Potential, electric field.	Introduction. Hypothesis, Demonstration, result and discussion conclusion Activity- show the electrostatic effect due to plastic and wool cloth.	Smart board, Teach Next modules Text book, refreshers, internet, modules	Student will be able to learn to perform activity, based on topics.	Pen and paper, project, Lab activity	Student learnt about, charges and its properties.
JUN	Unit-2 Current Electricity a) Electric current & resistance b) Electric measurement c) Heating effects of current.	15	Student will be able to learn about magnetic effect of current.	Introduction. Hypothesis, Demonstration, result and discussion , conclusion . Activity: - to measure resistance voltage current and check continuity of a given circuit using multimeter.	Smart board, Teach Next modules Text book, refreshers, internet, modules	Students will learn the concept by performing the experiment based on ohm's law, meter bridge, and potentiometer.	Pen and paper, project, Lab activity	Students are able to solve the conceptual problem related with the topics.
JULY	Unit-3 Magnetic effects of current and magnetism a) Magnetic field due to current b) Forces on charged particles in electric and magnetic fields	16	Students will be able to learn about magnetic force and magnetic field.	Introduction. Hypothesis, Demonstration, result and discussion , conclusion. Activity- function of electromagnet.	Smart board, Teach Next modules Text book, refreshers, internet, modules	Students will be able to learn the concept about magnetic field by performing activity related to the topics.	Pen and paper, project, Lab activity	Students are able to solve the problem related with the topics.
AUG	Unit-4 Alternating currents, Electrical devices Unit-5 Electromagnetic waves, Introduction of E.M.W. Maxwell's equation and Lorentz force	21	Student's will be able to learn about the concept related with A.C. circuit.	Introduction. Hypothesis, Demonstration, result and discussion , conclusion . Activity- To assemble a household circuit comprising three bulbs, three switches, a fuse and a power source.	Smart board, Teach Next modules Text book, refreshers, internet, modules	Students will be able to learn the application related concept based on E.M.W.	Pen and paper, project, Lab activity	Students are able to learn about the AC. Circuit and able to learn the E.M.W.
SEP	Hertz experiments & electromagnetic spectrum Unit-6 Optics a)	18	Students will be able to learn about the	Introduction. Hypothesis, Demonstration, result and discussion conclusion.	Smart board, Teach Next modules Text book, refreshers,	Students will be able to calculate the focal length and	Pen and paper, project, Lab activity	Students are able to solve the problem related with concept.

	Photometry b) Reflection of light c) refraction of light d) Dispersion of light e) optical instruments.		concept related with lights.	Activity- to study the variation potential drop in length of a wire for a steady current.	internet, modules	refractive index of lenses.		
OCT	e) Huygens principle & interference & diffraction & polarization. Unit-7 Dual nature of matter & radiat Unit-8 Atoms & nuclei a) atoms b) nuclei	18	Students will be able to learn about the concept.	Introduction. Hypothesis, Demonstration, result and discussion, conclusion Activity- To obtain the lens combination with the specified focal length by using two lenses from the given set of lenses.	Smart board, Teach Next modules Text book, refreshers, internet, modules	Student will be able to learn the concept-based experiment.	Pen and paper, project, Lab activity	Students are able to solve the problem related with concept.
NOV	Unit-9 Semiconductor devices a) conductors, insulators and semi- conductors b) semi-conductor devices c) Logic gates	20	Student are able to learn about semiconductors and its application.	Introduction. Hypothesis, Demonstration, result and discussion conclusion Activity- To identify a diode, an LED, a transistor, a resistor and a capacitor from a mixed collection of such items.	Smart board, Teach Next modules Text book, refreshers, internet, modules	Students will be able to perform the experiment-based activity on P-N junction diode.	Pen and paper, project, Lab activity	Students are able to develop the concept based on semiconductors.
DEC	unit 10. Communication	15	Students will be able to solve the problem related with the communication.	Introduction. Hypothesis, Demonstration, result and discussion conclusion Activity- To study effect of intensity of light on an LDR.	Smart board, Teach Next modules Text book, refreshers, internet, modules	Students will be able to perform the experiment-based activity on the topic.	Pen and paper, project, Lab activity	Students are able to understand the application of communication.

PHYSICAL EDUCATION

Months	Topics & Sub-Topics	No of Periods	Learning Objectives	Methodology	Teaching Tools /Resources	Experiential Learning	Assessment Tools	Learning Outcome
June	Changing trends and career and physical education	14	Meaning and Definition of physical education	Lecture method, Discussion Method,& and Demonstration Activity: Students would be taken to auditorium to watch gladiator movie	Smart board Internet Flow chart Board marker	Students will become aware about fitness and health care They will learn different forms of actions that were primitive.	Pen-paper Test,class response Physical activity Running Yoga	Children will become aware about changing trends in current physicaleducationsyllabus
July	1- olympic Movement 2- Physical Fitness,Wellness and life style	27	Ancient and modern olympics, Components of wellness	Lecture method, Discussion Method,& and Demonstration Activity: Make a file showing the difference between ancient and modern Olympic.	Smart board Internet Flow chart Board marker Pen Paper	Organisational set-up Sports and Chacha Nehru sports awards.	Pen-paper Test,class response Physical activity Running Yoga	children will become aware about components of Health- Related Fitness
August	1- Yoga 2- Physical Activity 3- Test measurement and Evaluation.	22	Relaxation technique and concentration	Lecture method, Discussion Method,& and Demonstration Activity: Students would be doing three types of asana's a) Cultural b) Meditative c) Therapeutic	Smart board Internet Flow chart Board marker Yoga mat	Introduction to Asanas,Pranayama and yoga skills	Pen-paper Test,class response Physical activity Running Yoga	Concept of physical Activity in terms of yoga and importance of test and Measurement t and evaluation in sports
SEP	REVISION							
October	Fundamentals of Anatomy and physiology	20	Definition of Anatomy, Physiology and their importance	Lecture method, Discussion Method& and Demonstration Activity: Students would be visit to Biolab	Smart board Internet Flow chart Board marker	Introduce function of Respiratory system, and properties of muscles	Pen-paper Test, class response Physical activity Running Yoga	Functions of skeletal system, Classification of Bones and Types of joints

November	-Kinesiology, Biomechanics and sports 2- Psychology and sports	19	Meaning and importance of kinesiology and Biomechanics in physical education and sports	Lecture method, Discussion Method& and Demonstration Activity: Students would be go for 100 m race in field	Smart board Internet Flow chart Board marker	Major muscles around the joints (neck, shoulder, Elbow, Hip and knees)	Pen-paper Test, class response Physical activity Running Yoga	Children will learn analysis of skills of physical movement
Dec	-Training in sports and 2- Doping	22	Knowledge about method of improving motor skills 2- disadvantage of doping	Lecture method, Discussion Method& and Demonstration Activity: Students would make projects on different types of drugs.	Smart board Internet Flow chart Board marker	Developing strength, Endurance, speed flexibility	Pen-paper Test, class response Physical activity Running Yoga	Specific fitness and control dropping procedure
JAN	REVISION							
FEB	REVISION							

INFORMATION PRACTICES

MONT H	TOPIC / CONCEPT AND SKILL	No of Periods	LEARNING OBJECTIVE	METHODOLOGY	TEACHING TOOL/ RESOURCES	EXPERIENTIAL LEARNING	ASSESSMENT OF TOOLS	LEARNING OUTCOME
Apr	Introduction of Numerical Functions	10	Reindexing, and altering labels. 1D array, 2D array Arrays: slices, joins, and subsets, Arithmetic operations on 2D arrays	Experimental Learning, Demonstrative Brainstroming, Interactive, Communicative	Student can now deal with computer	practicably identify all the computer software and study deply about computer system	Given to identify more new devices and advcance AI devices	Student are now aware about python numerical calculus
June	Introduction of Python pandas	8	Advanced operations on Data Frames: pivoting, sorting, and aggregation	Brainstroming, Experimental Learning, Demonstrative, Interactive, Communicative	ready to identify hardware devices	we will recognize device of computer in lab	Given to identify more new devices	Students are able to develop application of number using simple python.
July	Introduction of Python pandas part-2	15	Iterating over a DataFrame, Binary operation in a DataFrame, Descriptive Statistics with Pandas	Communicative, Experimental Learning, Demonstrative Brainstroming, Interactive	Conditional statements: if, if-else, if-elif-else; simple programs:	for example learning of these items absolute value, sort 3 numbers, divisibility.	anaconda software to running program of python	Student are now able to use, develop & debug programs independently.
Aug	Introduction plotting with pyplot	10	Basic concept of Data representation: Binary, ASCII, Unicode	Experimental Learning, Demonstrative Brainstroming, Interactive, Communicative	Suggested programs: finding average and grade for given marks, amount calculation for given cost-qty-discount,	perimeter-wise/ area-wise cost calculation, interest calculation	List and dictionary: finding the maximum, minimum, mean; linear search on a list of numbers, and counting the frequency of elements in a list using a dictionary.	student are able to plot very creative graphs using python.

MONT H	TOPIC / CONCEPT AND SKILL	No of Periods	LEARNING OBJECTIVE	METHODOLOGY	TEACHING TOOL/ RESOURCES	EXPERIENTIAL LEARNING	ASSESSMENT OF TOOLS	LEARNING OUTCOME
Sep	Basic Software Engineering (BSE)	12	Software Processes: waterfall model, evolutionary model, and component based model	Experimental Learning, Demonstrative Brainstroming, Interactive ,Communicative	Text handling: compare, concat,	Python modules: importing math (sqrt, ceil, floor, pow, fabs), random (random, randint, randrange), statistics (mean, median) modules.	linking of python to SQL database	Student are now able to understand complete architecture of software development.
Revision of Term I Lesson 1 To 8								
Oct	Data Handling	5	Everyday Influences of AI Globally, The Ever-changing Focus of AI research ,Types of AI careers.	Experimental Learning, Demonstrative Brainstroming, Interactive ,Communicative	string operations (without using string module).	To create a database, To insert the details of at least 10 student in the above table	Array can be designed in Lab	Student are now able to construct table with their own idea
Nov	Data Management	6	Django based web application that parses a GET and POST request, and	Experimental Learning, Demonstrative Brainstroming, Interactive ,Communicative	creation of table by student	with the help of table we can connect python to program	connector of sql is used	Student are now able to deal with MYSQL database management
Dec	Society, Law and Ethics part-1	12	Intellectual property rights, plagiarism, digital rights management,	Experimental Learning, Demonstrative Brainstroming, Interactive ,Communicative	Now student are able to identify all type of online attack in online system	Identify all type of virus attack online fraud aware about that and work on its safety	all type of online sensitive website must be identified	Student are able to ensure safety and security in cyber-space.
Jan	Society, Law and Ethics part-2	10	Safely accessing web sites: adware, malware, viruses,	Interactive ,Communicative Experimental Learning, Demonstrative Brainstroming,	report about bad things in computer	Indian cyber security authority is working on	aware related to virus and transfer of worms	Student can understand societal, legal and ethical aspect of technology
Feb	Revision for Term II							

