ANNUAL CURRICULUM PLAN

CLASS XII SCIENCE

(SESSION: 2015-16)

WHERE THE MIND IS WITHOUT FEAR

Where the mind is without fear and the head is held high

Where knowledge is free

Where the world has not been broken up into fragments

By narrow domestic walls

Where words come out from the depth of truth

Where tireless striving stretches its arms towards perfection

Where the clear stream of reason has not lost its way

Into the dreary desert sand of dead habit

Where the mind is led forward by thee

Into ever-widening thought and action

Into that heaven of freedom, my Father, let my country awake.

- Rabindranath Tagore

LIST OF HOLIDAYS

1. Good Friday	**03.04.15**	**Friday**
2. Dr. Ambedkar Jayanti	**14.04.15**	**Tuesday**
3. Buddh Purnima	**04.05.15**	**Monday**
4. Id –Ul- Fitr	**18.07.15**	**Saturday**
5. Independence Day	**15.08.15**	**Saturday**
6. Teej	**17.08.15**	**Monday**
7. Raksha Bandhan	**29.08.15**	**Saturday**
8. Janamashtami	**05.09.15**	**Saturday**
9. Id-Ul-Zuha	**24.09.15**	**Thursday**
10. Gandhi Jayanti	**02.10.15**	**Friday**
11. Dussehra	**22.10.15**	**Thursday**
12. Muharram	**24.10.15**	**Saturday**
13. Karwa Chauth	**30.10.15**	**Friday**
14. Haryana Day	**01.11.15**	**Sunday**
15. Diwali	**11.11.15**	**Wednesday**
16. Goverdhan Puja	**12.11.15**	**Thursday**
17. Bhai Duj	**13.11.15**	**Friday**
18. Guru Nanak Dev ji's Birthday	**25.11.15**	**Wednesday**
19. Christmas Day	**25.12.15**	**Friday**
20. Makar Sankaranti	**14.01.16**	**Wednesday**
21. Republic Day	**26.01.16**	**Monday**
22. Maha Shivratri	**07.03.16**	**Monday**
23. Holi	**24.03.16**	**Thursday**

Note:

1. Summer Break: 17th May 2015 to 30th June 2015

2. Autumn Break: 18th October 2015 to 23rd October 2015

3. Winter Break: 1st January 2016 to 10th January 2016

Total Number of Working Days: 236

April: 23	**Aug.: 21**	**Dec.: 25**
May: 23	**Sept.: 23**	**Jan.: 14**
June: 06	**Oct.: 18**	**Feb : 24**
July: 24	**Nov.: 19**	**Mar.: 16**

School Curriculum Goals

The Curriculum will adopt the following goals:

- to create a connect between learners' spiritual, ethical, social, cognitive, mental and physical growth and development;
- to nurture individuality and thus enhance one's innate potentials;
- to foster constitutional literacy and tolerance for different cultures;
- to develop scientific outlook and transformative competences, in order to meet the demands of changing society. The aim of education is not just to let learners obtain basic knowledge but to make them life-long learners. It is to nurture future citizens who are mentally and physically robust, assertive, confident, empathetic and helpful to the community, intellectually inquisitive and reflective, tolerant and with creative vision and global perspective. Schools will accomplish such standards through the promotion of values based learning activities which emphasize humanity, practicality, individuality, inclusiveness, and modernity. Such activities involve collaborations between oneself and others, individuals and the community, as well as humans and nature.

To achieve this, we must guide our learners to achieve the following curriculum goals:

- To enhance self-awareness and explore innate potential;
- To develop creativity and the ability to appreciate art and showcase one's own talents;
- To promote capabilities related to goal setting, decision making and lifelong learning;
- To nurture assertive communication and interpersonal skills;
- To learn to be empathetic towards others, display dignity and respect to the opposite gender, to contribute for the community, and focus on preserving environment;
- To foster cultural learning and international understanding in an interdependent society;
- To strengthen knowledge and attitude related to livelihood skills;
- To acquire the ability to utilize technology and information for the betterment of humankind;
- To inspire the attitude of functional and participatory learning; and
- To develop abilities related to thinking skills and problem solving.

Main Pedagogical Outcomes for Curriculum Learning Areas:

- Learners use language to comprehend, acquire and communicate ideas and information and to interact with others.
- Learners identify, integrate and apply numerical and spatial concepts and techniques. They have clarity of concepts and are able to connect them to the real world.
- Learners understand and appreciate the physical, biological and technological world and have the knowledge, attitude, skills & values to make rational decisions in relation to it.
- Learners understand their cultural, geographical and historical milieus& have the knowledge, attitude, skills& values necessary to bring about transformation for a better India.

- Learners recognize the requirement of information, locate and resource it from a range of data available and evaluate, use and collaborate it with others.
- Learners identify, select, use technologies and are able to synthesize, innovate and discover newer technologies as required.
- Learners rationalize and reason about pre-defined arrangements, norms and relationships in order to comprehend, decode, validate and develop more relevant patterns.
- Learners think laterally, critically, identify opportunity, challenge their potential and are open to challenges. They are aware of consequences and take ownership of their deeds.
- Learners interact harmoniously with people and cultures from across the globe and are tolerant and empathetic towards others.
- Learners involve themselves in cultural pursuits as well as appreciate, respect and acknowledge the artistic, cultural and intellectual work of others.
- Learners value and engage in practices that promote personal physical as well as mental and cognitive development and well-being.

EXAMINATION SCHEDULE

AUGUST EXAMINATION SCHEDULE

DATE	XII Science
03.08.2015	Chemistry Practical
04.08.2015	Physics Practical
05.08.2015	Comp. Sci./ Phy. Edu. Prac.
06.08.2015	Biology Practical
07.08.2015	Gen. Studies
10.08.2015	Chemistry
12.08.2015	English
14.08.2015	Maths/ Biology
18.08.2015	Physics
22.08.2015	Comp. Sci/ Phy. Edu.

PRE-BOARD EXAMINATION SCHEDULE

DATE	XII Science
07.12.2015	Comp. Sci./ Phy. Edu.
09.12.2015	Maths/ Biology
11.12.2015	English
14.12.2015	Physics
16.12.2015	Chemistry

PRACTICALS' EXAMINATION SCHEDULE

DATE	XII SCIENCE
19.12.2015	Chemistry
21.12.2015	Phys. Ed./ Comp. Sc.
22.12.2015	Physics
23.12.2015	Biology

OBJECTIVES

The general objectives at this stage are:

- To listen and comprehend live as well as record in writing oral presentations on a variety of topics.
- To develop greater confidence and proficiency in the use of language skills necessary for social and academic purpose.
- To participate in group discussions, interviews by making short oral presentation on given topics.
- To perceive the overall meaning and organisation of the text (i.e., the relationships of the different "chunks" in the text to each other
- To identify the central/main point and supporting details, etc., to build communicative competence in various registers of English
- To promote advanced language skills with an aim to develop the skills of reasoning, drawing inferences, etc. through meaningful activities
- To translate texts from mother tongue(s) into English and vice versa
- To develop ability and knowledge required in order to engage in independent reflection and enquiry

At the end of this stage learners will be able to do the following:

- Read and comprehend extended texts (prescribed and non-prescribed) in the following genres: science fiction, drama, poetry, biography, autobiography, travel and sports literature, etc.
- text-based writing (i.e., writing in response to questions or tasks based on prescribed or unseen texts)
- Understand and respond to lectures, speeches, etc.
- Write expository / argumentative essays, explaining or developing a topic, arguing a case, etc.
- write formal/informal letters and applications for different purposes
- Write items related to the workplace (minutes, memoranda, notices, summaries, reports etc.
  filling up of forms, preparing CV, e mail messages., making notes from reference materials, recorded talks etc.The core course should draw upon the language items suggested for class IX-X and delve deeper into their usage and functions. Particular attention may, however, be given to the following areas of grammar: The use of passive forms in scientific and innovative writings. Converting one kind of sentence/clause into a different kind of structure as well as other items to exemplify stylistic variations in different discourses modal auxiliaries-uses based on semantic considerations.

Specific Objectives of Reading:

Students are expected to develop the following study skills:

a. refer to dictionaries, encyclopaedia, thesaurus and academic reference material
b. select and extract relevant information, using reading skills of skimming and scanning
c. understand the writer's attitude and bias
d. comprehend the difference between what is said and what is implied
e. understand the language of propaganda and persuasion
f. differentiate between claims and realities, facts and opinions
g. form business opinions on the basis of latest trends available
h. comprehend technical language as required in computer related fields
i. arrive at personal conclusion and comment on a given text specifically
j. develop the ability to be original and creative in interpreting opinion
k. develop the ability to be logically persuasive in defending one's opinion
l. making notes based on a text Develop literary skills as enumerated below:
    - personally respond to literary texts
    - appreciate and analyse special features of languages that differentiate literary texts from non-literary ones
    - explore and evaluate features of character, plot, setting, etc
    - understand and appreciate the oral, mobile and visual elements of drama
    - identify the elements of style such as humour, pathos, satire and irony, etc.
    - make notes from various resources for the purpose of developing the extracted ideas into sustained pieces of writing

Specific Objectives of Writing

- to write letters to friends, pen friends, relatives, etc.
- to write business and official letters.
- to send faxes, e-mails[formal].
- to open accounts in post offices and banks.
- to fill in railway/airline reservation forms.
- to write on various issues to institutions seeking relevant information, lodge complaints, express thanks or tender apology.
- to write applications, fill in application forms, prepare a personal bio-data for admission into colleges, universities, entrance tests and jobs.
- to write informal reports as part of personal letters on functions, programmes and activities held in school (morning assembly, annual day, sports day, etc.)
- to write formal reports for school magazines/ events/processes/ or in local newspapers about events or occasions.
- to express opinions, facts, arguments in the form a speech or debates.
- to draft papers to be presented in symposia.
- to take down notes from talks and lectures.
- to write examination answers according to the requirement of various subjects.
- to summarise a text.

ENGLISH CORE

SECTION A

Reading Comprehension **30 Marks**

Reading Unseen Passages and Note making

Two unseen Passages with a variety of very short answer or MCQ questions to test comprehension, interpretation and inference. Vocabulary such as word formation and inference of meaning will also be tested.

The total length of the two passages will be between 1100-1200 words. The passage will include two of the following:

a. Factual Passages, e.g. instructions, descriptions, reports.
b. Descriptive passages involving opinion, e.g. argumentative, persuasive or interpretative text.
c. Literary passages, e.g. extract from fiction, drama, poetry, essay or biography. A poem could be of 28-35 lines.
   - The passage can be literary, factual or discursive to test comprehensions. The length of the passage should be between 600-700 words.
   - A third passage of 400-500 words for note-making and abstraction

SECTION-B

Writing Skills **30 Marks**

- Short Answer Questions, e.g. advertisement and notices, designing or drafting posters, writing formal and informal invitations and replies.
- Long Answer questions: Letters based on verbal/visual input.

Letter types include

- Business or official letters (for making enquiries, registering complaints, asking for and giving information, placing orders and sending replies)
- Letters to the editor (giving suggestions on an issue or option on issue on public interest Application for a job

Very Long Answer Questions: Two compositions based on visual and / or verbal Output may be descriptive or argumentative in nature such as an article , a debate or a speech.

SECTION-C

Literature Textbooks and Long Reading Text **40 Marks**

Flamingo and Vistas

- Very Short Answer Questions- Based on an extract from poetry to test comprehension and appreciation.
- Short Answer Question-Based on Prose and poetry from both the texts.
- Long Answer Question-Based on texts to test global comprehension and extrapolation beyond the texts to bring out the key messages and values.

- **Long Answer Question –** Based on texts to test global comprehension along with analysis and extrapolation.
- **Long Answer Question –** Based on theme, plot and incidents from the prescribed novels.
- **Long Answer Question –** Based on understanding appreciation, analysis and interpretation of the character sketch.

Prescribed Books:

1. **Flamingo: English Reader** published by National Council of Education Research and Training, New Delhi
2. **Vistas Supplementary Reader** published by National Council of Education Research and Training, New Delhi

Note: Long answer questions based on values can be given in the writing section or in the literature section.

Textbooks	**Name of the lessons deleted**
Flamingo	1. Poets and Pancakes 2. The Interview 3. A Road Ride Stand (Poetry)
Vistas	4. The Third Level 5. Journey to the End of the Earth

Long Reading Texts

The Novels are:	**Author**
• Silas Marner	George Eliot
• The Invisible Man	H. G. Wells

QUESTION PAPER DESIGN

CLASS-XII ENGLISH CORE XII CODE-301 Time: 3 Hours Marks: 100

Typology	Typology of questions/ learning outcomes	MCQ 1 mark	VSAQ 1 mark	Short answer Question 3 marks	Short answer Question 4 marks	Long Answer-I 80-100 words 5 marks	Long Answer-2 Question 120-150 words 6 marks	Very long answer 150-200 words (HOTS) 10 marks	Total Marks	Overall %
Reading Skills	Conceptual understanding, decoding, analyzing, inferring, interpreting appreciating. Literary conventions and vocabulary, summarising and using appropriate format.	**6**	**16**	**1**	**----**	**1**	**___**	**___**	**30**	**30**
Writing Skills	Reasoning, appropriacy of style and tone, using appropriate format and fluency inference, analysis, evaluation and creativity.	**--**	**---**	**---**	**1**	**___**	**1**	**2**	**30**	**30**
Literary Textbooks And long reading text	Recalling, reasoning, appreciating a literary conventions , inference , analysis, evaluation, creativity with fluency	**---**	**4**	**4**	**---**	**---**	**4**	**___**	**40**	**40**
TOTAL		**6x1=6**	**20x1=20**	**5x3=15**	**1x4=4**	**1x5=5**	**5x6=30**	**2x10=20**	**100**	**100**

ANNUAL SYLLABUS BREAK UP

APRIL

Flamingo	:	Ch. 1 The Last Lesson
		P-1 My mother at Sixty Six
Vistas	:	Ch. 1 The Tiger King
Novel	:	The Invisible Man by H. G. Wells (Group Discussion)
Writing Skills	:	Notice, Advertisement

MAY

Flamingo	:	Ch. 2 Lost Spring
		P-2 An Elementary School Classroom in a Slum
Vistas	:	Ch. 2 The Enemy
Novel	:	The Invisible Man by H. G. Wells (Group Discussion)
Writing Skills	:	Invitation, Letter Writing (Formal)

JUNE

Flamingo	:	Ch. 3 Deep Water

JULY

Flamingo	:	Ch. 4 The Rattrap
Vistas	:	Ch. 3 Should Wizard Hit Mommy?
Flamingo	:	P-3 Keeping Quiet
Writing Skills	:	Poster Making and Article Writing
Novel	:	The Invisible Man by H. G. Wells (Group Discussion)

AUGUST

REVISION FOR AUGUST EXAMINATION

SEPTEMBER

Flamingo	:	Ch. 5 Indigo
Flamingo	:	P-4 A thing of Beauty
Novel	:	The Invisible Man by H. G. Wells (Group Discussion)
Writing Skills	:	Speech, Debate
Vistas	:	Ch.4 On the Face of it
Vistas	:	Ch.5 Evans tries an O level

OCTOBER

Flamingo	:	Ch. 6 Going Places
Flamingo	:	P- 5 Aunty Jenifer's Tiger
Vistas	:	Ch. 6 Memories of Childhood
Writing Skills	:	Applications for Job, Article Writing, Speech Writing
Novel	:	The Invisible Man by H. G. Wells (Group Discussion)

NOVEMBER

REVISION FOR PRE-BOARD EXAMINATION

DECEMBER

PRE-BOARD EXAMINATION

EXAMINATION SYLLABUS

AUGUST EXAMINATION

Section	Content	
Flamingo	Ch. 1	The Last Lesson
	Ch. 2	Lost Spring
	Ch. 3	Deep Water
	Ch. 4	The Rattrap
Poetry	P-1	My mother at Sixty Six
	P-2	An Elementary School Classroom in a Slum
	P-3	Keeping Quiet
Vistas	Ch. 1	The Tiger King
	Ch. 2	The Enemy
	Ch. 3	Should wizard hit Mommy
Writing Skills	Notices, Advertisements, Poster Making , Letters	
Novel	The Invisible Man by H. G. Wells	

PRE BOARD EXAMINATION (DECEMBER)

FULL SYLLABUS

NOTE: There will be a class test and assignment after every chapter.

OBJECTIVES

The broad objectives of teaching Mathematics at senior school stage intend to help the students:

- to acquire knowledge and critical understanding, particularly by way of motivation and visualization, of basic concepts, terms, principles, symbols and mastery of underlying processes and skills.
- to feel the flow of reasons while proving a result or solving a problem.
- to apply the knowledge and skills acquired to solve problems and wherever possible, by more than one method.
- to develop positive attitude to think, analyze and articulate logically.
- to develop interest in the subject by participating in related competitions.
- to acquaint students with different aspects of Mathematics used in daily life.
- to develop an interest in students to study Mathematics as a discipline.
- to develop awareness of the need for national integration, protection of environment, observance of small
- family norms, removal of social barriers, elimination of gender biases.
- to develop reverence and respect towards great Mathematicians for their contributions to the field of Mathematics.

	Unit	**Marks**
II.	RELATIONS AND FUNCTIONS	10
III.	ALGEBRA	1 3
IV.	CALCULUS	44
V.	VECTORS AND THREE-DIMENSIONAL GEOMETRY	17
VI.	LINEAR PROGRAMMING	06
VII.	PROBABILITY	10
	TOTAL	100

QUESTION WISE BREAK UP

Type of Question(s)	**Marks(s) per Question**	**Total No. of Questions**	**Total Marks**
VSA	1	6	06
LA-I	4	13	52
LA-II	6	7	42
Total		26	100

QUESTION PAPER DESIGN

Time: 3 Hours **CLASS-XII** **Max. Marks : 100**

S.No.	Typology of questions	Learning Outcomes and Testing Competencies	Very Short Answer (1 mark)	Long Answer I (4 Marks)	Long Answer II (6 marks)	Marks	% Weightage
1	**Remembering**- (Knowledge based simple recall questions, to know specific facts, terms, concepts, principles, or theories, Identify, define, or recite, information	•Reasoning •Analytical Skills •Critical thinking •Derivative	2	3	1	20	20%
2	**Understanding-** (Comprehension – to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase information)		2	2	1	16	16%
3	**Application** (Use abstract information in concrete situation, to apply knowledge to new situations, Use given content to interpret a situation, provide an example, or solve a problem)		1	3	2	25	25%
4	**High Order Thinking skills** (Analysis & Synthesis- Classify, compare, contrast or differentiate between different pieces of information, Organize and/or integrate unique pieces of information from a variety of sources		1	2	2	21	21%
5	**Evaluation and Multi-Disciplinary**- (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on value		--	2+1 (Value Based)	1	18	18%
	TOTAL		6*1=6	13*4=52	7*6=42	100	100%

ANNUAL SYLLABUS BREAKUP

APRIL

Chapter3: Matrices

Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Addition, multiplication and scalar multiplication of matrices, simple properties of addition, multiplication and scalar multiplication. Non-commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Concept of elementary row and column operations. Invertible matrices and proof of the uniqueness of inverse, if it exists.

Chapter 4: Determinants

Determinant of a square matrix (up to 3 x 3 matrices), properties of determinants, minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.

Chapter 1: Relation and Function

Types of relations: reflexive, symmetric, transitive and equivalence relations. Functions: One to one and onto functions, composite functions, inverse of a function. Binary operations.

MAY-JUNE

Chapter 2: Inverse Trignometric Functions

Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions. Elementary properties of inverse trigonometric functions.

Chapter 5: Continuity and Differentiability

Continuity and differentiability, derivative of composite functions, chain rule, derivatives of inverse trigonometric functions, derivative of implicit functions.Concept of exponential and logarithmic functions.

Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives. Rolle's and Lagrange's Mean Value Theorems (without proof) and their geometric interpretation.

JULY

Chapter 12: Linear Programming

Introduction, related terminology such as constraints, objective function, optimization. Different types of linear programming (L.P.) problems, mathematical formulation of L.P. problems, graphical method of solution for problems in two variables, feasible and infeasible regions, feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

Chapter 6: Applications of Derivatives

Applications of derivatives: rate of change of bodies, increasing/decreasing functions, tangents and normals, use of derivatives in approximation, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations).

Chapter 7: Integrals
Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts. Evaluation of simple intergrals.

AUGUST

REVISION FOR AUGUST EXAMINATION

SEPTEMBER

Chapter 7: Integrals
Definite integrals as a limit of a sum, Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.

Chapter 8: Applications of Integrals
Applications in finding the area under simple curves, especially lines, circles/parabolas/ellipses (in standard form only), Area between any of the two above said curves (the region should be clearly identifiable).

Chapter 9: Differential Equations
Definition, order and degree. General and particular solutions of a differential equation. Formation of differential equation whose general solution is given. Solution of differential equations of first order and first degree by method of separation of variables of homogeneous differential equations. Solutions of linear differential equation.

OCTOBER

Chapter 10: Vectors
Vectors and scalars, magnitude and direction of a vector. Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio.
Definition, Geometrical Interpretation, properties and applications of scalar (dot) product of vectors, vector (cross) product of vectors, scalar triple product of vectors projection of a vector on a line.

Chapter 13: Probability
Conditional probability, multiplication theorem on probability, independent events, total probability, Baye's theorem, Random variable and its probability distribution, mean and variance of a random variable.

NOVEMBER

Chapter 13: Probability (Contd.)
Repeated independent (Bernoulli) trials and Binomial distribution

Chapter 11:Three Dimensional Geometry
Direction cosines and direction ratios of a line joining two points. Cartesian and vector equation of a line, coplanar and skew lines, shortest distance between two lines. Cartesian and vector equation of a plane. Angle between (i) two lines, (ii) two planes, (iii) a line and a plane. Distance of a point from a plane.

DECEMBER

PRE-BOARD EXAMINATION

EXAMINATION SYLLABUS

AUGUST EXAMINATION

Chapters
Matrices
Determinants
Relation and Functions
Inverse Trigonometric Functions
Continuity and Differentiability
Linear Programming
Applications of Derivatives

PRE BOARD EXAMINATION (DECEMBER)

Full Syllabus

NOTE: There will be a class test and assignment after every chapter.

DETAILED SYLLABUS OF PHYSICS

OBJECTIVES

Senior Secondary stage of school education is a stage of transition from general education to discipline-based focus on curriculum. The present updated syllabus keeps in view the rigour and depth of disciplinary approach as well as the comprehension level of learners. Due care has also been taken that the syllabus is comparable to the international standards. Salient features of the syllabus include:

- Emphasis on basic conceptual understanding of the content.
- Emphasis on use of SI units, symbols, nomenclature of physical quantities and formulations as per international standards.
- Providing logical sequencing of units of the subject matter and proper placement of concepts with their linkage for better learning.
- Reducing the curriculum load by eliminating overlapping of concepts/content within the discipline and other disciplines.
- Promotion of process-skills, problem-solving abilities and applications of Physics concepts.

Besides, the syllabus also attempts to

- Strengthen the concepts developed at the secondary stage to provide firm foundation for further learning in the subject.
- Expose the learners to different processes used in Physics-related industrial and technological applications.
- Develop process-skills and experimental, observational, manipulative, decision making and investigatory skills in the learners.
- Promote problem solving abilities and creative thinking in learners.
- Develop conceptual competence in the learners and make them realize and appreciate the interface of Physics with other disciplines.
-

Time: 3 hrs. **THEORY** **Max. Marks: 70**

	Marks
Unit I Electrostatics Unit II Current Electricity	15
Unit III Magnetic Effect of Current and Magnetism Unit IV Electromagnetic Induction and Alternating Current	16
Unit V Electromagnetic Waves Unit VI Optics	17
Unit VII Dual Nature of Matter Unit VIII Atoms and Nuclei	10
Unit IX Electronic Devices Unit X Communication Systems	12
Total	70

PRACTICALS

The record, to be submitted by the students, at the time of their annual examination, has to include

- Record of at least 15 Experiments [with a minimum of 7 from section A and 8 from section B], to be performed by the students.
- Record of at least 5 Activities [with a minimum of 2 each from section A and section B], to be demonstrated by the teachers.
- The Report of the project, to be carried out by the students.

Evaluation Scheme

Two experiments one from each section	**8+8 Marks**
Practical record [experiments & activities]	6 Marks
Investigatory Project	3 Marks
Viva on experiments, activities & project	5 Marks
Total	**30 Marks**

QUESTION WISE BREAK UP

Total no. of Questions	**Marks(s) per Question**	**Total No. of Questions**	**Total Marks**
VSA	1	5	05
SA-I	2	5	10
SA-II	3	12	36
VBQ	4	1	04
LA	5	3	15
Total		**26**	**70**

1.Internal Choice: There is no overall choice in the paper. However, there is an internal choice in one question of 2 marks weightage, one question of 3 marks weightage and all the three questions of 5 marks weightage.

2. The above template is only a sample. Suitable internal variations may be made for generating similar templates keeping the overall weightage to different form of questions and typology of questions same.

QUESTION PAPER DESIGN

Time 3 Hours **Max. Marks : 70**

S.No.	Typology of questions	Very Short Answer (VSA) 1 mark	Short Answer-I (SA-I) 2 marks	Short Answer-II (SA-I) 3 marks	Value Based Questions 4 marks	Long Answer (5 marks)	Total marks	% Weightage
1	**Remembering-(Knowledge based** simple recall questions, to know specific facts, terms, concepts, principles, or theories, Identify, define, or recite, information	2	1	1	-	-	7	10%
2	**Understanding-(Comprehension** –to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase information)	-	2	4	-	1	21	30%
3	**Application** (Use abstract information in concrete situation, to apply knowledge to new situations, Use given content to interpret a situation, provide an example, or solve a problem)	-	2	4	-	1	21	30%
4	**High Order Thinking skills** (Analysis & Synthesis- Classify, compare, contrast or differentiate between different pieces of information, Organize and /or integrate unique pieces of information from a variety of sources	2	-	1	-	1	10	14%
5	**Evaluation and Multi-Disciplinary**- (Appraise, judge, and/or justify the value or worth of a decision or outcome , or to predict outcomes based on value	1	-	2	1	-	11	16%
	TOTAL	5x1=5	5x2=10	12x3= 36	1x4=4	3x5=15	70(26)	100%

ANNUAL SYLLABUS BREAKUP

APRIL

Unit I: Electrostatics **22 Periods**

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).
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 polarisation, 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.

MAY

Unit II: Current Electricity **20 Periods**

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity. Carbon resistors, colour code for carbon resistors; series and parallel combinations of resistors; 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 laws and simple applications. Wheatstone bridge, metre bridge.
Potentiometer - principle and its applications to measure potential difference and for comparing EMF of two cells; measurement of internal resistance of a cell.

MAY-JUNE

Unit III: Magnetic Effects of Current and Magnetism **22 Periods**

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 and toroidal solenoids, force on a moving charge in uniform magnetic and electric fields. Cyclotron.
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; moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter. Current loop as a magnetic dipole and its magnetic dipole moment.Magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; Earth's magnetic field and magnetic elements. Para-, dia- and ferro - magnetic substances, with examples. Electromagnets and factors affecting their strengths. Permanent magnets.

JULY

Unit IV: Electromagnetic Induction and Alternating Currents 20 Periods

Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Eddy currents. Self and mutual induction. Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits, wattless current. AC generator and transformer.

AUGUST

REVISION FOR AUGUST EXAMINATION

SEPTEMBER

Unit V: Electromagnetic waves 04 Periods

Need for displacement current, Electromagnetic waves and their characteristics (qualitative ideas only). Transverse nature of electromagnetic waves. Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

SEPTEMBER-OCTOBER

Unit VI: Optics 25 Periods

Reflection of light, spherical mirrors, mirror formula. Refraction of light, total internal reflection and its applications, optical fibers, refraction at spherical surfaces, lenses, thin lens formula, lens maker's formula. Magnification, power of a lens, combination of thin lenses in contact, Combination of a lens and a mirror. Refraction and dispersion of light through a prism. Scattering of light - blue colour of sky and reddish appearance of the sun at sunrise and sunset. Optical instruments : Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

Wave optics: Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light. Diffraction due to a single slit, width of central maximum.Resolving power of microscopes and astronomical telescope. Polarisation, plane polarised light, Brewster's law, uses of plane polarised light and Polaroids.

OCTOBER

Unit VII: Dual Nature of Matter and Radiation 08 Periods

Dual nature of radiation. Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light. Matter waves-wave nature of particles, de Broglie relation. Davisson-Germer experiment (experimental details should be omitted; only conclusion should be explained).

NOVEMBER

Unit VIII: Atoms and Nuclei 14 Periods

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum. Composition and size of nucleus, Radioactivity, alpha, beta and gamma particles/rays and their properties; radioactive decay law.

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

Unit IX: Electronic Devices **15 Periods**

Energy bands in solids (Qualitative ideas only) conductor, insulator and semiconductor; semiconductor diode - I-V characteristics in forward and reverse bias, diode as a rectifier; I-V characteristics of LED, photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator. Junction transistor, transistor action, characteristics of a transistor, transistor as an amplifier (common emitter configuration). Logic gates (OR, AND, NOT, NAND and NOR).

Unit X: Communication Systems **10 Periods**

Elements of a communication system (block diagram only); bandwidth of signals (speech, TV and digital data); bandwidth of transmission medium. Propagation of electromagnetic waves in the atmosphere, sky and space wave propagation. Need for modulation. Production and detection of an amplitude-modulated wave. Basic ideas about internet, mobile telephony and global positioning system (GPS).

DECEMBER

PRE-BOARD EXAMINATION

AUGUST EXAMINATION

Section
Unit 1, 2, 3 & 4

PRE-BOARD EXAMINATION
Full syllabus

NOTE: There will be a class test and assignment after every chapter.

PRACTICALS (Total Periods 60)

The record, to be submitted by the students, at the time of their annual examination, has to include:

1. Record of at least 15 Experiments [with a minimum of 7 from section A and 8 from section B], to be performed by the students.
2. Record of at least 5 Activities [with a minimum of 2 each from section A and section B], to be demonstrated by the teachers.
3. The Report of the project, to be carried out by the students.

Evaluation Scheme

Total Periods : 60

Two experiments one from each section	8+8 Marks
Practical record [experiments and activities]	6 Marks
Investigatory Project	3 Marks
Viva on experiments, activities and project	5 Marks
Total	30 marks

Note: Related practicals and activities will be done or conducted along with the chapter

SECTION–A
Experiments

(March to July)

(Any 7 experiments out of the following to be performed by the students)

1. To determine resistance per cm of a given wire by plotting a graph of potential difference versus current.
2. To find resistance of a given wire using metre bridge and hence determine the resistivity (specific resistance) of its material
3. To verify the laws of combination (series/parallel) of resistances using a metre bridge.

4. To compare the EMF of two given primary cells using potentiometer.
5. To determine the internal resistance of given primary cell using potentiometer.
6. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
7. To convert the given galvanometer (of known resistance and figure of merit) into an ammeter and voltmeter of desired range and to verify the same.
8. To find the frequency of AC mains with a sonometer.

Activities (For the purpose of demonstration only)

1. To measure the resistance and impedance of an inductor with or without iron core.
2. To measure resistance, voltage (AC/DC), current (AC) and check continuity of a given circuit using multimeter.
3. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.
4. To assemble the components of a given electrical circuit.
5. To study the variation in potential drop with length of a wire for a steady current.
6. 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.

SECTION–B
Experiments
(September to December)

(Any 8 experiments out of the following to be performed by the students)

1. To find the value of v for different values of u in case of a concave mirror and to find the focal length.
2. To find the focal length of a convex mirror, using a convex lens.
3. To find the focal length of a convex lens by plotting graphs between u and v or between 1/u and 1/v.
4. To find the focal length of a concave lens, using a convex lens.
5. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.
6. To determine refractive index of a glass slab using a travelling microscope.
7. To find refractive index of a liquid by using (i) concave mirror, (ii) convex lens and plane mirror.
8. To draw the I-V characteristic curve of a p-n junction in forward bias and reverse bias.
9. To draw the characteristic curve of a zener diode and to determine its reverse break down voltage.
10. To study the characteristic of a common - emitter npn or pnp transistor and to find out the values of current and voltage gains.

Activities (For the purpose of demonstration only)

1. To identify a diode, an LED, a transistor, an IC, a resistor and a capacitor from a mixed collection of such items.
2. Use of multimeter to (i) identify base of transistor, (ii) distinguish between npn and pnp type transistors, (iii) see the unidirectional flow of current in case of a diode and an LED, (iv) check whether a given electronic component (e.g., diode, transistor or IC) is in Working order.
3. To study effect of intensity of light (by varying distance of the source) on an LDR.
4. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
5. To observe polarization of light using two Polaroids.

6. To observe diffraction of light due to a thin slit.
7. To study the nature and size of the image formed by a (i) convex lens, (ii) concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror).
8. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.

(January)

Suggested Investigatory Projects

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. (a) in the power of the incandescent lamp, used to 'illuminate' the LDR. (keeping all the lamps at a fixed distance). (b) in the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.
3. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens, (made from a glass of known refractive index) and an adjustable object needle.
4. To design an appropriate logic gate combination for a given truth table.
5. To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.
6. To investigate the dependence of the angle of deviation on the angle of incidence, using a hollow prism filled, one by one, with different transparent fluids.
7. To estimate the charge induced on each one of the two identical styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.
8. To set up a common base transistor circuit and to study its input and output characteristic and to calculate its current gain.
9. To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C source of adjustable frequency.
10. To construct a switch using a transistor and to draw the graph between the input an output voltage and mark the cut-off, saturation and active regions.
11. To study the earth's magnetic field using a tangent galvanometer.

DETAILED SYLLABUS OF CHEMISTRY

OBJECTIVES

- The broad objectives of teaching Chemistry at Senior Secondary Stage are:
- To promote understanding of basic facts and concepts in chemistry while retaining the excitement of chemistry.
- To make students capable of studying chemistry in academic and professional courses (such as medicine, engineering, technology) at tertiary level.
- To expose the students to various emerging new areas of chemistry and apprise them with their relevance in future studies and their application in various spheres of chemical sciences and technology.
- To equip students to face various challenges related to health, nutrition, environment, population, weather, industries and agriculture.
- To develop problem solving skills in students.
- To expose the students to different processes used in industries and their technological applications. to apprise students with interface of chemistry with other disciplines of science such as physics, biology, geology, engineering etc.
- To acquaint students with different aspects of chemistry used in daily life. to develop an interest in students to study chemistry as a discipline.

Time: 3Hrs. **THEORY** **70 Marks**

Unit No.	Title	Marks
Unit I	Solid State	23
Unit II	Solutions	
Unit III	Electro Chemistry	
Unit IV	Chemical Kinetics	
Unit V	Surface Chemistry	
Unit VI	General Principles and Processes of Isolation of Elements	19
Unit VII	p-Block Elements	
Unit VIII	d- and –f Block Elements	
Unit IX	Coordination Compounds	
Unit X	Haloalkanes and Haloarenes	28
Unit XI	Alcohols , Phenols and Ethers	
Unit XII	Aldehydes ,Ketones and Carboxylic Acids	
Unit XIII	Organic Compounds containing Nitrogen	
Unit XIV	Biomolecules	
Unit XV	Polymers	
Unit XVI	Chemistry in Everyday Life	
Total		**70**

PRACTICALS

Evaluation Scheme for Examination	Marks
Volumetric Analysis	8
Salt Analysis	8
Content Based Experiment	6
Project Work	4
Class record and viva	4
Total	**30**

Type of Question(s)	Marks(s) per Question	Total No. of Questions	Total Marks
VSA	1	5	05
SA-I	2	5	10
SA-II	3	12	36
VBQ	4	1	04
LA	5	3	15
Total		26	70

QUESTION WISE BREAK UP

1. Internal Choice: There is no overall choice in the paper. However, there is an internal choice in one question of 2 marks weightage, one question of 3 marks weightage and all the three questions of 5 marks weightage.
2. The above template is only a sample. Suitable internal variations may be made for generating similar templates keeping the overall weightage to different form of questions and typology of questions same.

QUESTION PAPER DESIGN

Time 3 Hours **Max. Marks : 70**

S.No.	Typology of questions	Very Short Answer (VSA) I MARK	Short Answer-I (SA-I) 2 marks	Short Answer-II (SA-I) 3 marks	Value Based Questions 4 marks	Long Answer (5 marks)	Total marks	% Weightage
1	**Remembering-(Knowledge based** simple recall questions, to know specific facts, terms, concepts, principles, or theories, Identify, define, or recite, information	2	1	1	-	-	7	10%
2	**Understanding-(Comprehension** – to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase information)	-	2	4	-	1	21	30%
3	**Application** (Use abstract information in concrete situation, to apply knowledge to new situations, Use given content to interpret a situation, provide an example, or solve a problem)	-	2	4	-	1	21	30%
4	**High Order Thinking skills** (Analysis & Synthesis- Classify , compare, contrast or differentiate between different pieces of information, Organize and/or integrate unique pieces of information from a variety of sources	2	-	1	-	1	10	14%
5	**Evaluation and Multi-Disciplinary**- (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on value	1	-	2	1	-	11	16%
	TOTAL	5x1=5	5x2=10	12x3= 36	1x4=4	3x5=15	70(26)	100%

ANNUAL SYLLABUS BREAK UP

APRIL

Unit I: Solid State **10 Periods**

Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea). Unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell, packing in solids, packing efficiency, voids, number of atoms per unit cell in a cubic unit cell, point defects, electrical and magnetic properties. Band theory of metals, conductors, semiconductors and insulators and *n* and *p* type semiconductors**.**

Unit II: Solutions **10 Periods**

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties - relative lowering of vapour pressure, Raoult's law, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.
(PRACTICAL) Determination of concentration/ molarity of KMnO4 solution by titrating it against a standard solution of:
i) Oxalic acid,
ii) Ferrous Ammonium Sulphate
(Students will be required to prepare standard solutions by weighing themselves).

Unit XV: Polymers **08 Periods**

Classification - natural and synthetic, methods of polymerization (addition and condensation), copolymerization, some important polymers: natural and synthetic like polythene, nylon polyesters, bakelite, rubber. Biodegradable and non-biodegradable polymers.

MAY

Unit III: Electrochemistry **12 Periods**

i) Enthalpy of dissolution of Redox reactions, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, fuel cells, corrosion.
(PRACTICAL)C. Thermochemistry
Any one of the following experiments
Copper Sulphate or Potassium Nitrate.
ii) Enthalpy of neutralization of strong acid (HCI) and strong base (NaOH).
iii) Determination of enthaply change during interaction (Hydrogen bond formation) between Acetone and Chloroform.
D. Electrochemistry
Variation of cell potential in $Zn/Zn^{2+}||\ Cu^{2+}/Cu$ with change in concentration of electrolytes ($CuSO_4$ or $ZnSO_4$) at room temperature

Unit IV : Chemical Kinetics **10 Periods**

Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate

constant,integrated rate equations and half life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment). Activation energy, Arrhenious equation.

(PRACTICAL) B. Chemical Kinetics

(a) Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid.

(b) Study of reaction rates of any one of the following:

(i) Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentration of Iodide ions.

(ii) Reaction between Potassium Iodate, (KIO_3) and Sodium Sulphite: (Na2SO3) using starch solution asindicator (clock reaction).

JUNE

Unit V: Surface Chemistry **08 Periods**

Adsorption - physisorption and chemisorption, factors affecting adsorption of gases on solids, catalysis, homogenous and heterogenous activity and selectivity; enzyme catalysis colloidal state distinction between true solutions, colloids and suspension; lyophilic, lyophobic multimolecularand macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement,electrophoresis, coagulation, emulsion - types of emulsions.

(PRACTICAL) A. Surface Chemistry

(a) Preparation of one lyophilic and one lyophobic sol Lyophilic sol - starch, egg albumin and gum Lyophobic sol - aluminium hydroxide, ferric hydroxide, arsenous sulphide.

(b) Dialysis of sol-prepared in (a) above.

(c) Study of the role of emulsifying agents in stabilizing the emulsion of different oils.

JULY

Unit VI: General Principles & Processes of Isolation of Elements **08 Periods**

Principles and methods of extraction - concentration, oxidation, reduction - electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron.

(PRACTICAL) E. Chromatography

i) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rf values.

ii) Separation of constituents present in an inorganic mixture containing two cations only (constituents having large difference in Rf values to be provided).

F. Preparation of Inorganic Compounds

i) Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum.

ii) Preparation of Potassium Ferric Oxalate.

G. Preparation of Organic Compounds

Preparation of any one of the following compounds

i) Acetanilide

ii) Di -benzal Acetone

iii) p-Nitroacetanilide

iv) Aniline yellow or 2 - Naphthol Aniline dye.

Unit VII: "p"-Block Elements **12 Periods**

Group -15 Elements: General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; Nitrogen preparation properties and uses; compounds of Nitrogen, preparation and properties of Ammonia and Nitric Acid, Oxides of Nitrogen(Structure only) ; Phosphorus -allotropic forms, compounds of Phosphorus: Preparation and Properties of Phosphine, Halides and Oxoacids (elementary idea only).

Group 16 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties, dioxygen: Preparation, Properties and uses, classification of Oxides, Ozone, Sulphur -allotropic forms; compounds of Sulphur: Preparation Properties and uses of Sulphur-dioxide, Sulphuric Acid: industrial process of manufacture, properties and uses; Oxoacids of Sulphur (Structures only).

Group 17 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens, Preparation, properties and uses of Chlorine and Hydrochloric acid, interhalogen compounds, Oxoacids of halogens (structures only).

Group 18 Elements: General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.

Unit XVI: Chemistry in Everyday life **06 Periods**

Chemicals in medicines - analgesics, tranquilizers antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines.

Chemicals in food - preservatives, artificial sweetening agents, elementary idea of antioxidants.

Cleansing agents- soaps and detergents, cleansing action.

AUGUST

REVISION FOR AUGUST EXAMINATION

Unit IX: Coordination Compounds **12 Periods**

Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, importance of coordination compounds (in qualitative inclusion, extraction of metals and biological system).

SEPTEMBER

Unit VIII: "d" and "f" Block Elements **12 Periods**

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals - metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$.

Lanthanoids - Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences.

Actinoids - Electronic configuration, oxidation states and comparison with lanthanoids**.**

Unit X: Haloalkanes and Haloarenes. **10 Periods**

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

Haloarenes: Nature of C -X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only).

Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

Unit XIV: Biomolecules

Carbohydrates - Classification (aldoses and ketoses), monosaccahrides (glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates.

OCTOBER

Unit XIV: Biomolecules (Contd.)

Proteins -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins -primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure.
Vitamins - Classification and functions.
Nucleic Acids: DNA and RNA.

(PRACTICAL) I. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given food stuffs.

Unit XI: Alcohols, Phenols and Ethers 10 Periods

Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol.
Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols.
Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses.

Unit XII: Aldehydes, Ketones and Carboxylic Acids 10 Periods

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes: uses.
Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

NOVEMBER

Unit XIII: Organic compounds containing Nitrogen 10 Periods

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.
Cyanides and Isocyanides - will be mentioned at relevant places in text.
Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.

(PRACTICAL) . Tests for the functional groups present in organic compounds:
Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.
K. Qualitative analysis Determination of one cation and one anion in a given salt.
Cation – Pb^{2+}, Cu^{2+} As^{3+}, Al^{3+}, Fe^{3+}, Mn^{2+}, Zn^{2+}, Cu^{2+}, Co^{2+}, Ni^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+}, NH_4^+
Anions – CO_3^{2-} , S^{2-} , SO_3^{2-} , SO_4^{2-} , NO_2^- , Cl^- , Br- , I^- , PO_4^{3-} , $C_2O_4^{2-}$, CH_3COO^-
(Note: Insoluble salts excluded)
Revision from Sample Papers

DECEMBER

PRE-BOARD EXAMINATION

EXAMINATION SYLLABUS

AUGUST EXAMINATION

Solid States
Solutions
Polymers
Electro-Chemistry
Chemical Kinetics
Surface Chemistry
General Principles & Processes of Isolation of Elements
P-Block Elements
Chemistry in everyday life

PRE-BOARD EXAMINATION

Full Syllabus (Unit 1-16)

NOTE: There will be a class test and assignment after every chapter.

DETAILED SYLLABUS OF BIOLOGY

OBJECTIVES

- The prescribed syllabus is expected to:
- Promote understanding of basic principles of Biology.
- Encourage learning of emerging knowledge and its relevance to individual and society.
- Promote rational/scientific attitude to issues related to population, environment and development.
- Enhance awareness about environmental issues, problems and their appropriate solutions.
- Create awareness amongst the learners about diversity in the living organisms and developing respect for other living beings.
- Appreciate that the most complex biological phenomena are built on essentially simple processes.

THEORY

One Paper **Time: 3 Hours** **70 Marks**

Unit	Title	Marks
1.	Reproduction	14
2.	Genetics and Evolution	18
3.	Biology and Human Welfare	14
4.	Biotechnology and its Applications	10
5.	Ecology and Environment	14
	Total	**70**

Note: The question paper will include a Section on Open Case based –Questions on two case studies of 7 marks each from the syllabus, a total of 14 marks. The case studies will be supplied to students in advance. These case studies are designed to test the analytical and higher order thinking skills of students.

PRACTICALS

Evaluation Scheme	Maximum Marks : 30
One Major Experiment	5 marks
One Minor Experiment	4 marks
Slide Preparation	5 marks
Spotting	7 marks
Practical record + viva Voce	4 marks
Project record + viva Voce	5 marks
Total	30 marks

QUESTION PAPER DESIGN

Time 3 Hours **Max. Marks : 70**

S.No.	Typology of questions	Very Short Answer (VSA) 1 mark	Short Answer-I (SA-I) 2 marks	Short Answer-II (SA-I) 3 marks	Value Based Questions 4 marks	Long Answer (5 marks)	Total marks	% Weightage
1	**Remembering- (Knowledge based** simple recall questions, to know specific facts, terms, concepts, principles, or theories, Identify, define, or recite, information	2	1	1	---	---	7	10%
2	**Understanding- (Comprehension** – to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase information)	-	2	4	---	1	21	30%
3	**Application** (Use abstract information in concrete situation, to apply knowledge to new situations, Use given content to interpret a situation, provide an example, or solve a problem)	-	2	4	-	1	21	30%
4	**High Order Thinking skills** (Analysis & Synthesis- Classify, compare, contrast or differentiate between different pieces of information, Organize and/or integrate unique pieces of information from a variety of sources	2	-	1	-	1	10	14%
5	**Evaluation and Multi-Disciplinary**- (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on value	1	-	2	1	-	11	16%
	TOTAL	5x1=5	5x2=10	12x3= 36	1x4=4	3x5=15	70(26)	100%

Note: The question paper will include a Section on Open Case based – Questions on two case studies of 7 marks each from the syllabus, a total of 14 marks. The case studies will be supplied to students in advance. These case studies are designed to test the analytical and higher order thinking skills of students.

QUESTION WISE BREAK UP

Type of Question(s)	Marks(s) per Question	Total No. of Questions	Total Marks
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SA-I	2	5	10
SA-II	3	12	36
VBQ	4	1	04
LA	5	3	15
Total		26	70

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2. The above template is only a sample. Suitable internal variations may be made for generating similar templates keeping the overall weightage to different form of questions and typology of questions same.

ANNUAL SYLLABUS BREAK UP

APRIL

Unit 1: Reproduction

Ch1.Reproduction in organisms: Reproduction, a characteristic feature of all organisms for continuation of species; modes of reproduction - asexual and sexual reproduction; asexual reproduction - binary fission, sporulation, budding, gemmule, fragmentation; vegetative propagation in plants.

Ch2.Sexual reproduction in flowering plants: Flower structure; development of male and 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.

PRACTICALS : 1.Study Pollen germination on a slide (Core Experiment)

MAY

Ch3. 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).

Ch4. Reproductive health: Need for reproductive health and prevention of sexually transmitted diseases (STD); 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).

PRACTICALS: Spotting

1.Flowers adapted to pollination by different agencies (wind, insect, bird).

2. Pollen germination on stigma through a permanent slide.

3. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice

JUNE

Unit 2: Genetics and Evolution

Ch5. 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.

(PRACTICAL)

Core Experiments

1. Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity. Correlate with the kinds of plants found in them.

2. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organisms.

JULY

Ch6.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 and human genome project; DNA fingerprinting.
Ch7. Evolution: Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, embryology and molecular evidence); 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.

Unit 3: Biology and Human Welfare
Ch8.Health and disease: Pathogens; parasites causing human diseases (malaria, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) Basic concepts of immunology - vaccines; cancer, HIV and AIDS; Adolescence, drug and alcohol abuse.
(PRACTICAL)
(Core Experiment) 1.Study the presence of suspended particulate matter in air at two widely different sites.
(Spotting) 1.Meiosis in onion bud cell or grasshopper testis through permanent slides.
2.T.S. of blastula through permanent slides.

AUGUST

REVISION FOR AUGUST EXAMINATION

Unit3 Biology and Human Welfare
Ch9.Improvement in food production: Plant breeding, tissue culture, single cell protein, Bio fortification, Apiculture and Animal husbandry.
PRACTICALs
(Core Experiments)
1. Study of plant population density by quadrat method.
2. Study of plant population frequency by quadrat method

SEPTEMBER

Unit3.Biology and Human Welfare
Ch10. Microbes in human welfare: In household food processing, industrial production, sewage treatment, energy generation and as bio control agents and bio fertilizers
Unit 4: Biotechnology and Its Applications
Ch11. Principles and processes of biotechnology: Genetic Engineering (Recombinant DNA Technology).
Ch12. Application of biotechnology in health and agriculture: Human insulin and vaccine production, gene therapy; genetically modified organisms – Bt.crops; transgenic animals; biosafety issues, bio piracy and patents.

PRACTICALS

(Core Experiment)

Prepare a temporary mount of onion root tip to study mitosis.

(Spotting)

1. Mendelian inheritance using seeds of different colour/sizes of any plant.
2. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness

OCTOBER

Unit 5: Ecology and Environment

Ch13.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.

Ch14. Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy; nutrient cycles (carbon and phosphorous); ecological succession; ecological services - carbon fixation, pollination, seed dispersal, oxygen release.

PRACTICALS

(Core Experiment)

1. Study the effect of different temperatures and three different pH on the activity of salivary amylase on starch.

(Spotting)

1. Controlled pollination - emasculation, tagging and bagging.
2. Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, Roundworm through permanent slides or specimens. Comment on symptoms of disease that they cause.

NOVEMBER

Ch15. Biodiversity and its 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 and sanctuaries.

Ch16. 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 global warming; ozone depletion; deforestation; any three case studies as success stories addressing environmental issues, diseases; dengue and chickengunia.

PRACTICALS

(Core Experiments)

1. Isolation of DNA from available plant material such as spinach, green pea seeds, papaya, etc.

(Spotting)

1.Two plants and two animals (models/virtual images) found in xeric conditions. Comment upon their morphological adaptations.

2. Two plants and two animals (models/virtual images) found in aquatic conditions. Comment upon their morphological adaptations

DECEMBER

PRE-BOARD EXAMINATION

AUGUST EXAMINATION

Chapters

Reproduction in organism
Sexual Reproduction in flowering plant
Human reproduction
Reproductive health
Principle of inheritance and variation.
Molecular basis of inheritance
Evolution
Human Health and disease

PRE-BOARD EXAMINATION

Full Syllabus

NOTE: There will be a class test and assignment after every chapter.

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OBJECTIVES

1. To understand basics of computers.
2. To develop logic for Problem Solving.
3. To develop problem solving skills and their implementation through **Python (version: 2.7)** or using C++.
4. To understand and implement the concept of Object Oriented Methodology.
5. To understand the concept of working with Relational Database.
6. To understand the basic concept of Computing Logic.
7. To understand the basic concepts of Communication and Networking technologies.
8. To understand Open Source Software.

Theory

One Paper **Time: 3 Hours** **70 Marks**

Unit	Title	Marks
1.	OBJECT ORIENTED PROGRAMMING IN C++	30
2.	DATA STRUCTURE	14
3.	DATABASE MANAGEMENT SYSTEM AND SQL	8
4.	BOOLEAN ALGEBRA	8
5.	NETWORKING AND OPEN SOURCE SOFTWARE	10
	TOTAL	**70**

ANNUAL SYLLABUS BREAK UP

APRIL

Chapter 1: Review of C++

Chapter 2: OOP Object Oriented Programming: Concept of Object Oriented Programming - Data hiding, Data encapsulation, Class and Object, Abstract class and Concrete class, Polymorphism (Implementation of polymorphism using Function overloading as **an example in C++**); Inheritance, Advantages of Object Oriented Programming over earlier programming methodologies.

Chapter 3: Implementation of OOP Concepts in C++ (Classes and Objects)

Implementation of Object Oriented Programming concepts in C++: Definition of a class, Member of a class - Data Members and Member Functions (methods), Using Private and Public visibility modes, default visibility mode (private); Member function definition: inside class definition and outside class definition using scope resolution operator (::); Declaration of objects as instances of a class; accessing members from object (s), Objects as function arguments - pass by value and pass by reference.

Chapter 4: Constructors and Destructors

Constructor and Destructor: Constructor: special characteristics, declaration and definition of a constructor, default constructor, overloaded constructors, copy constructor, constructor with default arguments.

MAY-JUNE

Chapter 4: Constructors and Destructors (contd.)

Destructor: Special Characteristics, declaration and definition of destructor.

Chapter 5: Inheritance

Inheritance (Extending Classes): Concept of Inheritances, Base Class, Derived classes, protected Visibility mode; Single level inheritance, Multilevel inheritance and Multiple inheritance, Privately derived, Publicly derived and Protectedly derived class, accessibility of members from objects and within derived class.

Chapter 6: Pointers

Declaration and Initialization of Pointer; Dynamic memory allocation/deallocation operators: **new, delete**; Pointers and Arrays: Array of Pointers, Pointer to an array (1 dimensional array), Function returning a pointer, Pointer to structure: De-reference operator; self referencial structure.

Chapter 7:Data File Handling

Need for a data file, Types of data files - Text file and Binary file; **Text File:** Basic file operations on text file: Creating/Writing text into file, Reading and Manipulation of text from an already existing text file (accessing sequentially).

Binary File: Creation of file, Writing data into file, Searching for required data from file, Appending data to a file, Insertion of data in sorted file, Deletion of data from file, Modification of data in a file; Implementation of above mentioned data file handling in C++; Components of C++ to be used with file handling: Header file: fstream.h; ifstream, ofstream, fstream classes;
Opening a file in in, out, and app modes.

Using cascading operators (>><<) for writing text to the file and reading text from the file; open(), get(), read(),put(), write(), getline() and close() functions; Detecting end-of-file (with or without using eof()function), tellg() , tellp(), seekg(), seekp().

JULY

Chapter 8: Arrays

One and two Dimensional arrays: Sequential allocation and address calculation; One dimensional array: Traversal, Searching (Linear, Binary Search), Insertion of an element in an array, deletion of an element from an array, Sorting (Insertion, Selection, Bubble) Two-dimensional arrays: Traversal Finding sum/difference of two NxM arrays containing numeric
values, Interchanging Row and Column elements in a two dimensional array.

Project Work

AUGUST

REVISION FOR AUGUST EXAMINATION

. SEPTEMBER

Chapter 9: Stacks

(Array and Linked implementation of Stack): Introduction to stack (LIFO_Last in First Out Operations) Operations on Stack (PUSH and POP) and its Implementation in C++, Converting expressions from INFIX to POSTFIX notation and evaluation of Postfix expression.

Chapter 10: Queues

Queue: (Circular Array and Linked Implementation): Introduction to Queue (FIFO - First in First Out operations) Operations on Queue (Insert and Delete and its Implementation in C++.

OCTOBER

Chapter 11: Databases and SQL

Data base Concepts: Introduction to data base concepts and its need.

Relational data model: Concept of domain, tuple, relation, key, primary key, alternate key, candidate key.

Relational algebra: Selection, Projection, Union and Cartesian product.

Structured Query Language:

General Concepts: Advantages of using SQL, Data Definition Language and Data Manipulation Language.

Data Types: NUMBER/DECIMAL, CHARACTER/VARCHAR/VARCHAR2, DATE; SQL
COMMANDS: CREATE TABLE, DROP TABLE, ALTER TABLE, UPDATE ….SET…., INSERT,
DELETE; SELECT, DISTINCT, FROM, WHERE, IN, BETWEEN, GROUPBY, HAVING, ORDERBY;

SQL functions: SUM, AVG, COUNT, MAX AND MIN.

Obtaining results (SELECT query) from 2 tables using equi-join and Union

Note: Implementation of the above mentioned commands could be done on any SQL supported software On one or two tables.

Chapter 12: Boolean Algebra
Role of Logical Operations in Computing.

Binary-valued Quantities, Boolean Variable, Boolean Constant and Boolean Operators: AND, OR, NOT; **Truth Tables;** Closure Property, Commutative Law, Associative Law, Identity law, Inverse Law, Principle of Duality, Idem potent Law, Distributive Law, Absorption Law, Involution Law, DeMorgan's Law and their applications; Obtaining Sum of Product (SOP) and Product of Sum (POS) form from the Truth Table, Reducing Boolean Expression (SOP and POS) to its minimal form.

NOVEMBER

Chapter 12: Boolean Algebra (contd.)

Use of Karnaugh Map for minimization of Boolean expressions (up to 4 variables).

Application of Boolean Logic: Digital electronic circuit design using basic Logic Gates (NOT, AND, OR, NAND, NOR)

Use of Boolean operators (AND, OR) in search engine queries.

Chapter 13: Networking and Open Source Concepts

Evolution of Networking: ARPANET, Internet, Interspace Different ways of sending data across the network with reference to switching techniques (Circuit and Packet switching).

Data Communication terminologies: Concept of Channel, Bandwidth (Hz, KHz, MHz) and Data transfer rate (bps, kbps, Mbps, Gbps, Tbps).

Transmission media: Twisted pair cable, coaxial cable, optical fiber, infrared, radio link, microwave link and satellite link.

Network devices: Modem, RJ45 connector, Ethernet Card, Router, Repeater, Switch, Gateway, wifi card; **Network Topologies and types:** Bus, Star, Tree, PAN, LAN, WAN, MAN.

Network Protocol: TCP/IP, File Transfer Protocol (FTP), PPP, SMTP, POP3, Remote Login (Telnet), Internet Wireless/Mobile Communication protocol such as GSM, CDMA, GPRS, WLL.

Mobile Telecommunication Technologies: 1G, 2G, 3G and 4G Protocols for Chat and Video Conferencing VOIP Wireless technologies such as Wi-Fi and WiMax Network Security Concepts: Threats and prevention from Viruses, Worms, Trojan horse, Spams, Use of Cookies, Protection using Firewall; India IT Act, Cyber Law, Cyber Crimes, IPR issues, Hacking.

Introduction To Web services: WWW, Hyper Text Markup Language (HTML), eXtensible Markup Language (XML); Hyper Text Transfer Protocol (HTTP); Domain Names; URL; Website, Web browser, Web Servers; Web Hosting, Web Scripting - Client side (VB Script, Java Script, PHP) and Server side (ASP, JSP, PHP), Web 2.0 (for social networking).

DECEMBER

PRE-BOARD EXAMINATION

EXAMINATION SYLLABUS

AUGUST EXAMINATION

Chapters 1-8

PRE-BOARD EXAMINATION

Full Syllabus

NOTE: There will be a class test and assignment after every chapter.

DETAILED SYLLABUS OF PHYSICAL EDUCATION

THEORY **MM 70**

Unit 1 Sports environment and society
Unit 2 Adventure sports and leadership training
Unit 3 Sports and nutrition
Unit 4 Planning in sports
Unit 5 Postures
Unit 6 Children and sports
Unit 7 Test and measurement in sports
Unit 8 Physiology and sports
Unit 9 Biomechanics and sports
Unit 10 Psychology and sports
Unit 11 Training in sports

PRACTICAL **MM: 30**

1. Physical fitness – aahpar
2. Athletics – middle and long distance races and throws
3. Health and fitness activities asanas/swiss ball, polymetric (any one)
4. Skill on any one individual game of choice from given list- athletics, basketball, football, hand ball, hockey, kho- kho, volley ball
5. Viva
6. Record file

ANNUAL SYLLABUS BREAK UP

APRIL

CHAPTER 1 :Sports environment and society

- Meaning and need of sports environment.
- Essential elements of positive sports environment.
- Role of individual in improvement of sports environment.
- Role of Spectators and media in creating positive sports environment.
- Women participation - As discourse and Ideology.

CHAPTER 2: Adventure sports and leadership training

- Meaning and objectives of Adventure Sports.
- Types of activities - Camping, Rock Climbing, Tracking, River Rafting and Mountaineering.
- Material requirement and safety measures.
- Identification and use of Natural Resources.
- Conservation of environment.
- Creating leaders through Physical Education.

MAY-JUNE

CHAPTER 3: Sports And Nutrition

- Balanced Diet and Nutrition: Macro and Micro Nutrients.
- Nutritive and Non-Nutritive Components of Diet.
- Eating Disorders - Anorexia Nervosa and Bulemia.
- Effects of Diet on Performance.
- Eating for Weight Control - A Healthy weight, The pitfalls of Dieting, food intolerance and food myths.

CHAPTER 4: Planning In Sports

- Meaning and Objectives of Planning.
- Various Committees and its responsibilities.
- Tournament - Knock-Out, League or Round Robin and Combination.
- Procedure to draw Fixtures - Knock-Out (Bye and Seeding) and League (Staircase and Cyclic)
- Intramural and Extramural - Meaning, Objectives and its Significance.
- Specific Sports Programme (Sports Day, Health Run, Run for Fun, Run for Specific Cause and Run for Unity).

JULY

. CHAPTER 5:Postures

- Meaning and concept of correct postures - standing and sitting.
- Advantages of correct posture.
- Common Postural Deformities - Knock Knee; Flat Foot; Round Shoulders; Lordosis, Kyphosis, Bow Legs and Scolioses.
- Physical activities as corrective measures.

CHAPTER 6: Children And Sports

- Motor development in children.
- Factors affecting motor development.
- Physical and Physiological benefits of exercise on children.
- Advantages and disadvantages of weight training and food supplement for children.
- Activities and quality of life.

AUGUST

REVISION FOR AUGUST EXAMINATION

SEPTEMBER

CHAPTER 7: Test And Measurement In Sports

- Measurement of Muscular Strength - Kraus Weber Test.
- Motor Fitness Test - AAPHER
- Measurement of Cardio Vascular Fitness - Harward Step Test/Rockfort Test.
- Measurement of Flexibility - Sit and Reach Test.
- Rikli and Jones - Senior Citizen Fitness Test.
    1. Chair Stand test for lower body strength.
    2. Arm Curl test for upper body strength.
    3. Chair Sit and Reach test for lower body flexibility.
    4. Back Scratch test for upper body flexibility.
    5. Eight Foot Up and Go test for agility.
    6. Six minute walk test for Aerobic Endurance.

CHAPTER 8: Physiology And Sports

- Physiological factor determining component of Physical Fitness.
- Effect of exercise on Cardio Vascular System.
- Effect of exercise on Respiratory System.
- Effect of exercise on Circulatory System.
- Physiological changes due to ageing and role of regular exercise on ageing process.

OCTOBER

CHAPTER 9: Biomechanics And Sports

- Projectile and factors affecting Projectile Trajectory.
- Angular and Linear Movements.
- Introduction to Work, Power and Energy.
- Friction
- Mechanical Analysis of Walking and Running.

CHAPTER 10: Psychology And Sports

- Understanding stress, anxiety and its management.
- Coping Strategies - Problem Focused and Emotional focused.
- Personality, its dimensions and types; Role of sports in personality development.
- Motivation, its type and technique.
- Self-esteem and Body image

NOVEMBER

CHAPTER 11 : Training In Sports

- Strength - Definition, types and methods of improving strength - Isometric, Isotonic and Isokinetic.
- Endurance - Definition, types and methods to develop Endurance - Continuous Training, Interval Training and Fartlek Training.
- Speed - Definition, types and methods to develop speed - Acceleration run and pace run.
- Flexibility - Definition, types and methods to improve flexibility.
- Coordinative abilities - Definition and types.

DECEMBER

PRE-BOARD EXAMINATION

AUGUST EXAMINATION

Chapter 1, 2, 3, 4, 5 & 6.

PRE-BOARD EXAMINATION

Full Syllabus

NOTE: There will be a class test and assignment after every chapter.