ANNUAL CURRICULUM PLAN

CLASS XII SCIENCE (SESSION: 2018-19)

GOLAYA PROGRESSIVE PUBLIC SCHOOL, PALWAL
ANNUAL CALENDAR (SESSION: 2018-19)

April 2018 (Working days = 23)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 Session begins	3	4	5	6	7 **World Health Day**
8	9	10	11	12	13 **Baisakhi Celebrations**	14 ***Holiday (Ambedkar Jayanti)***
15	16	17	18 **World Heritage Day**	19	20	21
22	23 **World Book & Copyright Day**	24	25 **Inter House Solo Song & Dance (Sr.) Competition**	26 **Inter House Volleyball Match**	27	28 **Parent Teacher Meeting**
29	30 ***Holiday (Buddha Purnima)***					

May 2018 (Working days = 13+13)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 **Commencement of Periodic Test 1** **Intl. Labour Day**	2	3	4	5
6	7	8 **World Red Cross Day**	9 **Culmination of Periodic Test 1**	10	11 **National Technology Day**	12 ***Holiday for students on account of 2nd Saturday***
13 Mother's Day	14	15 **International Day of the Family**	16	17 **** Commencement of Summer Break for Class VI - VIII / Extra Class for IX - XII***	18	19
20	21	22	23	24	25	26
27	28	29	30	31 Anti Tobacco Day	*** subject to change as per Govt. instructions**	

June 2018 (Working days = 02)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4 *Commencement of Summer Break for Class IX - XII*	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21 International Day of Yoga	22	23
24	25	26	27	28	29	30

July 2018 (Working days = 25)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 The school wil open after Summer Vacation	3 **Van Mahotsav**	4	5	6	7
8	9	10	11 **World Population Day**	12	13	14 *Holiday for students on account of 2nd Saturday*
15	16	17	18	19	20	21 **Inter House Yoga Competition**
22	23	24	25 **Kargil Victory Day**	26	27 **Inter House kho-kho competition (Semi Final)**	28 **Inter House kho-kho competition (Final)** **World Nature Conservation Day**
29	30 **Investiture Ceremony**	31 **Parent Teacher Meeting**				

GOLAYA PROGRESSIVE PUBLIC SCHOOL, PALWAL

ANNUAL CALENDAR (SESSION: 2018-19)

August 2018 (Working days = 23)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8 World Senior Citizens' Day	9 Independence Celebrations Week Inter House Solo Song (Jr.) Competition (Theme - Patriotic)	10	11 *Holiday for students on account of 2nd Saturday*
12	13 *Holiday (Teej)*	14 Inter House Solo Dance (Jr.) Competition (Theme - Patriotic)	15 *Holiday (Independence Day)*	16	17 Inter House Basketball Match	18
19	20	21	22 *Holiday (Id-ul-Zuha)*	23	24	25 Activities on Rakshabandhan Commencement of Sanskrit Week
26 *Raksha-bandhan*	27	28	29 National Sports Day	30 Inter House Taekwondo Competition	31 Parent Teacher Meeting	

September 2018 (Working days = 22)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 *Holiday (Janmashtami)*	4	5 Teachers' Day Celebrations	6	7	8 *Holiday for students on account of 2nd Saturday*
9	10 Commencement of Half Yearly Exam. for Class I - XII	11	12	13	14	15
16	17	18 Culmination of Half Yearly Exam.	19	20	21 *Holiday (Muharram)*	22
23	24	25	26 Day of the Deaf	27 Inter House Badminton Match World Tourism Day	28	29 Parent Teacher Meeting
30						

October 2018 (Working days = 18)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 International Day for the Elderly World Habitat Day	2 *Holiday (Gandhi Jayanti)*	3	4 World Animal Welfare Day	5	6
7	8 Air Force Day	9 World Post Office Day	10 National Post Day	11 Intl. Day of the Girl Child World Sight Day	12 National Day for Disaster	13 *Holiday for students on account of 2nd Saturday*
14	15 ** Commencement of Autumn Break*	16 *World Food Day*	17	18	19 *Dussehra*	20 ** Culmination of Autumn Break*
21	22	23	24 United Nations Day World Devp. Information Day	25	26 Inter House Group Song & Group Dance Competition	27 *Holiday (Karva Chauth)*
28	29 Inter House Football Match	30	31 Parent Teacher Meeting	* subject to change as per Govt. instructions		

November 2018 (Working days = 18)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 *Holiday (Haryana Day)*	2	3
4	5 World Tsunami Day	6	7 *Holiday (Diwali)*	8 *Holiday (Goverdhan Puja)*	9 *Holiday (Bhai Dooj)*	10 *Holiday for students on account of 2nd Saturday*
11	12	13	14 Children's Day Celebrations Diabetes Day	15	16	17 Annual Exhibition
18	19 *Holiday*	20	21 *Holiday (Id-e-Milad)*	22	23 *Holiday (Guru Nanak Devji's Birthday)*	24
25	26 Constitution Day	27	28	29	30	

GOLAYA PROGRESSIVE PUBLIC SCHOOL, PALWAL

ANNUAL CALENDAR (SESSION: 2018-19)

December 2018 (Working days = 23)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 **World AIDS Day**
2	3 **World Day of the Handicapped**	4 **Indian Navy Day**	5	6 Commencement of Periodic Test 2 / Pre-Board Exam.	7 Indian Armed Forces Flag Day	8 *Holiday for students on account of 2nd Saturday*
9	10 Human Rights Day	11	12	13	14	15 Culmination of Periodic Test 2 / Pre-Board Exam. for Class I - XII
16	17	18	19	20	21	22 **National Mathematics Day**
					Annual Sports Meet	
23 Farmer's Day	24 **Good Governance Day** **Christmas Celebrations**	25 ***Holiday (Christmas)***	26	27	28	29 **Parent Teacher Meeting**
30	31 **** Commencement of Winter Break***	* subject to change as per Govt. instructions				

January 2019 (Working days = 19)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5 **** Culmination of Winter Break***
6	7	8	9	10 Commencement of Pre-Board Exam. of Class XII	11	12 *Holiday for students on account of 2nd Saturday*
13	14	15 ***Holiday (Makar Sankranti)*** ***Army Day***	16	17	18	19
20	21	22	23 Culmination of Pre-Board Exam. of Class XII	24	25 **Republic Day Celebrations** **Farewell to Class XII**	26 ***Holiday (Republic Day)***
27	28	29	30 **Martyrs' Day**	31 **Parent Teacher Meeting**	* subject to change as per Govt. instructions	

February 2019 (Working days = 23)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 Commencement of Board Practicals of Class XII	2
3	4 Commencement of Annual Exam. of class IX & XI	5	6	7	8	9 *Holiday for students on account of 2nd Saturday*
10	11	12	13	14	15 Culmination of Annual Exam. of class IX	16
17	18	19	20 Culmination of Annual Exam. of class XI	21	22	23
24	25	26	27 **National Science Day**	28 **Parent Teacher Meeting**		

March 2019 (Working days = 13)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 Commencement of CBSE AISSE & AISSCE	2
3	4 ***Holiday (Mahashivratri)***	5 Commencement of Annual Examination for Class I - VIII	6	7	8 International Women's Day	9 *Holiday for students on account of 2nd Saturday*
10	11	12	13	14	15 World Disabled Day	16
17	18 Culmination of Annual Examination	19	20	21 ***Holiday (Holi)***	22 ***Holiday (Good Friday)*** ***World Day for Water***	23
24 World TB Day	25	26	27 **Result Declaration**	28	29	30
31						

TEST SCHEDULE

Subject	Periodic Test 1
Chemistry	03.05.2018
English	04.05.2018
Physics	05.05.2018
Computer Science / Physical Education	07.05.2018
Mathematics / Biology	08.05.2018

Subject	Half Yearly Exam.
Chemistry Practical	10.09.2018
Chemistry	12.09.2018
English	13.09.2018
Computer Science / Physical Education	14.09.2018
Physics	15.09.2018
Mathematics / Biology	17.09.2018
Biology Practical	18.09.2018
Physics Practical	19.09.2018
Computer Science / Physical Education Practical	22.09.2018

Subject	Pre-Board Examination
Chemistry Practical	07.12.2018
Chemistry	10.12.2018
Physics	11.12.2018
English	12.12.2018
Mathematics / Biology	13.12.2018
Computer Science / Physical Education	14.12.2018
Biology Practical	15.12.2018
Physics Practical	17.12.2018
Computer Science / Physical Education Practical	19.12.2018

DETAILED SYLLABUS OF ENGLISH

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 organization 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 Resume, 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:

- refer to dictionaries, encyclopedia, thesaurus and academic reference material.
- select and extract relevant information, using reading skills of skimming and scanning.
- understand the writer's attitude and bias.
- comprehend the difference between what is said and what is implied.
- understand the language of propaganda and persuasion.
- differentiate between claims and realities, facts and opinions.
- form business opinions on the basis of latest trends available.
- comprehend technical language as required in computer related fields.
- arrive at personal conclusion and comment on a given text specifically.
- develop the ability to be original and creative in interpreting opinion.
- develop the ability to be logically persuasive in defending one's opinion.
- making notes based on a text

Develop literary skills as enumerated below:

- Personally respond to literary texts.
- appreciate and analyze 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.

Listening and Speaking

Speaking needs a very strong emphasis and is an important objective leading to professional competence. Hence, testing of oral skills must be made an important component of the overall testing pattern. To this end, speaking and listening skills are overtly built into the material to guide the teachers in actualization of the skills.

Specific Objectives of Listening

Students are expected to develop the ability:

- to listen to lectures and talks and to be able to extract relevant and useful information for a specific purpose.
- To listen to news bulletins and to develop the ability to discuss informally on wide ranging issues like current national and international affairs, sports, business, etc.
- to respond in interviews and to participate in formal group discussions.
- to make enquiries meaningfully and adequately and to respond to enquiries for the purpose of travelling within the country and abroad.
- to listen to business news and to be able to extract relevant important information.
- to develop the art of formal public speaking.

Guidelines for Assessment in Listening and Speaking Skills

A. Activities:

- Activities for listening and speaking available at www.cbseacademic.in are to be used for developing listening and speaking skills of students.
- Subject teachers should also refer to books prescribed in the syllabus.
- In addition to the above, teachers may create their own material for assessing the listening and speaking skills.

B. Parameters for Assessment:

The listening and speaking skills are to be assessed on the following parameters:

i. Interactive competence (Initiation & turn taking, relevance to the topic).
ii. Fluency (cohesion, coherence and speed of delivery).
iii. Pronunciation
iv. Language (accuracy and vocabulary).

C. Schedule:

- The practice of listening and speaking skills should be done throughout the academic year.
- The final assessment of the skills is to be done as per the convenience and schedule of the school.

D. Record keeping:

The record of the activities done and the marks given must be kept for three months after the declaration of result of class XI, for any random checking by the Board.
No recording of speaking skills is to be done.

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 summarize a text.

ENGLISH CORE (CODE NO. 301)
CLASS – XII
(2018-19)
SECTION-A

Reading Comprehension **30 Marks**

Reading Unseen Passages and Note making

Two unseen passages with a variety **of very short answer / short answer or MCQ type 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 passages can be literary, factual or discursive to test comprehensions. The length of one passage should be between 600-700 words.

d) 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 Input may be descriptive or argumentative in nature such as an article, a debate or a speech or a report

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 Questions** - Based on prose / drama / 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

Extended Reading Text: (Either one)

The Novels are:	**Author**
i) **The Invisible Man** (unabridged)	H.G. Wells
ii) **Silas Marner** (unabridged)	George Eliot

QUESTION PAPER DESIGN 2018-19

CLASS-XII **ENGLISH CORE** **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, summarizing 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/ novels	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	:	Lesson 1 The Last Lesson Poem-1 My Mother at Sixty Six
Vistas	:	Lesson 1 The Tiger King
Novel	:	The Invisible Man by H. G. Wells (Explanation of theme, plot, settings followed by Group Discussion)
Writing Skills	:	Notice, Advertisement

MAY

Flamingo	:	Lesson 2 Lost Spring Poem-2 An Elementary School Classroom in a Slum
Vistas	:	Lesson 2 The Enemy
Novel	:	The Invisible Man by H. G. Wells (Continue with the explanation followed by Group Discussion)
Writing Skills	:	Invitation, Letter Writing (Formal)

JUNE

Flamingo	:	Lesson 3 Deep Water

JULY

Flamingo	:	Lesson 4 The Rattrap
Flamingo	:	Poem-3 Keeping Quiet
Vistas	:	Lesson 3 Should Wizard Hit Mommy?
Writing Skills	:	Poster Making and Article Writing
Novel	:	The Invisible Man by H. G. Wells (Group Discussion and discussion of Q/As and Bio sketch of important characters)

AUGUST

Flamingo	:	Lesson 5 Indigo
Vistas	:	Lesson 4 On the Face of it
Novel	:	The Invisible Man by H. G. Wells (Group Discussion)
Writing Skills	:	Speech, Debate

SEPTEMBER

HALF YEARLY EXAMINATION

OCTOBER

Flamingo	:	Lesson 6 Going Places
Flamingo	:	Poem-4 A Thing of Beauty
Vistas	:	Lesson 5 Evans tries an O level
Writing Skills	:	Applications for Job, Article and Speech Writing

NOVEMBER

Flamingo	:	Poem- 5 Aunt Jenifer's Tiger
Vistas	:	Lesson 6 Memories of Childhood
Novel	:	The Invisible Man by H. G. Wells (Group Discussion on important characters in the novel and Q. answers)
Writing Skills	:	Report Writing

REVISION FOR PRE-BOARD EXAMINATION

DECEMBER

PRE-BOARD EXAMINATION

EXAMINATION SYLLABUS

PERIODIC TEST - 1

Section		Content
Flamingo	:	Lesson 1 The Last Lesson Poem-1 My Mother at Sixty Six
Vistas	:	Lesson 1 The Tiger King
Writing Skills	:	Notice, Advertisement

HALF YEARLY EXAMINATION

Section	Content
Flamingo	Lesson 1 The Last Lesson
	Lesson 2 Lost Spring
	Lesson 3 Deep Water
	Lesson 4 The Rattrap
Poetry	Poem-1 My Mother at Sixty Six
	Poem-2 An Elementary School Classroom in a Slum
	Poem-3 Keeping Quiet
Vistas	Lesson 1 The Tiger King
	Lesson 2 The Enemy
	Lesson 3 Should Wizard Hit Mommy?
Writing Skills	Notice, Advertisement, Letter & Poster Making
Novel	The Invisible Man by H. G. Wells

PRE BOARD EXAMINATION

FULL SYLLABUS

NOTE: 1 The students will be given a class test and assignment after every chapter.

2 The students will be shown a movie on "The Invisible Man"

DETAILED SYLLABUS OF MATHEMATICS

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**	**Periods**
I.	RELATIONS AND FUNCTIONS	10	30
II.	ALGEBRA	13	50
III.	CALCULUS	44	80
IV.	VECTORS AND THREE-DIMENSIONAL GEOMETRY	17	30
V.	LINEAR PROGRAMMING	06	20
VI.	PROBABILITY	10	30
	TOTAL	**100**	**240**

QUESTION WISE BREAK UP

Type of Question	**Mark per Question**	**Total No. of Questions**	**Total Marks**
VSA	1	4	04
SA	2	8	16
LA-I	4	11	44
LA-II	6	6	36
Total		**29**	**100**

1. No chapter wise weightage. Care to be taken to cover all the chapters.
2. Suitable internal variations may be made for generating various templates keeping the overall weightage to different form of questions and typology of questions same.

Choice(s):
There will be no overall choice in the question paper.
However, 30% internal choices will be given in 4 marks and 6 marks questions.

QUESTION PAPER DESIGN

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

S. No.	Typology of questions	Very Short Answer (1 mark)	Short Answer (2 marks)	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)	2	2	2	1	20	20%
2	**Understanding- (Comprehension –** to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase information)	1	3	4	2	35	35%
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)	-	3	1	-	10	10%
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 values)	--	-	1	1	-	10%
	TOTAL	1x4=4	2x8=16	4x11=44	6x6=36	100	100%

VBQ: One of the LA-I type question should be to assess the values inherent in the texts.

ANNUAL SYLLABUS BREAK UP

APRIL

Chapter 3: 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, cofactors 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 2: Inverse Trigonometric Functions

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

MAY-JUNE

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.

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).

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).

Video on 'Linear Programming (Graphical method)'

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 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.

AUGUST

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

Definitions, 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.

REVISION FOR SEPTEMBER EXAMINATION

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.

Video on 'Geometrical Interpretation and Properties of Vectors'

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.

Videos on '3-D Geometry'

NOVEMBER

Chapter 13: Probability

Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean and variance of a random variable. Repeated independent (Bernoulli) trials and Binomial distribution.

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.

DECEMBER

PRE-BOARD EXAMINATION

EXAMINATION SYLLABUS

PERIODIC TEST 1

Chapters

Matrices

Determinants

Inverse Trigonometric Functions

HALF YEARLY EXAMINATION

Chapters

Matrices

Determinants

Inverse Trigonometric Functions

Continuity and Differentiability

Applications of Derivatives

Linear Programming

Integrals

Applications of Integrals

Differential Equations

PRE BOARD EXAMINATION

Full Syllabus

NOTE: There will be a class test 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.

PHYSICS (CODE NO. 042)
COURSE STRUCTURE
Class XII (Theory) (2018-19)

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

Units		No. of Periods	Marks
Unit-I	**Electrostatics**	22	15
	Chapter-1 Electric Charge and Fields		
	Chapter-2 Electrostatic Potential and Capacitance		
Unit-II	**Current Electricity**	20	
	Chapter-3 Current Electricity		
Unit-III	**Magnetic Effects of Current and magnetism**	22	16
	Chapter-4 Moving charges and Magnetism		
	Chapter-5 Magnetism and Matter		
Unit-IV	**Electromagnetic Induction and Alternating Current**	20	
	Chapter-6 Electromagnetic Induction		
	Chapter-7 Alternating Current		
Unit-V	**Electromagnetic Waves**	04	17
	Chapter-8 Electromagnetic Waves		
Unit-VI	**Optics**	25	
	Chapter-9 Ray Optics and Optical Instruments		
	Chapter-10 Wave Optics		
Unit-VII	**Dual Nature of Radiations and Matter**	08	10
	Chapter-11 Dual Nature of Radiations and Matter		
Unit-VIII	**Atoms and Nuclei**	14	
	Chapter-12 Atoms		
	Chapter-13 Nuclei		
Unit-IX	**Electronic Devices**	15	12
	Chapter-14 Semiconductor Electronics: Materials, Devices and Simple Circuits		
Unit-X	**Communication**	10	
	Chapter-15 Communication System		
Total		**160**	**70**

PRACTICALS **(Total Periods 60)**

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 6 from each section], 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

Time: 3Hrs **Max. Marks: 30**

Two experiments one from each section	8+8 Marks
Practical record (experiment and activities)	6 Marks
Investigatory Project	3 Marks
Viva on experiments, activities and project	5 Marks
Total	**30 Marks**

SECTION–A

Experiments

1. To determine resistance per cm of a given wire by plotting a graph for 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) of resistances using a metre bridge.
4. To verify the laws of combination (parallel) of resistances using a metre bridge.
5. To compare the EMF of two given primary cells using potentiometer.
6. To determine the internal resistance of given primary cell using potentiometer.
7. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
8. To convert the given galvanometer (of known resistance and figure of merit) into a voltmeter of desired range and to verify the same.
9. To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.
10. 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 multi-meter.
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

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 convex lens and plane mirror.
8. To draw the I-V characteristic curve for 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.

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 in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) 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 and output voltage and mark the cut-off, saturation and active regions.
11. To study the earth's magnetic field using a tangent galvanometer.

QUESTION WISE BREAK UP

Total no. of Questions	Marks 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.

PHYSICS (CODE: 042) QUESTION PAPER DESIGN CLASS XII

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-II) 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%**

Curriculum Plan of XII Physics
Session (2018-19)

Mon	Topic	Sub Topics	Practical / Activity
April	**Unit I: Electro-statics**	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 polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor.	**Videos: Gauss law and Gaussian surface, Capacitors, Dielectric and its effect on capacitance.** • To determine resistance per cm of a given wire by plotting a graph of potential difference versus current. **Videos: Wheatstone bridge, Metre bridge, Potentiometer** • To find resistance of a given wire using metre bridge and hence determine the resistivity (specific resistance) of its material. • To verify the laws of combination (series/parallel) of resistances using a metre bridge. • To compare the EMF of two given primary cells using potentiometer. • To determine the internal resistance of given primary cell using potentiometer.
	Unit II: Current Electricity	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 nonlinear), 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.	

Mon	Topic	Sub Topics	Practical / Activity
May	**Unit III: Magnetic Effects of Current and Magnetism**	Concept of magnetic field, Oersted's experiment. Biot-Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long straight wire. Straight 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.	**Videos: Cyclotron, Moving coil galvanometer, Earth's magnetism.** • To determine resistance of a galvanometer by half-deflection method and to find its figure of merit. • 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. • To find the frequency of AC mains with a sonometer.
July	**Unit IV: Electro-magnetic Induction and Alternating Currents**	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, wattles current. AC generator and transformer.	**Videos: LC Oscillations, Transformers.**
	Unit V: Electromagnetic waves	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.	**Videos: Electromagnetic waves and characteristics, Electromagnetic spectrum.**

Mon	Topic	Sub Topics	Practical / Activity
August	**Unit VI: Optics**	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 Huygens's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygens'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. Polarization, plane polarised light, Brewster's law, uses of plane polarized light and Polaroids.	**Videos: Dispersion and Scattering, Microscope, Telescope.** • To find the value of v for different values of u in case of a concave mirror and to find the focal length. • To find the focal length of a convex mirror, using a convex lens. • To find the focal length of a convex lens by plotting graphs between u and v or between 1/u and 1/v. • To find the focal length of a concave lens, using a convex lens. • To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation. **Videos: Wavefronts, Interference, Diffraction, Polarization.**
September	**HALF YEARLY EXAMINATION**		
	Unit VII: Dual Nature of Matter and Radiation	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).	**Videos: Photoelectric effect, Davison- Germer experiment**

Mon	Topic	Sub Topics	Practical / Activity
October	**Unit VIII: Atoms and Nuclei**	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.	**Videos: Rutherford's model, Bohr model, Radioactivity.**
November	**Unit IX: Electronic Devices** **Unit X: Communication Systems**	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; Special purpose p-n junction diodes: LED, photodiode, solar cell, and Zener diode and their characteristics; 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). 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).	**Videos: LED, Photodiode, Solar cell, Zener diode.** • To draw the I-V characteristic curve of a p-n junction in forward bias and reverse bias. • To draw the characteristic curve of a zener diode and to determine its reverse break down voltage. • To study the characteristic of a common - emitter npn or pnp transistor and to find out the values of current and voltage gains. **Videos: Sky and space wave propagation, Internet, Mobile telephony, GPS**
December	**PRE-BOARD EXAMINATION**		

EXAMINATION SYLLABUS

PERIODIC TEST 1:	Unit 1 & 2
HALF YEARLY EXAMINATION:	Units 1 to 5
PRE-BOARD EXAMINATION:	Full Syllabus (Units 1 to 10)

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

DETAILED SYLLABUS OF CHEMISTRY

OBJECTIVES

The curriculum of Chemistry at Senior Secondary Stage aims to:

- promote understanding of basic facts and concepts in chemistry while retaining the excitement of chemistry.
- make students capable of studying chemistry in academic and professional courses (such as medicine, engineering, technology) at tertiary level.
- 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.
- equip students to face various challenges related to health, nutrition, environment, population, weather, industries and agriculture.
- develop problem solving skills in students.
- expose the students to different processes used in industries and their technological applications.
- apprise students with interface of chemistry with other disciplines of science such as physics, biology, geology, engineering etc.
- acquaint students with different aspects of chemistry used in daily life.
- develop an interest in students to study chemistry as a discipline.
- integrate life skills and values in the context of chemistry.

CHEMISTRY (2018-19)

Time: 3 Hours **Theory** **Total Marks: 70 marks**

Unit No.	Title	Marks	No. of Periods
Unit I	Solid State	23	10
Unit II	Solutions		10
Unit III	Electro Chemistry		12
Unit IV	Chemical Kinetics		10
Unit V	Surface Chemistry		08
Unit VI	General Principles and Processes of Isolation of Elements	19	08
Unit VII	p-Block Elements		12
Unit VIII	d- and –f Block Elements		12
Unit IX	Coordination Compounds		12
Unit X	Haloalkanes and Haloarenes	28	10
Unit XI	Alcohols , Phenols and Ethers		10
Unit XII	Aldehydes ,Ketones and Carboxylic Acids		10
Unit XIII	Organic Compounds containing Nitrogen		10
Unit XIV	Biomolecules		12
Unit XV	Polymers		08
Unit XVI	Chemistry in Everyday Life		06
	Total	**70**	**160**

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**

QUESTION WISE BREAK UP

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

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.

CHEMISTRY (Code No. 043) QUESTION PAPER DESIGN CLASS - XII (2018-19)

S.No.	Typology of questions	Very Short Answer (VSA) 1 mark	Short Answer -I (SA-I) 2 marks	Short Answer-II (SA-II) 3 marks	Value Based Questions 4 marks	Long Answer (L.A.) (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

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

Video to show point defects.

Unit II: Solutions

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.

Videos to show colligative properties and abnormal molecular mass, Raoult's law.

PRACTICAL: (1) Determination of concentration/ molarity of $KMnO_4$ solution by titrating it against a standard solution of:

- Oxalic acid,
- Ferrous Ammonium Sulphate

(Students will be required to prepare standard solutions by weighing themselves).

Unit III: Electrochemistry

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.

Videos to show fuel cells.

PRACTICAL:

(1) Thermochemistry

Any one of the following experiments

- Copper Sulphate or Potassium Nitrate.
- Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).
- Determination of enthalpy change during interaction (Hydrogen bond formation) between Acetone and Chloroform.

(2) 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

MAY

Unit IV : Chemical Kinetics

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, Arrhenius equation.

Videos to show activation energy, collision theory and rate of reaction.

PRACTICAL:(1) Chemical Kinetics

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

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

- Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentration of Iodide ions.
- Reaction between Potassium Iodate (KIO_3) and Sodium Sulphite (Na_2SO_3) using starch solution as indicator (clock reaction).

Unit V: Surface Chemistry

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, multimolecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation, emulsion - types of emulsions.

Videos to show Tyndall effect, Brownian movement.

PRACTICAL:(1) Surface Chemistry

- Preparation of one lyophilic and one lyophobic sol Lyophilic sol - starch, egg albumin and gum Lyophobic sol - aluminium hydroxide, ferric hydroxide, arsenous sulphide.
- Dialysis of sol-prepared in (a) above.
- Study of the role of emulsifying agents in stabilizing the emulsion of different oils.

Revision for Periodic test: 1

JUNE

Unit VI: General Principles & Processes of Isolation of Elements

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

PRACTICAL:(1) Chromatography

- Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of R_f values.
- Separation of constituents present in an inorganic mixture containing two cations only (constituents having large difference in R_f values to be provided).

JULY

Unit VII: "p"-Block Elements

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 VIII: "d" and "f" Block Elements
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**.**

AUGUST

Unit IX: Coordination Compounds
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).
Video to show stereoisomerism
PRACTICAL:(1) Preparation of inorganic compounds

- Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum.
- Preparation of Potassium Ferric Oxalate.

Unit X: Haloalkanes and Haloarenes.
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.

PRACTICAL:(1) Preparation of Organic Compounds
Preparation of any one of the following compounds

- Acetanilide
- Di -benzal Acetone
- p-Nitroacetanilide
- Aniline yellow or 2 - Naphthol Aniline dye.

Revision for Half Yearly Examination

SEPTEMBER

Unit XI: Alcohols, Phenols and Ethers

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.

Video to show mechanism of dehydration in alcohols.

OCTOBER

Unit XII: Aldehydes, Ketones and Carboxylic Acids

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.

Videos to show mechanism of addition and nucleophilic reactions

PRACTICAL:(1) Tests for the functional groups present in organic compounds:
Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

Unit XIII: Organic compounds containing Nitrogen

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.

NOVEMBER

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.

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.

Video to show structure of proteins, D-L configuration of oligosaccharides.

Unit XV: Polymers

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.

Unit XVI: Chemistry in Everyday life

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.

Video to show cleansing action of soaps

PRACTICAL:(1) 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)

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

Revision from Sample Papers

DECEMBER

PRE-BOARD EXAMINATION

EXAMINATION SYLLABUS

PERIODIC TEST 1: Unit 1,2,3

HALF YEARLY EXAMINATION: Unit 1-10

PRE-BOARD EXAMINATION

Full Syllabus (Units 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

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

Unit	Title	Marks	No. of Periods
VI	Reproduction	14	30
VII	Genetics and Evolution	18	40
VIII	Biology and Human Welfare	14	30
IX	Biotechnology and its Applications	10	30
X	Ecology and Environment	14	30
	Total	**70**	**160**

PRACTICALS

Evaluation Scheme	Maximum Marks : 30
One Major Experiment Part A (Expt. No. 5, 6, 8, 9)	5 marks
One Minor Experiment Part A (Expt. No. 2, 3, 4)	4 marks
Slide Preparation Part A (Expt. No. 1, 7)	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) I mark	Short Answer-I (SA-I) 2 marks	Short Answer-II (SA-II) 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 orcontrast, differentiate between different pieces of information, Organize or integrate unique pieces of information from a variety of sources)	2	-	1	-	1	10	14%
5	**Evaluation and Multi-Disciplinary-** (Appraise, judge or justify the value or worth of a decision or outcome or to predict outcomes based on values)	1	-	2	1	-	11	16%
	TOTAL	5x1=5	5x2=10	12x3=36	1x4=4	3x5=15	70 (26)	100%

QUESTION WISE BREAK UP

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

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.

A. List of Experiments:

1. Study pollen germination on a slide.
2. 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.
3. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organism.
4. Study the presence of suspended particulate matter in air at two widely different sites.
5. Study the plant population density by quadrat method.
6. Study the plant population frequency by quadrat method.
7. Prepare a temporary mount of onion root tip to study mitosis.
8. Study the effect of different temperatures and three different pH on the activity of salivary amylase on starch.
9. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc

B. Study/observation of the following (Spotting)

1. Flowers adapted to pollination by different agencies (wind, insects, birds).
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).
4. Meiosis in onion bud cell or grasshopper testis through permanent slides.
5. T.S. of blastula through permanent slides (Mammalian).
6. Mendelian inheritance using seeds of different colour/sizes of any plant.
7. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness.
8. Controlled pollination - emasculation, tagging and bagging.
9. Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, Roundworm through permanent slides or specimens. Comment on symptoms of diseases that they cause.
10. Two plants and two animals (models/virtual images) found in xeric conditions. Comment upon their morphological adaptations.
11. Two plants and two animals (models/virtual images) found in aquatic conditions. Comment upon their morphological adaptations.

ANNUAL SYLLABUS BREAK UP

APRIL

Unit VI: Reproduction

Ch 1. 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 formation, fragmentation, vegetative propagation in plants.

Ch 2. Sexual reproduction in flowering plants: Flower structure; development of male and female gametophytes, pollination - types, agencies and examples, out breeding devices, pollen-pistil interaction, double fertilization, post fertilization events - development of endosperm and embryo, development of seed and formation of fruit, special modes-apomixis, parthenocarpy, polyembryony, Significance of seed dispersal and fruit formation.

Video on: Structure of flower, pollination, fertilization in plants.

PRACTICALS:

- Study Pollen germination on a slide.
- Control pollination- emasculation, tagging & bagging.
- Pollen germination on stigma through a permanent slide.
- Flowers adapted to pollination by different agencies (wind, insects, birds).

MAY-JUNE

Ch 3. Human Reproduction: Male and female reproductive systems, microscopic anatomy of testis and ovary, gametogenesis - spermatogenesis and oogenesis, menstrual cycle, fertilisation, embryo development upto blastocyst formation, implantation, pregnancy and placenta formation (elementary idea), parturition (elementary idea), lactation (elementary idea).

Ch 4. Reproductive Health: Need for reproductive health and prevention of sexually transmitted diseases (STD), birth control – need, methods of contraception and medical termination of pregnancy (MTP), amniocentesis, infertility and assisted reproductive technologies - IVF, ZIFT, GIFT (elementary idea for general awareness).

PRACTICALS: [Spotting]

- Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).
- Meiosis in onion bud cell or grasshopper testis through permanent slides.
- T.S. of blastula through permanent slides (Mammalian).

JULY

Unit VII: Genetics and Evolution

Ch 5. Principles of Inheritance 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.

Video on chromosomal disorders.

Ch 6: Molecular basis of inheritance: Search for genetic material and DNA as genetic material; Structure of DNA and RNA, DNA packaging, DNA replication, Central dogma, transcription, genetic code, translation, gene expression and regulation - lac operon; genome and human and rice genome project, DNA fingerprinting.

Video on: Structure of DNA. Packaging of DNA, DNA Replication, Transcription, Translation, Lac Operon, DNA finger printing

PRACTICALS:

- Mendelian inheritance using seeds of different colour/sizes of any plant.
- 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.

AUGUST

Ch 6: Molecular basis of inheritance: To be continued

Ch 7. 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 VIII: Biology and Human Welfare

Ch 8. Human Health and disease: 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.

Video on: Cancer, Malaria.

PRACTICAL:

- Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, Round worm through permanent slides or specimens. Comment on symptoms of diseases that they cause.

SEPTEMBER

Ch 9. Strategies for enhancement in Food Production:

Improvement in food production, Plant breeding, tissue culture, single cell protein, Biofortification, Apiculture and Animal husbandry.

Ch 10. Microbes in Human Welfare: In household food processing, industrial production, sewage treatment, energy generation and as bio control agents and bio fertilizers

Unit IX: Biotechnology

Ch 11. Principles and Processes of Biotechnology: Genetic Engineering (Recombinant DNA Technology). **Video on Recombinant DNA Technology**

PRACTICALS:

- Study the effect of different temperatures and three different pH on the activity of salivary amylase on starch.
- Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc
- Prepare a temporary mount of onion root tip to study mitosis.

HALF YEARLY EXAMINATION

Ch 12. Biotechnology and Its Applications

Application of biotechnology in health and agriculture, Human insulin and vaccine production, stem cell technology, gene therapy; genetically modified organisms – BT crops, transgenic animals; Biosafety issues, bio piracy and patents.

Video on: GMOs.

OCTOBER

Unit X: Ecology and Environment

Ch 13. Organisms and Population: Habitat and niche, population and ecological adaptations; population interactions - mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution.

Ch 14. 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:

- 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.
- Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organism.
- Study the presence of suspended particulate matter in air at two widely different sites.
- Study the plant population density by quadrat method.
- Study the plant population frequency by quadrat method.

NOVEMBER

Ch 15. 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.

Ch 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 global warming, ozone depletion, deforestation.

Any three case studies as success stories addressing environmental issues, diseases; dengue and chickengunia.

PRACTICALS:

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

EXAMINATION SYLLABUS

PERIODIC TEST - 1

Chapters 1 to 5

HALF YEARLY EXAMINATION

Chapters

- Reproduction in organisms
- Sexual Reproduction in flowering plant
- Human reproduction
- Reproductive health
- Principle of inheritance and variation.
- Molecular basis of inheritance
- Evolution
- Human Health and disease
- Improvement in food production
- Microbes in human welfare
- Principles and processes of biotechnology

PRE-BOARD EXAMINATION

FULL SLLAYBUS

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

DETAILED SYLLABUS OF COMPUTER SCIENCE

OBJECTIVES

- To understand basics of computers.
- To develop logic for Problem Solving.
- To develop problem solving skills and their implementation through **C++**
- To understand and implement the concept of Object Oriented Methodology.
- To understand the concept of working with Relational Database.
- To understand the basic concept of Computing Logic.
- To understand the basic concepts of Communication and Networking technologies.
- To understand Open Source Software.

COURSE STRUCTURE

Unit No.	Unit Name	Marks
1	**Object Oriented Programming in C++**	**30**
2	**Data Structure**	**14**
3	**Database Management System and SQL**	**08**
4	**Boolean Algebra**	**08**
5	**Communication Technologies**	**10**
	Total	**70**

ANNUAL SYLLABUS BREAK UP

APRIL

UNIT - 1: OBJECT ORIENTED PROGRAMMING IN C++

Review: C++ covered in Class XI

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,

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 (::); accessing members from object (s), Objects as function arguments–pass by value and pass by reference;

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

Destructor: Special Characteristics, declaration and definition of destructor;

MAY

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 (es);

JULY

Pointers:

Introduction to Pointer, 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, Reference variables and use of alias; Function call by reference. Pointer to structure: De-reference/Deference operator: *, ->; self referential structure

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, classes;

Opening a text 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();

AUGUST

Unit 2: Data Structures

Introduction to data structure- array, stack queues primitive and non-primitive data structure, linear and non-linear structure, static and dynamic data structure.

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;

SEPTEMBER

Half Yearly Examination

Stack (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;

Queue: (Array and Linked Implementation)

Introduction to Queue (FIFO: First in First out operations) Operations on Queue (Insert and Delete and its Implementation in C++, circular queue using array.

OCTOBER

Unit 3 Databases and SQL

Chapter 1 Data base Concepts: Introduction to database 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

Chapter 2 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, GROUP BY, HAVING, ORDER BY;

SQL functions: SUM( ), AVG( ), COUNT( ), MAX( ) and MIN( )

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

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

Unit 4 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, Idempotent 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. 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 (NOT, AND, OR) in search engine queries.

NOVEMBER

Unit 5 Communication Technologies
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
Electronic mail protocols such as SMTP, POP3
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).

PROJECT WORK

DECEMBER

Pre-Board Examination

Class XII Practical – C++

Duration: 3 hours **Total Marks: 30**

1. Programming in C++ **10**

One programming problem in C++ to be developed and tested on Computer during the examination. Marks are allotted on the basis of the following:

Logic	:	6 marks
Documentation/Indentation	:	2 marks
Output Presentation	:	2 marks

Notes: The types of problem to be given will be of application type from the following topics

- Arrays (One dimensional and two dimensional)
- Class(es) and objects
- Stack using arrays and or linked implementation
- Queue using arrays (circular) and or linked implementation
- Binary File operations (Creation, Displaying, Searching and modification)
- Text File operations (Creation, Displaying and modification)

2. **SQL commands** **05**

Five Query questions based on a particular Table/Relation to be tested practically on Computer during the examination. The command along with the result must be written in the answer sheet.

3. **Project Work** **06**

The project has to be developed in C++ language with Object Oriented Technology and also should have use of Data files. (The project is required to be developed in a group of 2-4 students)

- Presentation on the computer
- Project report (Listing, Sample, Outputs, Documentation)
- Viva

* 1 mark is for innovation while writing programme.

4. **Practical File** **5+1***

Must have minimum 20 programs from the following topics:

- Arrays (One dimensional and two dimensional, sorting, searching, merging, deletion & insertion of elements)
- Class(es) and objects
- Stacks using arrays and linked implementation
- Queue using arrays & linked implementation (circular also).
- File (Binary and Text) operations (Creation, Updation, Query)
- Any computational Based problems
- 15 SQL commands along with the output based on any table/relation:

5. **Viva Voce** **04**

Viva will be asked from syllabus covered in class XII and the project developed by student.

GUIDELINES FOR PROJECTS (Class XI and XII)

1. Preamble
   1.1 The academic course in Computer Science includes one Project in each year. The Purpose behind this is to consolidate the concepts and practices imparted during the course and to serve as a record of competence.
   1.2 A group of 2-3 students as team may be allowed to work on one project.
2. Project content
   2.1 Project for class XI can be selected from the topics mentioned in the syllabus or domains on similar lines.
   2.2 Project for class XII should ensure the coverage of following areas of curriculum:
   a) Flow of control
   b) Data Structure
   c) Object Oriented Programming C++
   d) Data File Handling

   Theme of the project can be
   - Any subsystem of a System Software or Tool
   - Any Scientific or a fairly complex algorithmic situation
   - School Management, Banking, Library Information System, Hotel or Hospital Management
   - System, Transport query system
   - Quizzes / Games;
   - Tutor, Computer Aided Learning Systems

2.3 It is suggested to prepare a bilingual (English and other Indian language) user manual part of project file.

2.4 The aim of the project is to highlight the abilities of algorithmic formulation, modular programming, optimized code preparation, systematic documentation and other associated aspects of Software Development.

EXAMINATION SYLLABUS

PERIODIC TEST 1

Unit 1: Object Oriented Programming with C++

- Chapter 1 Review of C++
- Chapter 2 Concept of Object Oriented Programming
- Chapter 3 Classes and Objects
- Chapter 4 Constructor and Destructor

HALF YEARLY EXAMINATION

Unit 1: Object Oriented Programming in C++
Unit 2 Data Structures

- Arrays

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	Planning in Sports
Unit 2	Adventure Sports and leadership training
Unit 3	Sports and Nutrition
Unit 4	Postures
Unit 5	Children and Sports
Unit 6	Women and Sports
Unit 7	Test and Measurement in Sports
Unit 8	Physiology and Sports
Unit 9	Sports Medicine
Unit 10	Biomechanics and Sports
Unit 11	Psychology and Sports
Unit 12	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: 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).

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.

Video on 'Adventure Sports'

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.
- Sports Nutrition (Fluid and meal intake, Pre, during and post competition)

Video on 'Nutrition'

CHAPTER 4: 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.

JULY

CHAPTER 5: 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.

Video on 'Motor Development'

CHAPTER 6: Women and Sports

- Sports participation of Women in India.
- Special consideration (Menarch, Menstural Disfuntion, Pregnancy, Menupause)
- Female Athletes Triad(Anemia, Oestoperosis and Amenoria)
- Psychological aspects of women athlete.
- Sociological aspects of sports participation.
- Ideology.

Video on 'Women Players'

AUGUST

REVISION FOR HALF YEARLY 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

- Gender differences in Physical and Physiological parameters.
- Physiological factors determining component of Physical Fitness.
- Effect of Exercise on Cardio Vascular System.
- Effect of Exercise on Respiratory System.
- Effect of Exercise on Muscular System.
- Physiological changes due to ageing and role of regular exercise on ageing process.
- Role of Physical Activity maintaining functional fitness in aged population.

Video on 'Physical Fitness'

OCTOBER

CHAPTER 9: Sports Medicines

- Concept and definition.
- Aims and Scope of Sports Medicine.
- Impact of Surface and Environment on Athlete.
- Sports Injuries: Classification, Causes and Prevention.
- Management of Injuries :
  - Soft Tissue Injuries(Abrasion, Contusion, Lacration, Incision, Sprain, Strain)
  - Bone and Joint Injuries(Dislocation, Fracture: Stress fracture, Green Stick, Communated Transerse Oblique and impacted)

Video on 'Sports Medicine'

CHAPTER 10: 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.

Video on 'Biomechanics'

NOVEMBER

CHAPTER 11: 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
- Psychological benefits of Exercise.

CHAPTER 12 : 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.

Video on 'Sports Channels'

DECEMBER

PRE-BOARD EXAMINATION

EXAMINATION SYLLABUS

PERIODIC TEST - 1

Chapters 1 & 2

HALF YEARLY EXAMINATION

Chapters 1 to 6

PRE-BOARD EXAMINATION

Full Syllabus

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

अभिभावक कृपया ध्यान दें

1. स्कूल में अपना पता तथा टेलीफोन नंबर हमेशा सही-सही लिखवा कर रखें, जिससे की इमरजेंसी में आपसे बिना विलंब के संपर्क साधा जा सके\ अपने बच्चे को स्कूल शुरू होने के आधे घंटे पहले तथा स्कूल ख़त्म होने के आधे घंटे बाद से ज्यादा देर तक स्कूल में न छोड़े \
2. अपने बच्चे का टिफिन अनजान व्यक्ति के हाथ से न भेजें, वह नहीं लिया जाएगा \ अपने बच्चे को ले जाने के लिए अनजान व्यक्ति को न भेजें, उसके साथ बच्चा नहीं भेजा जाएगा \
3. कृपया बच्चे की फीस लोकल चैक से अप्रैल, जुलाई, अक्तूबर तथा जनवरी की दस तारीख तक जमा करवा दें | उसके बाद 1 रू. प्रतिदिन फाइन लगेगा | अगर आपका चैक किसी कारण से वापिस आता है तो 500 रूपये पेनल्टी तथा लेट फी फाइन लगेगा एवं फीस केवल ड्राफ्ट द्वारा ली जाएगी | दूसरी बार चैक नहीं लिया जाएगा |
4. देर से आने वाले बच्चों को वापिस भेज दिया जाएगा |

अभिभावक के हस्ताक्षर

For Parents…

1. A complete 100% attendance is desirable. Leave of absence can be granted only in case of serious illness or eventuality or the marriage in blood relation or any emergency, on the production of a valid document. Parents are advised not to insist on obtaining leave for their children except when it is absolutely necessary.
2. Parents/Guardians/Students are expected to sincerely adhere to all the existing rules and regulations of the school which may be modified from time to time. In case of a dispute, the decision of the Principal shall be final and binding on them.
3. No student is allowed to come to school by bike or car if he/she does not possess a valid driving license.
4. The school strictly condemns the practice of extra coaching, tuition, professional coaching, etc.
5. Parents are to ensure that their ward takes timely nutritious meals i.e. breakfast, lunch and dinner containing milk products, seasonal vegetables, fruits, etc. and he/she refrains from fast food like burger, pizza, noodles, chips, etc.
6. All the students shall converse in English on the School Campus so, parents are to encourage their ward to speak in English. They must discourage him/her to use abusive language in or outside the school.
7. Parents are to attend PTMs regularly and check the Student Diary (Almanac) from time to time for a regulated follow up of their child so that he/she may acquire the habit of working with utmost regularity.
8. Parents are not to leave their child in the school half an hour before the start of the school and half an hour after the closure of the school.
9. They are not to send the tiffin of the child through any unknown person. He/ She will not be allowed to supply the same to the child.
10. Any unknown person will not be allowed to meet the child or fetch him/her from the school.
11. The school fee will be deposited on the quarterly basis by the local cheque only by 10th of April, July October and January positively. After that late fee fine of Rs. 1/- per day will be charged and for the dishonored cheque a penalty of Rs. 500- with the late fine will be charged. In case the cheque is dishonored, the fee along with the penalty and late fine shall be accepted with a Demand Draft (DD) only.
12. Parents are to ensure that their child comes to school in time in proper school uniform. The late comers and uniform defaulters will be sent back home from the school entry itself.
13. Please keep the information about address and the telephone numbers updated in the school records. It helps the school contact you in case of emergency or any other requirement.

GENERAL INFORMATION

- The Curriculum Plan is a convenient division of work for an academic year.
- It makes learning and teaching fruitful and systematic.
- Every student is to undertake learning and writing work according to the prescribed syllabus.
- If the stipulated work is not completed by the end of the month, students should approach the subject-teacher concerned to hold extra classes.
- The guardian too should assess the progress of the child in the light of the syllabus covered.
- All tests and examinations are held as per the prescribed syllabus.

Parent's Signature