SHIVALIK PUBLIC SCHOOL
Syllabus for Class XI (2020-21)

PHYSICS (Code No. 042)

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 XI – 2020-21 (Theory)

Time: 3 hrs.			**Max Marks: 70**
		No. of Periods	**Marks**
Unit–I	**Physical World and Measurement**		
	Chapter–1: Physical World	**6**	
	Chapter–2: Units and Measurements		
Unit-II	**Kinematics**		**23**
	Chapter–3: Motion in a Straight Line	**16**	
	Chapter–4: Motion in a Plane		
Unit–III	**Laws of Motion**	**10**	
	Chapter–5: Laws of Motion		
Unit–IV	**Work, Energy and Power**	**12**	
	Chapter–6: Work, Energy and Power		
Unit–V	**Motion of System of Particles and Rigid**	**16**	**17**
	Body		
	Chapter–7: System of Particles and Rotational		
	Motion		
Unit-VI	**Gravitation**	**8**	

	Chapter–8: Gravitation			
Unit–VII	**Properties of Bulk Matter**			
	Chapter–9: Mechanical Properties of Solids	**22**		
	Chapter–10: Mechanical Properties of Fluids			
	Chapter–11: Thermal Properties of Matter			
Unit–VIII	**Thermodynamics**		**20**	
		10		
	Chapter–12: Thermodynamics			
Unit–IX	**Behaviour of Perfect Gases and Kinetic Theory of Gases**	**08**		
	Chapter–13: Kinetic Theory			
Unit–X	**Oscillations and Waves**			
	Chapter–14: Oscillations	**23**	**10**	
	Chapter–15: Waves			
	Total	**131**	**70**	

Unit I: Physical World and Measurement 6 Periods

Chapter–1: Physical World

Physics-scope and excitement; nature of physical laws; Physics, technology and society.(To be discussed as a part of introduction and integrated with other topics)

Chapter–2: Units and Measurements

Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures.

Dimensions of physical quantities, dimensional analysis and its applications.

PRACTICAL: EXP 1. To measure diameter of a small spherical/cylindrical body and to measure internal diameter and depth of a given beaker/calorimeter using Vernier Callipers and hence find its volume

Unit II: Kinematics 16 Periods

Chapter–3: Motion in a Straight Line

Elementary concepts of differentiation and integration for describing motion, uniform and non- uniform motion, average speed and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs.

Relations for uniformly accelerated motion (graphical treatment).

Chapter–4: Motion in a Plane

Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, relative velocity, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors.

Motion in a plane, cases of uniform velocity and uniform acceleration-projectile motion, uniform circular motion.

PRACTICAL:

EXP 2.To measure diameter of a given wire and thickness of a given sheet using screw gauge.

OR

To determine volume of an irregular lamina using screw gauge.

Unit III: Laws of Motion 10 Periods

Chapter–5: Laws of Motion

Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion.(recapitulation only)
Law of conservation of linear momentum and its applications.

Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication.

Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).

PRACTICALS:

EXP 3 To determine radius of curvature of a given spherical surface by a spherometer

Unit IV: Work, Energy and Power 12 Periods

Chapter–6: Work, Energy and Power

Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power.

Notion of potential energy, potential energy of a spring, conservative forces: conservation of mechanical energy (kinetic and potential energies); non-conservative forces: motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.

PRACTICAL :

EXP 4 To find the weight of a given body using parallelogram law of vectors.

Unit V: Motion of System of Particles and Rigid Body 16 Periods

Chapter–7: System of Particles and Rotational Motion

Centre of mass of a two-particle system, momentum conservation and centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod. Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications.

Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions.

Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation).

PRACTICAL:

EXP 5 : Using a simple pendulum, plot its L-T^2 graph and use it to find the effective length of second's pendulum.

OR

To study variation of time period of a simple pendulum of a given length by taking bobs of same size but different masses and interpret the result.

Unit VI: Gravitation 8 Periods

Chapter–8: Gravitation

Universal law of gravitation. Acceleration due to gravity(recapitulation only) and its variation with altitude and depth.

Gravitational potential energy and gravitational potential, escape velocity, orbital velocity of a satellite, Geo-stationary satellites.

PRACTICAL :

EXP 6: To study the relationship between force of limiting friction and normal reaction and to find the co- efficient of friction between a block and a horizontal surface.

OR

To find the downward force, along an inclined plane, acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination θ by plotting graph between force and sin θ.

Unit VII: Properties of Bulk Matter 22 Periods

Chapter–9: Mechanical Properties of Solids

Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus.

Chapter–10: Mechanical Properties of Fluids

Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes), effect of gravity on fluid pressure.

Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its applications.

Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.

Chapter–11: Thermal Properties of Matter

Heat, temperature,(recapitulation only) thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv - calorimetry; change of state - latent heat capacity.

Heat transfer-conduction, convection and radiation(recapitulation only), thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law, Greenhouse effect.

PRACTICAL :

EXP 7: To determine Young's modulus of elasticity of the material of a given wire.

OR

To find the force constant of a helical spring by plotting a graph between load and extension

Unit VIII: Thermodynamics 10 Periods

Chapter–12: Thermodynamics

Thermal equilibrium and definition of temperature (zeroth law of thermodynamics), heat, work and internal energy. First law of thermodynamics, isothermal and adiabatic processes.

Second law of thermodynamics: reversible and irreversible processes.

PRACTICAL:

EXP8: To study the relationship between the temperature of a hot body and time by plotting a cooling curve

Unit IX: Behaviour of Perfect Gases and Kinetic Theory of Gases 08 Periods

Chapter–13: Kinetic Theory

Equation of state of a perfect gas, work done in compressing a gas.

Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy (statement only) and application to

specific heat capacities of gases; concept of mean free path, Avogadro's number**.**

PRACTICAL:
EXP 9: To study the relation between frequency and length of a given wire under constant tension using sonometer.

OR

To study the relation between the length of a given wire and tension for constant frequency using sonometer.

Unit X: Oscillations and Waves 23 Periods

Chapter–14: Oscillations

Periodic motion - time period, frequency, displacement as a function of time, periodic functions.

Simple harmonic motion (S.H.M) and its equation; phase; oscillations of a loaded spring- restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum derivation of expression for its time period. Free, forced and damped oscillations (qualitative ideas only), resonance.

Chapter–15: Waves

Wave motion: Transverse and longitudinal waves, speed of travelling wave, displacement relation for a progressive wave, principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, Beats.

ACTIVITIES:

1. **To make a paper scale of given least count ,eg. 0.2cm ,0.5cm.**
2. **To determine mass of a givenbody using a metre scale by principle of moments.**
3. **To plot a graph for a given set of data,with proper choice of scales and error bars.**
4. **To observe change of state and plot a cooling curve for molten wax.**
5. **To note the change in level of liquid in a container on heating and interpret the observations.**
6. **To study the factors affecting the rate of loss of heat of a liquid.**

PRACTICALS Total Periods: 32

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

- **Record of at least 8 Experiments [with a minimum of 4 from each section], to be performed by the students**

- **Record of at least 6 activities [with 3 each from section A and section B], to be demonstrated by teacher.**

EVALUATION SCHEME		
Time Allowed: Three hours	**Max. Marks: 30**	
Two experiments one from each section	**8 +8 Marks**	
Practical record (experiment and activities)		**7 Marks**
Viva on experiments, activities and project		**5 Marks**
Total		**30 Marks**

Prescribed Books:

1. **Physics Part-I, Textbook for Class XI, Published by NCERT**
2. **Physics Part-II, Textbook for Class XI, Published by NCERT**
3. **Laboratory Manual of Physics, Class XI Published by NCERT**
4. **The list of other related books and manuals brought out by NCERT (consider multimedia also).**

SHIVALIK PUBLIC SCHOOL
Syllabus for Class XI (2020-21)
PHYSICAL EDUCATION (048)

Theory **Max. Marks 70**

Unit I Changing Trends & Career in Physical Education
- Meaning & definition of Physical Education
- Aims & Objectives of Physical Education
- Career Options in Physical Education
- Competitions in various sports at national and international level
- Khelo-India Program

PRACTICAL-General fitness- warming up and cooling down.

Unit II Olympic Value Education
- Olympics, Paralympics and Special Olympics
- Olympic Symbols, Ideals, Objectives & Values of Olympism
- International Olympic Committee
- Indian Olympic Association

PRACTICAL-General fitness- jogging, stretching exercises.

Unit III Physical Fitness, Wellness & Lifestyle
- Meaning & Importance of Physical Fitness, Wellness & Lifestyle
- Components of physical fitness and Wellness
- Components of Health related fitness

PRACTICAL- Sprint,continues running

Unit IV Physical Education & Sports for CWSN (Children with Special Needs- Divyang)
- Aims & objectives of Adaptive Physical Education
- Organization promoting Adaptive Sports (Special Olympics Bharat; Paralympics; Deaflympics)
- Concept of Inclusion, its need and Implementation
- Role of various professionals for children with special needs (Counsellor, Occupational Therapist, Physiotherapist, Physical Education Teacher, Speech Therapist & special Educator)

PRACTICAL- Throw ball, sit and reach test

Unit V Yoga
- Meaning & Importance of Yoga
- Elements of Yoga
- Introduction - Asanas, Pranayam, Meditation & Yogic Kriyas
- Yoga for concentration & related Asanas (Sukhasana; Tadasana; Padmasana & Shashankasana, Naukasana, Vrikshasana (Tree pose), Garudasana (Eagle pose)

 Relaxation Techniques for improving concentration – Yog-nidra
PRACTICAL-Practice of Yoga asana

Unit VI Physical Activity & Leadership Training
 Leadership Qualities & Role of a Leader
 Creating leaders through Physical Education
 Meaning, objectives & types of Adventure Sports (Rock Climbing, trekking, River
Rafting, Mountaineering, Surfing and Para Gliding)
 Safety measures to prevent sports injuries
PRACTICAL-Practices of different types of Asana. Game-Volleyball

Unit VII Test, Measurement & Evaluation
 Define Test, Measurement & Evaluation
 Importance of Test, Measurement & Evaluation in Sports
 Calculation of BMI & Waist - Hip Ratio
 Somato Types (Endomorphy, Mesomorphy & Ectomorphy)
 Measurement of health related fitness
PRACTICAL-Broad jump, Game-Volleyball-fundamental skills of Volleyball and dimension, rules and regulations.

Unit VIII Fundamentals of Anatomy, Physiology & Kinesiology in Sports
 Definition and Importance of Anatomy, Physiology & Kinesiology
 Function of Skeleton System, Classification of Bones & Types of Joints
 Properties and Functions of Muscles
 Function & Structure of Respiratory System and Circulatory System
 Equilibrium – Dynamic & Static and Centre of Gravity and its application in sports
PRACTICAL-Game-Badminton-fundamental skills

Unit IX Psychology & Sports
 Definition & Importance of Psychology in Phy. Edu. & Sports
 Define & Differentiate Between Growth & Development
 Developmental Characteristics at Different Stages of Development
 Adolescent Problems & Their Management

PRACTICAL-Game-Badminton-dimension, rules of the game

Unit X Training and Doping in Sports
 Meaning & Concept of Sports Training
 Principles of Sports Training
 Warming up & limbering down
 Skill, Technique & Style
 Concept & classification of doping
 Prohibited Substances & their side effects
 dealing with alcohol and substance abuse
PRACTICAL- Practice of skill of the game

Practical Max. Marks 30

01. Physical Fitness Test - 6 Marks

02. Proficiency in Games and Sports (Skill of any one Game of choice from the given list*) - 7 Marks
03. Yogic Practices - 7 Marks
04. Record File ** - 5 Marks
05. Viva Voce (Health/ Games & Sports/ Yoga) - 5 Marks

* Athletics, Archery, Badminton, Boxing, Chess, Judo, Shooting, Skating, Swimming, Taekwondo,
Tennis, Aerobics, Gymastics, Rope-Skipping, Yoga, Bocce & Unified Basketball [CWSN (Children With
Special Needs - Divyang)]

****Record File shall include:**

Practical-1: Labelled diagram of 400 M Track & Field with computations.

Practical-2: Computation of BMI from family or neighbourhood & graphical representation of the data.

Practical-3: Labelled diagram of field & equipment of any one game of your choice out of the above list.

Practical-4: List of current National Awardees (Dronacharya Award, Arjuna Award & Rajiv Gandhi Khel
Ratna Award)

Practical-5: Pictorial presentation of any five Asanas for improving concentration.

SHIVALIK PUBLIC SCHOOL
Syllabus for Class XI (2020-21)

MATHEMATICS (CODE NO. 041)

SESSION – 2020-21

The Syllabus in the subject of Mathematics has undergone changes from time to time in accordance with growth of the subject and emerging needs of the society. Senior Secondary stage is a launching stage from where the students go either for higher academic education in Mathematics or for professional courses like Engineering, Physical and Biological science, Commerce or Computer Applications. The present revised syllabus has been designed in accordance with National Curriculum Framework 2005 and as per guidelines given in Focus Group on Teaching of Mathematics 2005 which is to meet the emerging needs of all categories of students. Motivating the topics from real life situations and other subject areas, greater emphasis has been laid on application of various concepts.

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.

COURSE STRUCTURE

CLASS XI (2020-21)

One Paper | Total Periods–168 [35 Minutes Each]

Three Hours | **Max Marks: 80**

No.	Units	No. of Periods	Marks
I.	Sets and Functions	43	23
II.	Algebra	41	30
III.	Coordinate Geometry	33	10
IV.	Calculus	30	07
V.	Statistics and Probability	21	10
	Total	168	80
	Internal Assessment		20

Prescribed Books:

1) Mathematics Textbook for Class XI, NCERT Publications
2) Mathematics Exemplar Problem for Class XI, Published by NCERT
3) Mathematics Lab Manual class XI, published by NCERT

http://www.ncert.nic.in/exemplar/labmanuals.html

Unit-I

1. **Sets**
   Sets and their representations. Empty set. Finite and Infinite sets. Equal sets. Subsets. Subsets of a set of real numbers especially intervals (with notations). Power set. Universal set. Venn diagrams. Union and Intersection of sets.

UNIT II

2. **Relations & Functions**

Ordered pairs. Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the set of reals with itself (R x R only).Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special type of relation. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer functions, with their graphs.

UNIT III

Chapter 5- Complex Numbers and Quadratic Equations

Need for complex numbers, especially$\sqrt{-1}$, to be motivated by inability to solve some of the quardratic equations. Algebraic properties of complex numbers. Argand plane. Statement of Fundamental Theorem of Algebra, solution of quadratic equations (with real coefficients) in the complex number system.

UNIT IV

Chapter 3-Trigonometric Functions

Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin^2 x + \cos^2 x = 1$, for all x. Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing sin (x±y) and cos (x±y) in terms of sin x, sin y,cosx & cosy and their simple applications. Deducing identities like the following:

$$\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}, \cot(x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x}$$

$$\sin\alpha \pm \sin\beta = 2\sin\frac{1}{2}(\alpha \pm \beta)\cos\frac{1}{2}(\alpha \mp \beta)$$

$$\cos\alpha + \cos\beta = 2\cos\frac{1}{2}(\alpha + \beta)\cos\frac{1}{2}(\alpha - \beta)$$

$$cos\alpha - cos\beta = -2sin\frac{1}{2}(\alpha + \beta)sin\frac{1}{2}(\alpha - \beta)$$

Identities related to sin2*x*, cos2*x*, tan2 *x*, sin3*x*, cos3*x* and tan3*x*.

Chapter 6- Linear Inequalities

Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line. Graphical solution of linear inequalities in two variables. Graphical method of finding a solution of system of linear inequalities in two variables.

UNIT V

Chapter 7- Permutations and Combinations

Fundamental principle of counting. Factorial n. (n!) Permutations and combinations, formula for nPr and nCr, simple applications.

UNIT VI

Chapter 9 -Sequence and Series

Sequence and Series. Arithmetic Progression (A. P.). Arithmetic Mean (A.M.) Geometric Progression (G.P.), general term of a G.P., sum of n terms of a G.P., infinite G.P. and its sum, geometric mean (G.M.), relation between A.M. and G.M.

UNIT VII

Chapter 10- Straight Lines
Brief recall of two dimensional geometry from earlier classes. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axis, point -slope form, slope-intercept form, two-point form, intercept form and normal form. General equation of a line. Distance of a point from a line.

UNIT VIII

Chapter 11 - Conic Sections
Sections of a cone: circles, ellipse, parabola, hyperbola. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.

Chapter 12 -Introduction to Three-dimensional Geometry
Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points and section formula.

UNIT IX

Chapter 13- Limits and Derivatives
Derivative introduced as rate of change both as that of distance function and geometrically. Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions .Definition of derivative relate it to scope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

UNIT X

Chapter 15- Statistics
Measures of Dispersion: Range, Mean deviation, variance and standard deviation of ungrouped/grouped data.

Chapter 16- Probability
Random experiments; outcomes, sample spaces (set representation). Events; occurrence of events, ‘not’, ‘and’ and ‘or’ events, exhaustive events, mutually exclusive events, Probability of an event, probability of ‘not’, ‘and’ and ‘or’ events.

ACTIVITIES: Any 10 activities from the Math Lab Manual prescribed by NCERT.

MATHEMATICS

QUESTION PAPER DESIGN

CLASS – XI (2020-21)

Time : 3 Hours **Max. Marks: 80**

S. No.	Typology of Questions	Total Marks	% Weightage
1	**Remembering:** Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. **Understanding:** Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas	44	55
2	**Applying:** Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	20	25
3	**Analysing :** Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations **Evaluating:** Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria. **Creating:** Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions	16	20
	Total	80	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, 33% internal choices will be given in all the sections

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

SHIVALIK PUBLIC SCHOOL
Syllabus for Class XI (2020-21)
ENGLISH CORE (CODE NO. 301)

PART A - 40 MARKS

Reading **18 Marks**

I. Multiple Choice questions based on one unseen passage to assess comprehension, interpretation and inference. Vocabulary and inference of meaning will also be assessed. The passage may be factual, descriptive or literary. Ten out of eleven questions to be done. (**10x1=10 Marks)**

II. Multiple Choice questions based on one unseen **case-based** factual passage with verbal/visual inputs like statistical data, charts etc. Eight out of Nine questions to be done. (**8x1=8 Marks)**

Note: The combined word limit for both the passages will be 600-750.

Grammar **8 Marks**

III. Multiple choice questions on Gap filling (Determiners, Tenses)

IV. Multiple choice questions on re-ordering/transformation of sentences

(Total eight questions to be done out of the ten given).

Literature Section **14 Marks**

V. Multiple Choice questions from an extract from Poetry from **Hornbill** to assess comprehension and appreciation. Any 1 out of 2 extracts to be done.(3x1=3)

VI. Multiple Choice questions based on two Prose extracts, out of the three given, from Prose (**Hornbill as well as Snapshots** to assess comprehension and appreciation. (6x1=6)

VII. Text based Multiple Choice Questions to assess comprehension, analysis and interpretation, from Prose and Poetry. Five questions out of six to be done. (5x1=5)

PART B - 40 MARKS

Reading Section: **8 Marks**

Q1. Note Making and Summarization based on a passage of approximately 200-250 words.

I.	Note Making:	**5 Marks**
	○ Title:	1
	○ Numbering and indenting: 1	
	○ Key/glossary:	1
	○ Notes:	2
II.	Summary (up to 50 words):	**3 Marks**
	○ Content:	1
	○ Expression:	1
Writing Section:		**16 Marks**

Q2. Short writing task -**Notice** writing up to 50 words. One out of the two given questions to be answered **(3 Marks**: Format : 1 / Content : 1 / Expression : 1)

Q3. Short writing task –**Poster** up to 50 words. One out of the two given questions to be answered.(**3marks:**Format : 1 / Content : 1 / Expression : 1)

Q4. Letters based on verbal/visual input, to be answered in 120-150 words. Business or official letters (for making enquiries, registering complaints, asking for and giving information, placing orders and sending replies), letter to the school or college authorities, regarding admissions, school issues, requirements / suitability of courses, etc. One out of the two given questions to be answered (**5 Marks**: Format: 1 / Content: 2 / Expression: 2)

Q5 .Writing composition based on visual/verbal inputs in 120-150 words. May be descriptive / argumentative in nature such as **speech**/**debate**. The theme should be contemporary topical issues. One out of the two given questions to be answered. **(5 Marks**: Format: 1 / Content: 2 / Expression: 2)

Literature Section: 16 Marks

Q6. **Two** Short answer type question**(one from Prose and one from Poetry from the book Hornbill), out of four,** to be answered in 30-40 words. Questions should elicit inferential responses through critical thinking. **(2x2=4)**

Q7. One Short answer type question, from **Prose (Snapshots),** to be answered in 40-

50 words. Questions should elicit inferential responses through critical thinking. Any 1

out of 2 questions to be done.	**(1x2 =2)**

Q 8. One Long answer type question, from **Prose/poetry (Hornbill),** to be answered in 120-150 words to assess global comprehension and extrapolation beyond the text. Questions to provide evaluative and analytical responses using incidents, events, themes as reference points. Any 1 out of 2 questions to be done.**(1x5=5)**

Q.9 One Long answer type question, based on the chapters from the book **Snapshots**, to be answered in 120-150 words to assess global comprehension and extrapolation beyond the text. Questions to provide evaluative and analytical responses using incidents, events, themes as reference points. Any 1 out of 2 questions to be done.**(1x5=5)**

INTERNAL ASSESSMENT

Assessment of Listening and Speaking Skills

Assessment of Listening and Speaking Skills will be for 20 marks. It is recommended that listening and speaking skills should be regularly practiced in the class.

Unit wise Distribution of Syllabus

Unit – 1

L. Reader: **Ch-1 The Portrait of a lady.**
(key words-revolting, serenity, seclusion, veritable, resignation, frivolous, rebukes, dilapidated, chirruping, monopoly)

S. Reader: **Ch-1- The Summer of the beautiful white horse.**
(Key words-magnificence, hallmarks, capricious, vagrant, surrey, suspicious)

Grammar : Determiners (Gap filling Exercises to be practiced)

Writing : Notice-writing,

Reading : Practice of unseen passage

Unit – 2

L. Reader: **Poem- A Photograph**
(Key words - paddling, transient, wry, laboured, circumstance)

Ch-2- The Address
(Key words-poignant, fleetingly, lugging, reprovingly, threatened, oppressed)

L. Reader: **Ch-2 We're Not Afraid to Die.....if We Can All Be Together**
(Key words-honing, ominous, tousled, gigantic, scrambled, sloshed, deteriorate, respite, caricatures, optimistic, expeditions, hazardous)

Writing : Debate Writing

Reading : Note-making

Grammar: Revision of tenses , Re –ordering – sentences

Unit – 3

L. Reader: **Ch-3 Discovering Tut..... the Saga Continues**
(Key words-forensic, scudded, resurrection, funerary, circumvented, tomography, consolidated, aftermath, demise, intriguing, speculations, eerie, constellation)

Writing : Letter Writing (to the school or college authorities, regarding admissions,
school issues, requirements / suitability of courses)

Unit – 4

S. Reader :**Ch-3 Ranga's Marriage**
(Key words-Cartographer, disgraceful, pleasantries, savoring, negotiations, suspicion)

L. Reader: **Ch-**4 **The Laburnum Top (Poetry)**

(Key words - Laburnum , goldfinch, twitching ,chirrup ,chitterlings, tremor , barred , eerie)

Reading : Practice of Unseen Passage

Writing: Poster making

Grammar **:** Tenses Maltiple choice Gap filling Exercises to be practiced

Unit-5

Ch-4 **Landscape of the Soul**
(Key words- Anecdote, astonished, Flanders,mooted ,conduit propounding)

Writing : Speech Writing

Assessment of Speaking & Listening tests to be conducted.

Unit – 6

L. Reader: **Poem-The Voice of the Rain**
(key words-impalpable, vaguely, lave, droughts, atomies, racked)

S.Reader **Ch-4 Albert Einstein at School**
(key words- expulsion, speechless, miserable, squalor, reluctantly, summoned, rebellion, accord, stalked)

Writing : Debate writing , Poster Making
Reading : Note-making

Unit – 7

L. Reader: Ch-**5 The Ailing Planet**
(Key words-holistic, ecological, sustainable, languish, ignominious, catastrophic, depletion, transcending, decimated, impoverished, precede, tenancy, voluntary)

S. Reader: **Ch-5 Mother's Day**
(Key words-dubiously, apologetically, lax, complacently, dominating, indignantly, barmy, concussion, pompous)

Grammar **:** Tenses Maltiple choice Gap filling Exercises to be practiced
Writing : Official letters for making enquiry, Business letters for complaints, placing order and sending replies.

Unit – 8

L. Reader: **(Poem) Childhood**
(key words-Ceased, Preached)

S. Reader: **L.7. Birth**
(Key words Abruptly, Contemplation, Premonition, fret, Sordidly, Flaccid Oblivious)

Grammar: Re –ordering – sentences,
Writing : Letter Writing (to the school or college authorities, regarding admissions,
school issues, requirements / suitability of courses)

Unit – 9

L. Reader : **Ch-6 The Browning Version**
(Excerpt, Slackers, Evidently, Exaggerate, Shriveled up, Frantically, Throaty)

Writing: Poster making
Grammar **:** Tenses Maltiple choice Gap filling Exercises to be practiced

Unit – 10

L. Reader : **Silk Road**

(Key words- Man oeuvres , billowed ,swathe , gazelles ,veering)

Revision of entire syllabus.

Assessment of Speaking and listening skills to be conducted.

REVISED SYLLABUS FOR CLASS XI (2020-21)

SUBJECT - CHEMISTRY (043)

Prescribed Books :

1. **Chemistry Part-I, Class -XI, Published by NCERT.**
2. **Chemistry Part-II, class-XI, Published by NCERT.**

Rationale

Higher Secondary is the most crucial stage of school education because at this juncture specialized discipline based, content -oriented courses are introduced. Students reach this stage after 10 years of general education and opt for Chemistry with a purpose of pursuing their career in basic sciences or professional courses like medicine, engineering, technology and study courses in applied areas of science and technology at tertiary level. Therefore, there is a need to provide learners with sufficient conceptual background of Chemistry, which will make them competent to meet the challenges of academic and professional courses after the senior secondary stage.

The new and updated curriculum is based on disciplinary approach with rigour and depth taking care that the syllabus is not heavy and at the same time it is comparable to the international level. The knowledge related to the subject of Chemistry has undergone tremendous changes during the past one decade. Many new areas like synthetic materials, bio -molecules, natural resources, industrial chemistry are coming in a big way and deserve to be an integral part of chemistry syllabus at senior secondary stage. At international level, new formulations and nomenclature of elements and compounds, symbols and units of physical quantities floated by scientific bodies like IUPAC and CGPM are of immense importance and need to be incorporated in the updated syllabus. The revised syllabus takes care of all these aspects. Greater emphasis has been laid on use of new nomenclature, symbols and formulations,teaching of fundamental concepts, application of concepts in chemistry to industry/ technology, logical sequencing of units, removal of obsolete content and repetition, etc.

Objectives

The broad objectives of teaching Chemistry at Senior Secondary Stage are:

- promote understanding of basic facts and concepts in chemistry while retaining the excitement of chemistry.

- 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.
- develop problem solving skills in students.
- expose the students to different processes used in industries and their technological applications.
- 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.

COURSE STRUCTURE CLASS–XI (THEORY)
2020-21)

Total Periods (Theory 119 +Practical 44)

Time:3Hours **TotalMarks70**

Unit No.	**Title**	**No. of Periods**	**Marks**
Unit I	Some Basic Concepts of Chemistry	10	11
Unit II	Structure of Atom	12	
Unit III	Classification of Elements and Periodicity in Properties	6	04
Unit IV	Chemical Bonding and Molecular Structure	14	21
Unit V	States of Matter: Gases and Liquids	9	
Unit VI	Chemical Thermodynamics	14	
Unit VII	Equilibrium	12	
Unit VIII	Redox Reactions	4	16
Unit IX	Hydrogen	4	
Unit X	s -Block Elements	5	
Unit XI	Some p -Block Elements	9	
Unit XII	Organic Chemistry: Some basic Principles and Techniques	10	18
Unit XIII	Hydrocarbons	10	
	Total	**119**	**70**

UNIT - 1

Some Basics Concepts of Chemistry (10 Periods)

General Introduction: Importance and scope of chemistry. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.

Working Words

Significant figures, Gram molecular mass, Mole, Molarity, Molality, limiting reagent, Molecular formula, Empirical formula.

Unit 2:

Structure of Atom (12 Periods)

Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half filled and completely filled orbitals.

Working Words

Isoelectronic, Electromagnetic radiations, Spectrum, Wavelength: Frequency, Velocity, Orbital, Orbit, Electronic Configuration, Quantum number.

Classification of Elements and Periodicity in Properties (6 Periods)

Modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.

Working Words

s-block, p-block, d- block, f - block, Atomic radius, Amphoteric oxide, Electronegativity, Metallic Character, Screening Effect, Penetration Effect, Ionization enthalpy.

Unit 3:

Chemical Bonding and Molecular Structure (14 Periods)

Valence electrons, ionic bond, covalent bond; bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s,p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), hydrogen bond.

Working Words

Lewis concept, Molecular orbital, Atomic orbitals, Hydrogen bonding, Bonding orbital, Anti bonding orbital, Hybridization, Sigma bond, Pie bond, Dipole moment, Partial ionic character, VSEPR theory, Paramagnetic, Diamagnetic, Bond Order, Bond length.

States of Matter: Gases and Liquids (9 Periods)

Three states of matter, intermolecular interactions, types of bonding, melting and boiling points, role of gas laws in elucidating the concept of the molecule, Boyle's law, Charles law, Gay Lussac's law, Avogadro's law, ideal behaviour, empirical derivation of gas equation, Avogadro's number, ideal gas equation. Deviation from ideal behaviour.

Working Words

Absolute zero , Van der waal's forces , Van der waal's constants, Compressibility factor,gas constant.

Unit 4:

Equilibrium (12 Periods)

Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium-ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, buffer solution, solubility product, common ion effect (with illustrative examples).

Working Words

Equilibrium, Physical equilibrium, Chemical equilibrium, Saturated solution, Dynamic, Dynamicity, Equilibrium constant, Dissociation, Homogeneous, Precipitation, Amphoteric substances, Conjugate acid - base pairs, Heterogeneous, Catalyst, PH, Buffer, Solubility product.

Unit 5:

Organic Chemistry - Some Basic Principles and Technique (10 Periods)

General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.

Working Words

Tetracovalency, Catenation, Functional groups, Homologous series, Isomerism, Heterolytic cleavage, Homolytic Cleavage, Carbocation, Carboanion, Free radical, Nucleophiles, Electrophiles, Inductive Effect, Electromeric effect, Resonance Effect, Hypercojugation, Sigma bond, Pi bond.

Unit 6:

Chemical Thermodynamics (14 Periods)

Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions.

First law of thermodynamics -internal energy and enthalpy, measurement of ΔU and ΔH, Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction)

Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes,

Third law of thermodynamics (brief introduction).

Working Words

Open System, Closed System, Isolated system, State Functions, Internal Energy, Isothermal Process, Adiabatic Process, Isochoric Process, Isobaric Process, Enthalpy, Spontaneous Process, Entropy, Gibbs Free Energy.

Unit 7: Hydrocarbons (10 Periods)

Classification of Hydrocarbons

Aliphatic Hydrocarbons: Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions.

Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markownikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.

Alkynes - Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water.

Aromatic Hydrocarbons: Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of functional group in monosubstituted benzene. Carcinogenicity and toxicity.

Working Words

Acyclic, Aliphatic, Alicyclic, Aromatic, Alkane, Alkene, Alkyne, Combustion, Substitution, Addition, Oxidation, Conformational isomerism, Optical Isomerism, Ozonolysis.

Unit 8: s -Block Elements (Alkali and Alkaline Earth Metals) (5 Periods)

Group 1 and Group 2 Elements

General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group, diagonal relationship, trends in the variation of properties

(such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen, water, hydrogen and halogens, uses.

Working Words

Sparingly soluble, Thermal stability, Solvay process, Anomalous behavior, Diagonal relationship, Alkaline earth metals, Ionization enthalpy

Unit 9: Some p -Block Elements (9 Periods)

General Introduction to p - Block Elements

Group 13 Elements: General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group, Boron - physical and chemical properties.

Group 14 Elements: General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behaviour of first elements. Carbon-catenation, allotropic forms, physical and chemical properties.

Working Words

Diborane, Ionization energy, Electropositive (or metallic) character, Anomalous properties, Electro negativity, Allotropes.

Unit 10: Redox Reaction (4 Periods)

Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number.

Working Words

Oxidation, Reduction, Oxidation number, Oxidizing agent, Reducing agent, Standard Electrode Potential.

Hydrogen (4 Periods)

Position of hydrogen in periodic table, occurrence, isotopes, hydrides-ionic covalent and interstitial; physical and chemical properties of water, heavy water, hydrogen as a fuel.

Working Words

Ionic hydride, Molecular hydride, Deficient hydride, Calgon, Hard water, Amphoteric, Oxidizing agent, Reducing agent.

PRACTICALS

Evaluation Scheme for Examination	Marks
Volumetric Analysis	08
Salt Analysis	08
Content Based Experiment	06
Project Work	04
Class record and viva	04
Total	**30**

PRACTICAL SYLLABUS **Total Periods:44**

Micro-chemical methods are available for several of the practical experiments, wherever possible such techniques should be used.

A. Basic Laboratory Techniques

1. Cutting glass tube and glass rod
2. Bending a glass tube
3. Drawing out a glass jet
4. Boring a cork

B. Characterization and Purification of Chemical Substances

1. Determination of melting point of an organic compound.
2. Determination of boiling point of an organic compound.
3. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, Benzoic Acid.

C. Quantitative Estimation

i. Using a mechanical balance/electronic balance.
ii. Preparation of standard solution of Oxalic acid.
iii. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.
iv. Preparation of standard solution of Sodium carbonate.
v. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonate solution.

D. QualitativeAnalysis

a) **Determination of one anion and one cation in a given salt**

(Note: Insoluble salts excluded)

b) **Detection of Nitrogen, Sulphur, Chlorine in organiccompounds.**

c) **PROJECTS**

Scientific investigations involving laboratory testing and collecting information

from other sources.

A few suggested Projects

- Checking the bacterial contamination in drinking water by testing sulphide ion
- Study of the methods of purification of water
- Testing the hardness, presence of Iron, Fluoride, Chloride, etc., depending upon the regional variation in drinking water and study of causes of presence of these ions above permissible limit (if any).
- Investigation of the foaming capacity of different washing soaps and the effect of addition of Sodium carbonate on it
- Study the acidity of different samples of tealeaves.
- Determination of the rate of evaporation of different liquids
- Study the effect of acids and bases on the tensile strength of fibers.
- Study of acidity of fruit and vegetable juices.

Note: Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

QUESTION PAPER DESIGN

CLASS –XI (2020-21)
CHEMISTRY

(Code No.043)

1. There shall be two different parts in the Board examination for the year 2020-21. The two-part Assessment will carry weightage of fifty percent for each section.

   Part A will be the objective type exams OMR/ Computer based test for the complete rationalized syllabus for 2020-21. It will comprise of MCQ as well asAssertion/ Reasoning type questions. MCQ and Assertion/ Reasoning type questions will include the format of case based/ source based/ integrated questions.

   Part B will be a subjective/descriptive type test for the complete rationalized syllabus for 2020-21, announced by the board and that will be held with the objective type test.
2. No chapter wise weightage. Care to be taken to cover all the chapters.
3. Suitable *internal variations may be made for generating various templates.*
4. **Choice(s):**

   - There will be no overall choice in the question paper. However internal choices will be given in all the sections.
   - 33% Choice will be given in both sections (Part A and Part B) separately

PART A: Objective type Paper

Type	Marks for each question	No. of Questions	Total Marks	Percentage
Objective	1	19	19	54.29
	2	5	10	28.57
CaseBased	3	2	6	17.14
Total		**26**	**35**	**100**

PART B: Descriptive paper

Type	Marks for each question	No. of Questions	Total Marks	percentage
Short Answer- I	2	4	8	22.86
Short Answer- II	3	4	12	34.28
Long Answer	5	3	15	42.86
Total		**11**	**35**	**100**

S.No	Domains	Total Marks	%
1	**Remembering and Understanding:** Exhibit memory of previously learned material by recalling facts, terms, basic concepts and answers. Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas.	28	40
2	**Applying:** Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	21	30
3	**Analysing, Evaluating and Creating:** Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.	21	30

SHIVALIK PUBLIC SCHOOL
Syllabus for Class XI (2020-21)

Subject : Biology (Code No. 044)

Prescribed Book: A text book of biology by NCERT

Rationale:

The present curriculum provides the students with updated concepts along with an extended exposure to contemporary areas of the subject. The curriculum also aims at emphasizing the underlying principles that are common to animals, plants and microorganisms as well as highlighting the relationship of Biology with other areas of knowledge. The format of the curriculum allows a simple, clear, sequential flow of concepts. It relates the study of biology to real life through the use of technology. It links the discoveries and innovations in biology to everyday life such as environment, industry, health and agriculture. The updated curriculum focuses on understanding and application of scientific principles, while ensuring that ample opportunities and scope for learning and appreciating basic concepts continue to be available within its framework.

Objectives of teaching Biology

- promote understanding of basic principles of Biology
- encourage learning of emerging knowledge and its relevance to individual and society
- promote rational/scientific attitude towards 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

It is expected that the students would get an exposure to various branches of Biology in the curriculum in a more contextual and systematic manner as they study its various units.

COURSE STRUCTURE
CLASS XI (2020 -21) (THEORY)

Time:3 Hours
Max. Marks: 70

Unit	**Title**	**No. of Periods**	**Marks**
I	Diversity of Living Organisms	27	12
II	Structural Organization in Plants and Animals	27	12
III	Cell: Structure and Function	26	12
IV	Plant Physiology	40	17
V	Human Physiology	40	17
	Total	**160**	**70**

PRACTICALS

Time allowed: 3 Hours Max. Marks: 30

Evaluation Scheme	
One Major Experiment Part A	5 Marks
One Minor Experiment Part A	4 Marks

Slide Preparation Part A	5 Marks
Spotting	7 Marks
Practical Record+Viva Voce	4 Marks
Project Record + Viva Voce	5 Marks
Total	30 Marks

Assessment Areas (Theory)
2020-21 Class XI
Biology (044)

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

Competencies	
Demonstrate Knowledge and Understanding	50%
Application of Knowledge / Concepts	30%
Analyse, Evaluate and Create	20

	%

QUESTION WISE BREAK UP

FORMATIVE ASSESMENT

Type of Question	Mark(s) per Question	Total No. of Questions	Total Marks
VSA	**1**	**03**	**03**
SA-I	**2**	**04**	**08**
SA-II	**3**	**03**	**09**
LA	**5**	**01**	**05**
Total		**11**	**25**

SUMMATIVE ASSESSMENT

Type of Question	Mark(s) per Question	Total No. of Questions	Total Marks
VSA	**1**	**05**	**05**
SA-I	**2**	**07**	**14**
SA-II	**3**	**12**	**36**
LA	**5**	**3**	**15**
Total		**27**	**70**

- Typology of questions: VSA including MCQs, Assertion – Reasoning type questions; SA; LA-I; LA-II; Source-based/ Case-based/ Passage-based/ Integrated assessment questions.

- An internal choice of approximately 33% would be provided.Suggestive verbs for various competencies
- **Demonstrate, Knowledge and Understanding**
  State, name, list, identify, define, suggest, describe, outline, summarize, etc.
- **Application of Knowledge/Concepts**
  Calculate, illustrate, show, adapt, explain, distinguish, etc.

- **Analyze, Evaluate and Create**
  Interpret, analyse, compare, contrast, examine, evaluate, discuss, construct, etc.

UNIT WISE SYLLABUS

Unit-1 **(Marks-5)**

- **Living world**

Key Words: Biodiversity, Flora, Fauna, Classification Taxonomy, Taxon, Nomenclature, Species.

What is living? biodiversity; need for classification; three domains of life; concept of species and taxonomical hierarchy; binomial nomenclature.

- **Biomolecules**

Key Words : Biomolecules, Macromolecules, Micromolecules, Saccharides, Polypetide, Nucleic acids, Enzymes, Activation energy, cofactors.

Chemical constituents of living cells; biomelecules, structure and function of proteins, carbodydrates, lipids, nucleic acids, enzymes, types, properties, enzyme action.

Unit-2 **(Marks-8)**

- **Cell, the unit of life**

Key Words : Prokaryotic and Eukaryotic cell, cytoplasm Middle lamella, cytoskeleton, Semiautonomous, Autophagosome ,chromosome, chromatids, centromere.

Cell theory and cell as the basic unit of life; structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; Cell envelope, cell membrane, cell wall; Cell organelles-structure and function; endomembrane system, endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles; mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus, nuclear membrane, chromatin, nucleolus.

- **Biological Classification**

Key Words : Classification, Monera, Lichens, Mycorrhiza Symbiosis, Phycobiont, Mycobiont, Retrovirus, Viroids.

Five kingdom classification; salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.

.Unit-3 (Marks-4)

- **Cell cycle and cell division.**

Key Words : Cell division, Equational division, Reductional division, Spindle apparatus, Karyokinesis, cytokinesis.

Cell division: cell cycle, mitosis, meiosis and their significance.

- **Plant Kingdom**

Key Words: Chlorophyceae, Phaeophyceae, Rhodophyceae, Peat moss, Sporophylls, Antheridium, Archegonium.

Salient features and classification of plants into major groups- Algae, Bryophyta, Pteridophyta, Gymnospermae (three to five salient and distinguising features and at least two examples of each category).

Unit-4 (Marks-11)

- **Morphology of flowering plants**

Key Words : Morphology, Parenchyma, Collechyma, tapel, monoadelphus, diadelphus.

Morphology of inflorescence; cymose and racemose, flower, Description of one family Solanaceae or liliaceae (to be dealt along with the relevant experiment of the Practical Syllabus).

Unit-5 (Marks-8)

- **Photosynthesis in Higher Plants**

Key Words : Photosynthesis, Photosystem, Photophosphorylation, Kranz anatomy, chemiosmotic hypothesis.

Photosynthesis: photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non cyclic

photophosphorylation; chemiosmotic hypothesis; photorespiration; C_3 and C_4 pathways; factors affecting photosynthesis.

Unit-6 (Marks-10)

- **Respiration**

Key Words : Aerobic and Anaerobic respiration, Fermentation Glycolysis, Amphibolic, Respiratory quotient.

Respiration: exchange of gases; cellular respiration-glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations-number of ATP molecules generated; amphibolic pathways; respiratory quotient.

- **Plant growth and development**

Key Words : Growth development, Hormones, Inhibitors Stress hormone, Dormancy.

Plant growth regulators-auxin, gibberellin, cytokinin, ethylene, ABA.

Unit-7 (Marks-6)

- **Animal Kingdom**

Key Words : Chordates, Non chrodates, Vertebrates, Invertebrate Symmetry, coelom, Metameric segmentation, Oviparous, Viviparous.

Salient features and classification of animals non chordates up to phyla level and chordates up to classes level (three to five salient features and at least two examples)

- **Structural Organisation in Animals**

Key Words : Tissues, Muscles, Striated and Non striated muscles cardiac muscles, Neuron.

Animal tissues.

Unit-8 (Marks-5)

- **Breathing and Exchange of Gases**

Key Words : Breathing, Respiration, Trachea, Alveoli, Tidal volume, Residual volume, Total lung capacity.

Breathing and Respiratory: Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing

and its regulation in humans-exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders related to respiration-asthma, emphysema, occupational respiratory disorders.

Unit-9 (Marks-6) (Period - 14)

- **Body Fluids and Circulation**

Key Words : Circulation, Coagulation, Value, Heart beat, cardiac cycle, stroke volume, Heart sounds.

Body fluids and circulation: composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system- Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system-hypertension, coronary artery diseases, angina pectoris, heart failure.

- **Excretion**

Key Words : Excretion, Osmoregulation, Malpighian body, Malpighian tubule, Nephron, Amonotelism, Ureotelism and Uricotelism, Haemodialysis.

Excretory products and their elimination : modes of excretion-ammonotelism, ureotelism, uricotelism; human excretory system-structure and function; urine formation, osmoregulation; regulation of kidney function-renin-angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in excretion; disorders-uraemia, renal failure, renal calculi, nephritis, dialysis and artificial kidney.

Unit-10
(Marks-7)

- **Locomotion and Movement**

Key Words : Locomotion, Movement, Skeletal Muscle, Smooth muscle Myofibril, Sacromere, Sacroplasmic reticulum, Tetanus, Arthritis

Locomotion and movement: skeletal muscle-contractile proteins and muscle contraction.

- **Neural Control and Coordination**

Key Words : Neuron, Resting potential, Action potential, Polarised, Depolarised, Impulse, Reflex action, Sensory and motor neuron, Blind spot, yellow spot, Rods and cones.

Neural control and coordination: neuron and nerves; Nervous system in humans-central nervous system: peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse.

- **Chemical Coordination and Integration**

Key Words: Endocrine gland, Exocrine gland, Hormone, Hyperglycemia, Hypoglycemia, Diabetes, Testes, Ovary.

Chemical coordination and regulation: endocrine glands and hormones: human endocrine system-hypothalamus, pituitary, pineal, parathyroid, adrenal, pancreas, gonads.

PRACTICALS

A. List of Experiments

1. Study and describe a locally available common flowering plant, from any one family: Solanaceae or Liliaceae (Poaceae, Asteraceae or Brassicaceae can be substituted in case of particular geographical location) including dissection and display of floral whorls, anther and ovary to show number of chambers (floral formulae and floral diagrams).
2. Study of distribution of stomata in the upper and lower surfaces of leaves.
3. Separation of plant pigments through paper chromatography.
4. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.
5. Test for presence of sugar in urine.
6. Test for presence of albumin in urine.

B. Study/Observer of the following (spotting)

1. Parts of a compound microscope.

2. Specimens/slides/models and identification with reasons - Bacteria, *Oscillatoria*, *Spirogyra*, *Rhizopus*, mushroom, yeast, liverwort, moss, fern, pine, one monocotyledonous plant, one dicotyledonous plant and one lichen.

3. Virtual specimens/slides/models and identifying features of - *Amoeba*, *Hydra*, liverfluke, *Ascaris*, leech, earthworm, prawn, silkworm, honeybee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.

4. Tissues and diversity in shape and size of animal cells (squamous epithelium, smooth, skeletal and cardiac muscle fibers and mammalian blood smear) through temporary/permanent slides.
5. Mitosis in onion root tip cells and animal cells (grasshopper) from permanent slides.