DAV PUBLIC SCHOOL, BERHAMPUR, ODISHA
Annual Syllabus – Std. XI (2021-22)

ENGLISH (301)
Std. XI (2021-22)

PRESCRIBED BOOKS:

1. Hornbill: English Reader published by National Council of Education Research and Training, New Delhi
2. Snapshots: Supplementary Reader published by National Council of Education Research and Training, New Delhi

QUESTION SPECIFICATION

- **TERM-I:** will have Multiple Choice Questions (MCQ) including MCQs on case-based passage and MCQs on Gap filling/ Transformation of Sentences from grammar.
- **TERM-II:** will have questions of different formats (case-based/ situation based, open ended- short answer/ long answer type).

COURSE STRUCTURE (THEORY)TERM-I

Time : 90 minutes

F.M:40

Section	TYPE OF TEST	TERM-I
	TIME PERIOD OF THE TEST	NOVEMBER-DECEMBER 2021
	NAME OF THE CHAPTER	
A	Reading Comprehension: • Unseen passage (factual, descriptive or literary/ discursive or persuasive) • Case Based Unseen (Factual) Passage	**8** **5**
B	**Creative Writing Skills and Grammar:** **Short Writing Tasks** • Notice Writing **Long Writing Tasks** • Business or Official Letters(Making enquiries, registering complaints, asking for or giving information, placing orders and sending replies) • Speech	**3** **5**

	Grammar • Determiners • Tenses • Re-ordering of Sentences {MCQs on Gap filling/ Transformation of Sentences}	**4**
C	**Literature:** Literary-prose/poetry extracts (seen- texts) comprehension and appreciation. (Two Extracts) Questions Based on Texts to assess comprehension and appreciation, analysis, inference, extrapolation **Book-Hornbill:** • The Portrait of a Lady (Prose) • A Photograph (Poem) • "We're Not Afraid to Die… if We Can All Be Together" (Prose) • Discovering Tut: The Saga Continues • The Laburnum Top (Poem) • Landscape of the Soul (Prose) **Book-Snapshots:** • The Summer of the Beautiful White Horse (Prose) • The Address (Prose) • Ranga's Marriage (Prose)	**9 Marks for Hornbill** **6 Marks for Snapshots**
	Total	**40**

Term I: 10 Marks
Assessment of Listening and Speaking Skills

i. Activities:

● Subject teachers must refer to books prescribed in the syllabus.

● In addition to the above, teachers may plan their own activities and create their own material for assessing the listening and speaking skills.

ii. Parameters for Assessment: The listening and speaking skills are to be assessed on the following parameters:

a. Interactive competence (Initiation & turn taking, relevance to the topic)

b. Fluency (cohesion, coherence and speed of delivery)

c. Pronunciation

d. Language (grammar and vocabulary)

iii. Schedule:

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

COURSE STRUCTURE (THEORY) ANNUAL

Time: 2Hrs **F.M:40**

SECTION	TYPE OF TEST	ANNUAL
	TIME PERIOD OF THE TEST	MARCH-APRIL 2022
	NAME OF THE CHAPTER	
A	**Reading Comprehension:** • Unseen passage (factual, descriptive or literary /discursive or persuasive) • Unseen passage for Note Making and Summarising	**8** **5**
		13
B	**Creative Writing Skills and Grammar:** **Short Writing Tasks** • Posters **Long Writing Tasks** • Official Letters: e.g., to school/college authorities (regarding admissions, school issues, requirements / suitability of courses)	**3** **5**

	• Debate **Grammar** • Determiners • Tenses • Re-ordering of Sentences **{MCQs on Gap filling/ Transformation of Sentences}**	**4**
		12
C	**Literature:** Questions based on extracts/texts to assess comprehension and appreciation, analysis, inference, extrapolation **Book-Hornbill:** • The Voice of the Rain (Poem) • The Ailing Planet: The Green Movement's Role (Prose) • The Browning Version(Play) • Childhood (Poem) • Silk Road (Prose) **Book-Snapshots:** • Albert Einstein at School (Prose) • Mother's Day (Play) • Birth (Prose)	**9 Marks for Hornbill** **6 Marks for Snapshots**
		15 Marks
	Total	**40**

PRACTICAL SYLLABUS

Term II: 10 Marks
Project Work + Viva
Out of ten marks allotted for the term, 5 marks will be allotted for the project report/script /essay etc. and 5 marks for the viva.
Suggestions for Project Work:

- The Project can be inter-disciplinary in theme. The ideas/issues highlighted in the chapters/ poems/ drama given the prescribed books can also be developed in the form of a project. Students can also take up any relevant and age-appropriate theme.
- Such topics may be taken up that provide students with opportunities for listening and speaking.
- Some suggestions are as follows: **a.** Interview-Based research:

Example:

- Students can choose a topic on which to do their research/ interview, e.g. a student can choose the topic: "Evolving food tastes in my neighbourhood" or "Corona pandemic and the fallout on families." Read the available literature.

- The student then conducts interviews with a few neighbours on the topic. For an interview, with the help of the teacher, student will frame questions based on the preliminary research/background.
- The student will then write an essay/ write up / report etc. up to 1000 words on his/her research and submit it. He / She will then take a viva on the research project. The project can be done in individually or in pairs/ groups

b. Listen to podcasts/ interviews/radio or TV documentary on a topic and prepare a report countering or agreeing with the speakers. Write an 800 - 1000 words report and submit. Take a viva on the report.

c. Students create their own video/ Audio, after writing a script. Before they decide a format, the following elements can be taken into consideration:

● Theme/topic of the audio / video. Would the child like to pick a current issue or something artistic like theatre?

● What are the elements that need to be part of the script?

● Will the video/audio have an interview with one or more guests?

● Would they prefer to improvise while chatting with guests, or work from a script?

● What would be the duration?

● How would they present the script/report to the teacher, e.g. Can it be in the form of a narrative?

d. Write, direct and present a theatrical production, /One act play

This will be a project which will be done as a team. It will involve planning, preparation and presentation. In short, various language skills will be utilised. There will be researching, discussion, writing the script, auditioning and ultimately producing the play. The project will end with a presentation and subsequently a viva. Teachers will be able to assess the core language skills of the students and help them grow as 21st century critical thinkers.

Parameters for Overall Assessment:-

1. Pronunciation:

- When evaluating the pronunciation of the students, teachers must listen for clearly articulated words, pronunciation of unusual spellings and intonation.
- Assess the students for the pronunciation skills and determine at which level the student needs improvement.

2. Vocabulary: After noting their pronunciation levels, evaluate the students on the use of extensive and appropriate **vocabulary** during the viva. Check if students are using vocabulary appropriate to the context about which they are speaking.

3. Accuracy:

Grammar has always been an important component of language skills. As students speak/ answer the questions during the viva, listen to their **grammatical structures**. *Are they competent enough to use multiple tenses? Is their word order correct in a given sentence?* An effective speaker will automatically use the correct grammatical structures of his language.

4. Communication:
Assessing the **communication skills** of the students means looking at more than language. Look at how creatively students use the language to make their points understood. Students with a low level of vocabulary and grammar may still have good communication skills if they are able to make the teacher understand their point of view.

5. Interaction:

- During the viva teachers need to ask the students some questions. Questions need to be based on the projects that have been suggested or chosen by the students.
- It is imperative for a teacher to read the essays/project reports before they can be ready to ask questions.
- Teachers need to observe how students answer the questions that are posed to them: *Are they able to understand and answer questions independently or can they answer only when the questions are translated into simpler words or repeated? Are they able to give appropriate responses in a conversation*?
- These elements of **interaction** are necessary for clear and effective communication. A student with effective interaction skills will be able to answer questions with relative ease and follow the flow of conversation.

6. Fluency:

- Fluency may be the easiest quality to judge in the students' speech: *How comfortable are they as they speak and express themselves? How easily do the words come out? Are there inappropriate pauses and gaps in the way a student speaks?*
- **Fluency** is a judgement of this communication and is an important criterion when evaluating speaking skills. These criteria: pronunciation, vocabulary, accuracy, interaction and fluency are all the hallmarks of a student's overall speaking abilities.
- Teachers must also remember that some **students may excel in one area and struggle in another**. Helping the students understand these issues will enable them to become effective speakers in future. Let your students know that you will be assessing them in these various areas when you evaluate their progress and encourage them to work and improve in these areas.
- **Finally,** teachers must remember that a proper evaluation of the students will take into consideration **more than just one oral interview on the final ASL** project. Teachers must take note of a student's progress throughout the academic year.

Project-Portfolio/ Project Report

The **Project-Portfolio/Project Report** is a compilation of the work that the students produce during the process of working on their ALS Project.
The Project-Portfolio may include the following:
● Cover page, with title of project, school details/details of students.
● Statement of purpose/objectives/goals
● Certificate of completion under the guidance of the teacher.
● Action plan for the completion of assigned tasks.

● Materials such as scripts for the theatre/role play, questionnaires for interview, written assignments, essays, survey-reports and other material evidence of learning progress and academic accomplishment.
● The 800-1000 words essay/Script/Report.
● Student/group reflections.
● If possible, Photographs that capture the positive learning experiences of the student(s).
● List of resources/bibliography.

MATHEMATICS (041)
Std. XI (2021-22)

PRESCRIBED BOOKS :

1.Mathematics Textbook for Class XI, (NCERT Publication)
2.Mathematics Exemplar Problems for Class XI,(NCERT Publication)
3.Mathematics Lab Manual For Class XI, Published by NCERT
4. Laboratory Manual of Mathematics, Class XI Published by NCERT

QUESTION SPECIFICATION

- **TERM-I :** will have Multiple Choice Questions(MCQ) including case-based MCQs and MCQs on assertion-reasoning type
- **TERM-**II: will have questions of different formats (case-based/situation based, open ended-short answer long answer type)

COURSE STRUCTURE (THEORY) TERM-I

Sl. No		**TYPE OF TEST**	**TERM – I (40 marks)**
		TIME PERIOD OF THE TEST	**November/December - 2021**
	Units	**Name of the Topics for Term - I**	**Marks Distribution**
1	I Sets & Functions	Sets	11
2		Relations & Functions	
3	II Algebra	Complex Numbers & Quadratic Equations	13
4		Sequence & Series	
5	III Coordinate Geometry	Straight lines	6
6	IV Calculus	Limits	4
7	V Statistics & Probability	Statistics	6
		Total	40
		Internal Assessment	10
		Total	50

DETAIL SYLLABUS FOR TERM - I

UNIT-I SETS AND FUNCTIONS

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.

2. Relations &Functions

Ordered pairs. Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of these two reals with itself (RxR 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-II ALGEBRA

1.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.

2.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-III CO-ORDINATE GEOMETRY

1.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-IV CALCULUS

1.Limits

Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions.

UNIT-V STATISTICS AND PROBABILITY

1.Statistics

Measures of Dispersion: Range, mean deviation, variance and standard deviation of ungrouped/grouped data.

INTERNAL ASSESSMENT	**TERM-I**
PeriodicTest/Chapter End Test/Unit Test	5Marks
Mathematics Activities: Activity file record +Term end assessment of one activity &Viva	5 Marks
Total	10

ACTIVITY SYLLABUS

SL. NO	ACTIVITY	
1	ACTIVITY 1	To find the number of subsets of a given set
2	ACTIVITY 2	To represent set theoretic operations by using Venn Diagram
3	ACTIVITY 3	To verify for any two sets A and B, if $n(A) = p, n(B) = q$, then the total number of relations from A to B is 2^{pq}.
4	ACTIVITY 4	To find analytically Lim x$\rightarrow c$ $f(x) = \frac{x^2-c^2}{x-c}$

COURSE STRUCTURES (THEORY) ANNUAL			
Sl. No		TYPE OF TEST	ANNUAL (40 marks)
		TIME PERIODOF THE TEST	March/April - 2022
	Units	Name of the Topics for Annual	Unit wise Marks Distribution
1	I Sets & Functions	** Functions	02
2		Trigonometric Functions	08
3	II Algebra	Linear Inequalities Permutations and Combinations	08
4	III Coordinate Geometry	** Straight Line	02
5		Conic Sections, Introduction to Three Dimensional Geometry	08
6	IV Calculus	**Limits	04
7		Derivatives	04
8	V Statistics and Probability	Statistics and Probability	04
		Total	40
		Internal Assessment	10
		Total	50

DETAIL SYLLABUS FOR ANNUAL

UNIT-I SETS AND FUNCTIONS

1.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 $cos^2x + sin^2x = 1$, 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$y$, cos$x$ & cos$y$ and their simple applications. Deducing identities like the following:

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

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

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

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

Identities related to sin2x, cos2x, tan2 x, sin3x, cos3x and tan3x.

UNIT-II ALGEBRA

1.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.

2.Permutations and Combinations

Fundamental principle of counting. Factorial n. (n!) Permutations and combinations, formula for ${}^{n}Pr$ and ${}^{n}Cr$, simple application

UNIT-III CO-ORDINATE GEOMETRY

1.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.

2.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-IV CALCULUS

1. Derivatives

Derivative introduced as rate of change both as that of distance function and geometrically. 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-V STATISTICS AND PROBABILITY

1.Probability

Randomexperiments;outcomes,samplespaces(setrepresentation).Events;occurrenceofevents,' not', 'and' and 'or' events, exhaustive events, mutually exclusive events, Probability of an event, probability of 'not', 'and' and 'or'events.

**UNIT-I SETS AND FUNCTIONS

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-II CO-ORDINATE GEOMETRY

Slope of a line and angle between two lines. Various forms of equations of a line: paralleltoaxis,point-slopeform,slope-interceptform,two-pointform, intercept form and normal form. General equation of a line. Distance of a point from a line.

UNIT-IV CALCULUS

Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions.

INTERNAL ASSESSMENT	**ANNUAL**
Periodic Test /Chapter End Test/Unit Test	5Marks
Mathematics Activities: Activity file record +Term end assessment of one activity &Viva	5 Marks
Total	10

ACTIVITY SYLLABUS

Sl. No	ACTIVITY	
1	ACTIVITY 5	To plot the graph of sin x, sin 2x, 2sin x, sin x/2
2	ACTIVITY 6	Linear Inequalities
3	ACTIVITY 7	Sample space of throwing a Dice
4	ACTIVITY 8	Sample space of tossing a Coin

PHYSICS (042)
Std. XI (2021-22)

PRESCRIBED BOOKS:

1. Physics Part-I, Published by NCERT
2. Physics Part-II, Published by NCERT
3. Exemplar Physics, Published by NCERT
4. Laboratory Manual of Physics, Class XI Published by NCERT
5. Any related books and manuals brought out by NCERT (Also consider multimedia)

QUESTION SPECIFICATION

Term I Examinations: will have Multiple Choice Questions (MCQ) including case-based MCQs and MCQs on assertion-reasoning type.

Term II Examination/ Year-end Examination: will have (case-based/ situation based, open ended- short answer/ long answer type) questions.

COURSE STRUCTURE (THEORY)

Class-XI (Term-I)

TIME : 90 Minutes **F.M. : 35**

UNITS	NAME OF THE TEST	Term –I
	TIME PERIOD OF THE TEST	**NOVEMBER/ DECEMBER-2021**
Unit – I	**Physical world and measurement**	20
	Chapter 1 : Physical world	
	Chapter 2: Units and Measurement	
Unit– II	**Kinematics**	
	Chapter 3: Motion in a straight line	
	Chapter 4: Motion in a plane	
Unit -III	**Laws of Motion**	
	Chapter 5: Laws of Motion	
Unit –IV	**Work, Energy and Power**	15
	Chapter 6: Work, Energy and Power	
Unit –V	**Motion of system of particles and rigid body**	
	Chapter 7: Motion of system of particles and rigid body	
Unit –VI	**Gravitation**	
	Chapter 8: Gravitation	
	TOTAL	**35**

SYLLABUS DETAILS

UNIT – I : PHYSICAL WORLD AND MEASUREMENT

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.

UNIT – II : KINEMATICS

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.

UNIT – III: LAWS OF MOTION

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).

UNIT – IV: WORK, ENERGY AND POWER

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**.**

UNIT – V: MOTION OF SYSTEM OF PARTICLES AND RIGID BODY

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).

UNIT –VI: GRAVITATION

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.

PRACTICALS

Syllabus for TERM I

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

Record of at least 4 Experiments, to be performed by the students

Record of at least 3 Activities, to be demonstrated by teacher.

EVALUATION SCHEME

Time Allowed: 1 and 1/2 hrs **Max Marks: 15**

Evaluation Scheme for Examination	**TERM-I**
Two experiments	8 Marks
Practical record (experiment and activities)	2 Marks
Viva on experiments and activities	5 Marks
Total	**15 Marks**

Experiments assigned for Term I

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

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.

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

4. To determine the mass of two different objects using a beam balance.

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

6. 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.

7. 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.

Activities assigned for Term I

1. To make a paper scale of given least count, e.g., 0.2cm, 0.5 cm.
2. To determine mass of a given body 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 measure the force of limiting friction for rolling of a roller on a horizontal plane.
5. To study the variation in range of a projectile with angle of projection.
6. To study the conservation of energy of a ball rolling down on an inclined plane (using a double inclined plane).
7. To study dissipation of energy of a simple pendulum by plotting a graph between square of amplitude and time.

CLASS-XI (ANNUAL EXAMINATION)

Time: 2 hours **F. M.:35**

Unit	NAME OF THE TEST TIME PERIOD OF THE TEST	Annual MARCH / APRIL
Unit–VII	**Properties of Bulk Matter**	
	Chapter–9: Mechanical Properties of Solids	
	Chapter–10: Mechanical Properties of Fluids	
	Chapter–11:Thermal Properties of Matter	
Unit–VIII	**Thermodynamics**	
	Chapter–12:Thermo dynamics	
	Behavior of Perfect Gases and Kinetic Theory of Gases	**18**
	Chapter–13:Kinetic Theory	

Unit–X	**Oscillations and Waves**	
	Chapter–14:Oscillations	**10**
	Chapter–15:Waves	
*	Elementary concepts of differentiation and integration with example Unit vector ; resolution of a vector in a plane, Scalar and	**05**
*	Conservative and non-conservative forces Equilibrium o frigid bodies	**02**
	Total	**35**

UNIT –VII : PROPERTIES OF BULK MATTER

Chapter – 9 : Mechanical Properties of Solids

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

Chapter – 10: Mechanical Properties of Fluid

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.

UNIT –VIII: THERMODYNAMICS

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.

UNIT –IX: BEHAVIOR OF PERFECT GASES AND KINETIC THEORY OF GASES

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.

UNIT –X: OSCILLATIONS AND WAVES

Chapter – 14: Oscillation

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

PRACTICALS(TERM-II)

Syllabus for TERM II

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

Record of at least 4 Experiments, to be performed by the students

Record of at least 3 Activities, to be demonstrated by teacher.

EVALUATION SCHEME

Time Allowed:1 and 1/2 hrs **Max Marks:15**

Evaluation Scheme for Examination	**TERM-I**
Two experiments	8 Marks
Practical record (experiment and activities)	2 Marks
Viva on experiments and activities	5 Marks
Total	**15 Marks**

Experiments assigned for Term II

1. 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.

2. To study the variation in volume with pressure for a sample of air at constant temperature by plotting graphs between P and V, and between P and 1/V.

3. To determine the surface tension of water by capillary rise method.

OR

To determine the coefficient of viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body.

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

5. To determine specific heat capacity of a given solid by method of mixtures.

6. 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.

7. To find the speed of sound in air at room temperature using a resonance tube by two resonance positions.

Activities assigned for Term II

1. To observe change of state and plot a cooling curve for molten wax.

2. To observe and explain the effect of heating on a bi-metallic strip.

3. To note the change in level of liquid in a container on heating and interpret the observations.

4. To study the effect of detergent on surface tension of water by observing capillary rise.

5. To study the factors affecting the rate of loss of heat of a liquid.

6. To study the effect of load on depression of a suitably clamped metre scale loaded at (i) its end (ii) in the middle.

7. To observe the decrease in pressure with increase in velocity of a fluid.

CHEMISTRY (043)
Std. XI (2021-22)

PRESCRIBED BOOKS:

1. Chemistry Part-I, Published by NCERT
2. Chemistry Part-II, Published by NCERT
3. Exemplar Chemistry, Published by NCERT
4. Laboratory Manual of Chemistry, Class XI Published by NCERT
5. Any related books and manuals brought out by NCERT (Also consider multimedia)

QUESTION SPECIFICATION

- **TERM-I:** will have Multiple Choice Questions (MCQ) including case-based MCQs and MCQs on assertion-reasoning type.
- **TERM-II:** will have questions of different formats (case-based situation based, open ended- short answer/ long answer type).

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COURSE STRUCTURE (THEORY) TERM-I

Time : 90 minutes **F.M:35**

Sl. No.	UNIT	TYPE OF TEST	TERM-I
		TIME PERIOD OF THE TEST	**NOVEMBER-DECEMBER 2021**
		NAME OF THE CHAPTER	
1	Unit – I	Some Basic Concepts of Chemistry	**11**
2	Unit – II	Structure of Atom	
3	Unit –III	Classification of Elements and Periodicity in Properties	**4**
4	Unit –IV	Chemical Bonding and Molecular Structure	**6**
5	Unit -VIII	Redox Reactions	**5**
6	Unit –IX	Hydrogen	
7	Unit –XII	Organic Chemistry: Some basic Principles and Techniques.	**9**
		Total	**35**

SYLLABUS DETAILS

UNIT I: SOME BASIC CONCEPTS OF CHEMISTRY

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.

UNIT II: STRUCTURE OF ATOMS

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.

UNIT III: CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES

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 nthalpy, electro negativity, valency. Nomenclature of elements with atomic number greater than 100.

UNIT IV: CHEMICAL BONDING AND MOLECULAR STRUCTURE

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.

UNIT VIII: REDOX REACTIONS

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.

UNIT IX: HYDROGEN

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

UNIT XII: ORGANIC CHEMISTRY -SOME BASIC PRINCIPLES AND TECHNIQUES

General introduction, 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.

PRACTICALS

EVALUATION SCHEME FOR EXAMINATION	**TERM-I**
VOLUMETRIC ANALYSIS	8
CONTENT BASED EXPERIMENT	2
CLASS RECORD AND VIVA(INTERNAL EXAMINER)	5
Total	**15**

PRACTICAL SYLLABUS

TERM-I

Micro-chemical methods are available for several of the practical experiments.

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 of Chemical Substances (2 Marks)**

1. Determination of melting point of an organic compound.
2. Determination of boiling point of an organic compound.

C**. Quantitative Estimation (8 marks)**

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.

COURSE STRUCTURE (THEORY) ANNUAL

Time : 2Hrs **F.M:35**

Sl. No.	UNIT	TYPE OF TEST	ANNUAL
		TIME PERIOD OF THE TEST	MARCH-APRIL 2022
		NAME OF THE CHAPTER	
1	Unit –V	States of Matter: Gases and Liquids	**12**
2	Unit –VI	Chemical Thermodynamics	
3	Unit –VII	Equilibrium	
4	Unit -X	s -Block Elements	**7**
5	Unit -XI	Some p -Block Elements	
6	Unit -XIII	Hydrocarbons	**9**
*7	Unit -VIII	Redox Reactions	**2**
*8	Unit –XII	Organic Chemistry: Some basic Principles and Techniques.	**5**
		Total	**35**

SYLLABUS DETAILS

UNIT V: STATES OF MATTER: GASES AND LIQUIDS

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 and deviation from ideal behaviour.

UNIT VI: CHEMICAL THERMODYNAMICS

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 nonspontaneous processes.

Third law of thermodynamics (brief introduction).

UNIT VII: EQUILIBRIUM

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).

UNIT X: s-BLOCK ELEMENTS (ALKALI AND ALKALINE EARTH METALS)

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.

UNIT XI: SOME p -BLOCK ELEMENTS

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.

UNIT XIII: HYDROCARBONS

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 (Markovnikov'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.

*UNIT VIII: REDOX REACTIONS

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.

*UNIT XII: ORGANIC CHEMISTRY -SOME BASIC PRINCIPLES AND TECHNIQUES

General introduction, 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.

PRACTICALS

EVALUATION SCHEME FOR EXAMINATION	**ANNUAL**
SALT ANALYSIS	8
CONTENT BASED EXPERIMENT	2
PROJECT WORK AND VIVA(INTERNAL)	5
Total	**15**

PRACTICAL SYLLABUS

ANNUAL

A. Qualitative Analysis(Marks 8)

a. Determination of one anion and one cation in a given salt

Cations- Pb^{2+}, Cu^{2+}, As^{3+}, Al^{3+}, Fe^{3+}, Mn^{2+}, Ni^{2+}, Zn^{2+}, Co^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+}, NH_4^+

Anions – $(CO_3)^{2-}$, S^{2-} , NO_2^- , SO_3^{2-} , SO_4^{2-} , NO_3^-, Cl^- , Br^- , I^- , PO_4^{3-} , $C_2O_4^{2-}$,CH_3COO^-

(Note: Insoluble salts excluded)

b. Detection of -Nitrogen, Sulphur, Chlorine in organic compounds.

B. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, Benzoic Acid. (Marks 2)

PROJECT

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 tea leaves.
- 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.

BIOLOGY (Code No. 044)
Std. XI (2021-22)

PRESCRIBED BOOKS:

1. TEXT BOOK OF BIOLOGY FOR CLASS-XI (NCERT).
2. EXEMPLAR BIOLOGY-CLASS-XI (NCERT).
3. BIOLOGY SUPPLEMENTARY MATERIAL (REVISED), AVAILABLE ON CBSE WEBSITE.
4. OTHER RELATED BOOKS AND MANUALS BROUGHT OUT BY NCERT (INCLUDING MULTIMEDIA).

QUESTION SPECIFICATIONS

- **TERM-I:** will have case-based MCQs and MCQs on assertion-reasoning type.
- **TERM-II:** will have questions of different formats (case-based/ situation based, open ended- short answer/ long answer type).

COURSE STRUCTURE (THEORY) TERM-I

Time: 90 Minutes **Max Marks: 35**

UNIT	**Type of Test**	**Term I**
	Time period of the test	**Nov/Dec 2021 (As per CBSE)**
	Name of the Unit	
1	Diversity of Living Organisms	15
2	Structural Organisation in Plants and Animals	08
3	Cell: Structure and Function	12
	Total	**35**

All questions are compulsory.

Section- 'A' is having 4 Case based questions (Each case based question has 5 MCQs of one mark each).
Section –'B' is having 15 Assertion and Reason type questions of one mark each.

Competencies	
Demonstrate Knowledge and Understanding	**50%**
Application of Knowledge / Concepts	**30%**
Formulate, Analyse, Evaluate and Create	**20%**
Total	**100%**

THEORY

Term – I
UNIT-I DIVERSITY OF LIVING ORGANISMS

Chapter-1: The Living World

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

Chapter-2: Biological Classification

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

Chapter-3: Plant Kingdom

Salient features and classification of plants into major groups - Algae, Bryophyta, Pteridophyta and Gymnospermae. (Salient and distinguishing features and a few examples of each category).

Chapter-4: Animal Kingdom

Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and distinguishing features of a few examples of each category). (No live animals or specimen should be displayed.)

UNIT-II STRUCTURAL ORGANIZATION IN ANIMALS AND PLANTS

Chapter-5: Morphology of Flowering Plants

Morphology of inflorescence and flower, Description of 01 family: Solanaceae or Liliaceae (to be dealt along with the relevant experiments of the Practical Syllabus).

Chapter-7: Structural Organization in Animals

Animal tissues.

UNIT-III CELL: STRUCTURE AND FUNCTION

Chapter-8: Cell-The Unit of Life

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 (ultra structure and function); nucleus.

Chapter-9: Biomolecules

Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzymes- types, properties, enzyme action.

PRACTICALS

Max. Marks: 15

Evaluation Scheme		
	TERM-I	MARKS
Part A		
One Major Experiment	Experiment No. -1	4
One Minor Experiment	Experiment No. - 2	3
Part B		
Spotting(3 Spots of 1 mark each)	B.1, 2, 3	3
Practical Record + Investigatory Project& Record + Viva Voce		5
Total		15

TERM -I:

A: List of Experiments

A1. 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).

A2. Study of osmosis by Potato osmometer.

B. Study/Observation of the following List of(spotting):

B.1 Parts of a compound microscope.

B.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.

B.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.

ANNUAL QUESTION SPECIFICATIONS

All questions are compulsory. However, an internal choice of approximately 33% are provided.

Section- 'A' is having 2 case based questions (Each question with 5 MCQs of one mark each).
Section B is having Short/Long type questions: SA(2 marks)-two questions, LA-I (3 marks)-two questions and LA II (5 marks)-one question.
Section 'C' is having 2 situation based questions (Each question with 5 MCQs of 1 mark each).
Internal Choice is provided in one of the MCQs of any one Case based question under Section A,1 question of section SA I, One question of LA I and 1 question of LA II under section 'B', and one of the MCQs of any one Situation based question under Section C'.

Competencies	
Demonstrate Knowledge and Understanding	**50%**
Application of Knowledge / Concepts	**30%**
Formulate, Analyse, Evaluate and Create	**20%**
Total	**100%**

COURSE STRUCTURE (THEORY)
ANNUAL EXAMINATION 2021-22

Time: 2 Hours **Max Marks:35**

Theory	**EVALUATION SCHEME**	
Unit		**Marks**
II	*Structural Organisation in Animals (Animal Tissues only) : Chapter 7	2
III	* Cell : The Unit of Life – Chapter 8 *Biomolecules – Chapter 9 Cell : Structure and Function Chatper : 10	5 4
		9
IV	Plant Physiology : Chapter 13, 14 and 15	9
V	Human Physiology : Chapter 17, 18, 19, 20, 21 and 22	15
	Total	**35**

*** Topics from Term 1**

ANNUAL (THEORY)

Unit-III Cell: Structure and Function

Chapter-10: Cell Cycle and Cell Division

Cell cycle, mitosis, meiosis and their significance

Unit-IV Plant Physiology

Chapter-13: Photosynthesis in Higher Plants

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; C3 and C4 pathways; factors affecting photosynthesis.

Chapter-14: Respiration in Plants

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.

Chapter-15: Plant - Growth and Development

Growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA.

Unit-V Human Physiology

Chapter-17: Breathing and Exchange of Gases

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.

Chapter-18: 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 disease, angina pectoris, heart failure.

Chapter-19: 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 - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant.

Chapter-20: Locomotion and Movement

Skeletal muscle, contractile proteins and muscle contraction.

Chapter-21: 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.

Chapter-22: Chemical Coordination and Integration

Endocrine glands and hormones; human endocrine system hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goitre, exophthalmic goitre, diabetes, Addison's disease.

Note : Diseases related to all the human physiological systems to be taught in brief.

PRACTICALS

Max. Marks: 15

Evaluation Scheme		
	TERM - II	MARKS
Part A		
One Major Experiment	Experiment No. -1, 2	4
One Minor Experiment	Experiment No. – 3, 4, 5	3
Part B		
Spotting(3 Spots of 1 mark each)	B.1, 2	3
Practical Record + Investigatory Project& Record + Viva Voce		5
Total		15

Practicals should be conducted alongside the concepts taught in theory classes.

TERM -II:

A: List of Experiments

A1. Separation of plant pigments through paper chromatography.

A2. Study of distribution of stomata in the upper and lower surfaces of leaves.

A3. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.

A4. Test for presence of sugar in urine.

A5. Test for presence of albumin in urine.

B. Study/Observation of the following List of(spotting):

B.1 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.

B.2 Mitosis in onion root tip cells and animal cells (grasshopper) from permanent slides.

COMPUTER SCIENCE (083)
STD. XI (2021-22)

PRESCRIBED BOOK:

Computer Science with Python (Dhanpat Rai Publication by Sumita Arora)

QUESTION PAPER

- **TERM-I:** will have Multiple Choice Questions (MCQ) including case-based MCQs and MCQs on assertion-reasoning type.
- **TERM-II:** will have questions of different formats (case-based/ situation based, open ended- short answer/ long answer type).

COURSE STRUCTURE (THEORY) TERM-I

Time : 90 minutes **F.M:35**

NAME OF THE TESTS&MARK DISTRIBUTION		
TIME PERIOD OF THE TEST		**TERM-I**
UNIT	**NAME OF THE UNIT**	**NOVEMBER-DECEMBER 2021**
1	**Computer Systems and Organisation (CSO)**	
	Basic computer organisation	1
	Memory Units	1
	Boolean logic	2
	Number System	2
	Types of software:	1
	Concept of Compiler and Interpreter	1
	Operating System	1
	Encoding Schemes	1

2	**Computational Thinking and Programming-1**	
	Introduction to Problem Solving	2
	Decomposition	
	Familiarization with the basics of Python programming	2
	Features of Python, Comments, Introduce the notion of a variable	3
	Knowledge of datatypes and operators, Operators & types, Execution of a program	4
	Conditional statements	4
	Iterative statements:	5
	String Manipulations	5
	TOTAL	**35**

SYLLABUS DETAILS

TERM-1:

UNIT 1: Computer Systems and Organisation (10 Theory+10 Practical)

- Basic Computer Organisation:
- Introduction to computer system, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (Bit, Byte, KB, MB,GB, TB, PB)
- Types of software: system software (operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler & interpreter), application software
- Operating system (OS): functions of operating system, OS user interface
- Boolean logic: NOT, AND, OR, NAND, NOR, XOR, truth table, De Morgan's laws and logic circuits
- Number system: Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems.
- Encoding schemes: ASCII, ISCII and UNICODE (UTF8, UTF32)

UNIT 2 :Computational Thinking and Programming – 1(80 Theory+60 Practical)

- Introduction to problem solving: Steps for problem solving (analysing the problem, developing an algorithm, coding, testing and debugging). representation of algorithms using flow chart and pseudo code, decomposition
- Familiarization with the basics of Python programming: Introduction to Python, features of Python, executing a simple "hello world" program, execution modes: interactive mode and script mode, Python character set, Python tokens (keyword, identifier, literal, operator, punctuator), variables, concept of l-value and r-value, use of comments
- Knowledge of data types: number (integer, floating point, complex), boolean, sequence (string, list, tuple), none, mapping (dictionary), mutable and immutable data types
- Operators: arithmetic operators, relational operators, logical operators, assignment operator, augmented assignment operators, identity operators (is, is not), membership operators (in, not in)
- Expressions, statement, type conversion & input/output: precedence of operators, expression, evaluation of expression, python statement, type conversion (explicit & implicit conversion),accepting data as input from the console and displaying output
- Errors: syntax errors, logical errors, runtime errors
- Flow of control: introduction, use of indentation, sequential flow, conditional and iterative flow control
- Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number
- Iterative statements: for loop, range function, while loop, flowcharts, break and continuestatements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number etc.
- Strings: introduction, indexing, string operations (concatenation, repetition, membership & slicing), traversing a string using loops, built-in functions: len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()

PRACTICAL

S.No.	EVALUATION SCHEME FOR EXAMINATION	Marks(Total=30)	TERM- I (15Marks)
1.	Python program	12	6
2.	Reportfile:Minimum20Pythonprograms Term- 1 : Minimum 10 programs based on Term – 1syllabus	7	4
	Viva voce	3	2
3.	Project + Viva voce Term – 1 : Synopsis of the project to be submitted by the students (documentation only)	8	3

PRACTICAL SYLLABUS

TERM-1

Input a welcome message and display it.

- Input two numbers and display the larger/smaller number.
- Input three numbers and display the largest/smallest number.
- Generate the following patterns using nested loop.

Pattern-1	Pattern-2	Pattern-3
*	12345	A
**	12 3 4	AB
***	123	ABC
****	12	ABCD
*****	1	ABCDE

- Write a program to input the value of x and n and print the sum of the following series:

  o $1+x+x^2+x^3+x^4+.....x^n$

  o $1-x+x^2-x^3+x^4 .....x^n$

  o $x-\frac{x^2}{2}+\frac{x^3}{3}-\frac{x^4}{4}+ .....\frac{x^n}{n}$

  o $\frac{x}{1}+\frac{x^2}{2!}-\frac{x^3}{3!}+\frac{x^4}{4!} .....\frac{x^n}{n!}$

COURSE STRUCTURE (THEORY) ANNUAL

NAME OF THE TESTS& MARK DISTRIBUTION		ANNUAL
TIME PERIOD OF THE TEST		**MARCH-APRIL-2022**
UNIT	**NAME OF THE UNIT**	
2	Introduction to Python modules (math module, random module, statistics module)	4
	List	6
	Tuples	5
	Dictionaries	5
3	**Society, Law and Ethics (SLE-1)**	
	Digital Footprints	1
	Digital society and Netizen	1
	Cyber-crime	2
	Safely accessing web sites	1
	E-waste management	1
	Indian Information Technology Act (IT Act)	1
	Technology & Society	1
*	Conditional statements	2
*	Iterative statements:	2
*	String Manipulations	3
	TOTAL	**35**

After completion of Term-1 contents teachers may proceed with Annual contents to overcome shortage of timing for course completion .

SYLLABUS DETAILS

ANNUAL:

Unit II :Computational Thinking and Programming–1

● Lists: introduction, indexing, list operations (concatenation, repetition, membership & slicing), traversing a list using loops, built-in functions: len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs: finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a list

● Tuples: introduction, indexing, tuple operations (concatenation, repetition, membership & slicing), built-in functions: len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple, suggested programs: finding the minimum, maximum, mean of values stored in a tuple; linear search on a tuple of numbers, counting the frequency of elements in a tuple

● Dictionary: introduction, accessing items in a dictionary using keys, mutability of dictionary (adding a new item, modifying an existing item), traversing a dictionary, built-in functions: len(), dict(), keys(), values(), items(), get(), update(), del(), clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), count(), sorted(), copy(); suggested programs : count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them

● Introduction to Python modules: Importing module using 'import <module>' and using from statement, Importing math module (pi, e, sqrt, ceil, floor, pow, fabs, sin, cos, tan); random module (random, randint, randrange), statistics module (mean, median,mode).

UNIT 3 :Society, Law and Ethics (20 Theory)

- Digital Footprints
- Digital society and Netizen: net etiquettes, communication etiquettes, social media etiquettes
- Data protection: Intellectual Property Right (copyright, patent, trademark), violation of IPR
- (plagiarism, copyright infringement, trademark infringement), open source softwares and licensing (Creative Commons, GPL and Apache)
- Cyber-crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware,
- preventing cyber crime

- Cyber safety: safely browsing the web, identity protection, confidentiality, cyber trolls and bullying.
- Safely accessing web sites: malware, viruses, trojans, adware
- E-waste management: proper disposal of used electronic gadgets Indian Information Technology Act (IT Act)
- Technology & Society: Gender and disability issues while teaching and using computers.

***UNIT-2:**

*Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number

*****Iterative statements: for loop, range function, while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number etc

*****Strings: introduction, indexing, string operations (concatenation, repetition, membership & slicing), traversing a string using loops, built-in functions: len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()

PRACTICAL

S.No	EVALUATION SCHEME FOR EXAMINATION	Marks (Total=30)	ANNUAL (15Marks)
1.	Python program	12	6
2.	Report file : Minimum 20 Python programs Annual : Minimum 10 programs based on Annual syllabus	7	3
	Viva voce	3	1
3.	Project + Viva voce Annual : Final coding + Viva voce (Student will be allowed to modify their Term 1document and submit the final executable code.)	8	5

PRACTICAL SYLLABUS

ANNUAL

- Find the largest / smallest number in a list/tuple
- Input a list of numbers and swap elements at the even location with the elements at the odd location.
- Input a list / tuple of elements, search for a given element in the list/tuple.
- Input a list of numbers and find the smallest and largest number from the list.
- Create a dictionary with the roll number, name and marks of n students in a class and display the names of students who have scored marks above 75.

Suggested Reading Material

- NCERT Textbook for COMPUTER SCIENCE (ClassXI)
- Support Materials on the CBSE website.