

# Class - XII

S. No.	Subject & Code	Page No.
1.	English Core (301)	2
2.	Mathematics (041)	15
3.	Physics (042)	24
4.	Chemistry (043)	35
5.	Biology (044)	47
6.	Sociology (039)	56
7.	Political Science (028)	59
8.	Economics (030)	66
9.	Business Studies (054)	73
10.	Accountancy (055)	81
11.	Physical Education (048)	89
12.	Information Technology (802)	96

# Subject : English Core

### Rationale

Students are expected to have acquired a reasonable degree of language proficiency in English Language by the time they come to higher secondary, and the course aims, essentially, at promoting the higher-order language skills. For a large number of students, the higher secondary stage will be a preparation for the university, where a fairly high degree of proficiency in English may be required. But for another large group, the higher secondary stage may be a preparation for entry into the professional domain. The Core Course should cater to both groups by promoting the language skills required for academic study as well as the language skills required for the workplace.

### Competencies to be focused on:

### The general objectives at this stage are to:

- listen and comprehend live as well as record in writing oral presentations on a variety of topics
- develop greater confidence and proficiency in the use of language skills necessary for social and academic purpose to participate in group discussions, interviews by making short oral presentation on given topics
- perceive the overall meaning and organisation of the text (i.e., correlation of the vital portions of the text)

- identify the central/main point and supporting details, etc., to build communicative competence in various lexicons of English
- promote advanced language skills with an aim to develop the skills of reasoning, drawing inferences, etc. through meaningful activities
- translate texts from mother tongue(s) into English and vice versa
- develop ability and acquire knowledge required in order to engage in independent reflection and enquiry read and comprehend extended texts (prescribed and non-prescribed) in the following genres: science fiction, drama, poetry, biography, autobiography, travel and sports literature, etc.
- text-based writing (i.e., writing in response to questions or tasks based on prescribed or unseen texts) understand and respond to lectures, speeches, etc.
- write expository / argumentative essays, explaining or developing a topic, arguing a case, etc. write formal/informal letters and applications for different purposes make use of contextual clues to infer meanings of unfamiliar vocabulary
- select, compile and collate information for an oral presentation
- produce unified paragraphs with adequate details and support
- use grammatical structures accurately and appropriately
- write items related to the workplace (minutes, memoranda, notices, summaries, reports etc.
- filling up of forms, preparing CV, e-mail messages., making notes from reference materials, recorded talks etc.

### Section A Reading Skills

### Reading Comprehension through Unseen Passage 20 Marks

- I. 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. (10x1=10Marks)
- II. One unseen case-based passage with verbal/visual inputs like statistical data, charts etc.(10x1=10 Marks)
- Note: The combined word limit for both the passages will be 700-750 words.

Multiple Choice Questions / Objective Type Questions will be asked.

### Section B III. Creative Writing Skills 20 Marks

The section has Short and Long writing tasks.

i. Notice up to 50 words. One out of the two given questions to be answered.

(5 Marks)Format :1 / Organisation of Ideas: 1/Content : 2 / Accuracy of Spelling and rammar : 1)

- Formal/Informal Invitation and Reply up to 50 words. One out of the two given questions to be answered. (5 Marks: Format : 1 / Organisation of Ideas: 1/Content : 2 / Accuracy of Spelling and Grammar:1)
- iii. Letters based on verbal/visual input, to be answered in approximately 120-150 words. Letter types include application for a job with bio data or resume. Letters to the editor (giving opinion on issues of public interest). One out of the two given questions to be answered. (5 Marks: Format: 1 / Organisation of Ideas: 1/Content: 2 /Accuracy of Spelling and Grammar: 1).

iv. Article/ Report Writing, descriptive and analytical in nature, based on verbal inputs, to be answered in 120-150 words. One out of the two given questions to be answered. (5 Marks: Format : 1 / Organisation of Ideas: 1/Content : 2 / Accuracy of Spelling and Grammar : 1 )

### Section C

This section will have variety of assessment items including Multiple Choice Questions, Objective Type Questions, Short Answer Type Questions and Long Answer Type Questions to assess comprehension, analysis, interpretation and extrapolation beyond the text.

IV. Reference to the Context

### 40 Marks

- One Poetry extract out of two from the book Flamingo to assess comprehension, interpretation, analysis and appreciation. (6x1=6 Marks)
- ii. One Prose extract out of two from the book Vistas to assess comprehension, interpretation, analysis and appreciation. (4x1=4 Marks)
- iii. One prose extract out of two from the book Flamingo to assess comprehension, interpretation and analysis. (6x1=6Marks)
- Short answer type question (from Prose and Poetry from the book Flamingo), to be answered in 40-50 words. Questions should elicit inferential responses through critical thinking. Five questions out of the six given are to be answered. (5x2=10 Marks)
- VI. Short answer type question, from Prose (Vistas), to be answered in 40-50 words. Questions should elicit inferential responses through critical thinking. Any 2 out of 3 questions to be done. (2x2=4 Marks)

- VII. One Long answer type question, from Prose/Poetry (Flamingo), to be answered in 120-150 words. Questions can be based on incident / theme / passage / extract / event as reference points to assess extrapolation beyond and across the text. The question will elicit analytical and evaluative response from student. Any 1 out of 2 questions to be done. (1x5=5 Marks)
- VIII. One Long answer type question, based on the chapters from the book Vistas, 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 Marks)

### PRESCRIBED BOOKS :

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

### (Prose)

The Last Lesson, Lost Spring, Deep Water, The Rattrap, Indigo, Poets and Pancakes, The Interview, Going Places

### (Poetry)

My Mother at Sixty-Six, Keeping Quiet, A Thing of Beauty, A Roadside Stand, Aunt Jennifer's Tigers

**Vistas:** Supplementary Reader published by National Council of Education Research and Training, New Delhi

The Third Level, The Tiger King, Journey to the end of the Earth, The Enemy, On the Face of It, Memories of Childhood, The Cutting of My Long Hair, We Too are Human Beings

### Question Paper Design English CORE XII

Section	Competencies	Total marks
Reading Skills	Conceptual understanding, decoding, Analyzing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarizing and using appropriate format/s.	20
Creative Writing Skills	Conceptual Understanding, application of rules, Analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.	20
Literature Text Books and Supplementary Reading Text	Recalling, reasoning, critical thinking, appreciating literary convention, inference, analysis, creativity with fluency.	40
	Total	80
	Assessment of Listening and Speaking Skills	10
	Internal Assessment • Listening	5 5
	Speaking     Project Work     Grand Total	10

### Project Work + Viva: 10 Marks

Out of ten marks, 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.

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

One Paper Marks:25	1 hour	
Section	Area of Learning	Marks specified
Part A	Reading Unseen Passages	5
Part B	Writing Skills	5
Part C	Extracts-Poetry & Prose	2+3=5
	Short answer	2+2=4
	Long answers	3+3=6
	Annual Assessment	
One Paper	3 hours	Marks: 80
Section	Area of Learning	Marks specified
Part A	Reading Unseen Passages (2)	10+10=20
Part B	Advanced Writing Skills	5+5+5+5=20

**Periodic Assessment** 

Part C	Lite	erature Flamingo &Vistas	
	Ex	tracts based on prose, poetry	6+4+6 =16
	Sh	ort answers	10+4=14
	Loi	ng answers	5+5 =10
	Unit	wise distribution of syllabus	
Unit I			
L. Reader	:	Poem- My mother at 66 ( Key Words- ashen, corpse, s wan, ache)	sprinting, spilling,
		Ch 1 The Last Lesson ( Key Words-bustle, unison, se enslaved, rapt, logical, prime thunderclap, apprentice)	olemn, reproach, er, gesture,
S. Reader	:	Ch 1 The Third Level (Key words- futuristic, intersed premium, spittoons, ducked A apparent, illogicality)	ction, derby, rched, protectors,
Writing Skills	:	Notice writing	
Activity	:	Practice of listening skill	
		Speech on "Preserving Langu Identity"	age Preserves
Unit II			
L. Reader	:	Ch 2 - Lost Spring (Key words- scrounging, glibly periphery, metaphorically, squ sanctity, apathy, vicious)	v, bleak, perpetual, uatters, unkempt,

S. Reader	:	Ch 2 The Tiger King (Key words: imperative, indomitable, transfixed, enunciated, incoherent, hindsight, shuddering, wantonly, flout, suppurating, conceit)
Writing Skills	:	Letter writing : letter to editor
Reading Skills	:	Practice of Unseen Passage
Activity	:	Card Making on Mother's Day (Work Experience)
Unit III		
L. Reader	:	Poem- : Poem – Keeping Quiet (Key words- exotic, inactivity, truck, interrupt)
	:	Ch.3- Deep Water (Key Words-phobia, treacherous, misadventure, aversion, bruiser, summoned, oblivion, paralysed, panicky, nightmare, handicap, haunting, terror)
Writing Skills	:	Job Applications, Notice Writing
Reading Skills	:	Practice of Unseen Passage
Activity	:	Practice of listening skill
Unit IV		
L. Reader	:	Chapter – 4 The Rattrap (Key words-plods, incredulous, forge, valet, jagged)
S. Reader	:	Ch 3 Journey to the end of the world (Key words ecosphere, immensity, checkpoints, thrived, prospect, ubiquitous, calving, consecrates, unmitigated, pristine, foster,

assimilate)

Writing Skills	:	Formal and Informal Invitation and replies.
Reading Skills	:	Practice of unseen passage
Activity	:	Practice of Speaking skill-
Unit V		
L. Reader	:	Chapter – 5 Indigo (Key words- delegates, emaciated, tenacity, chided, vehemently )
S. Reader	:	Ch.4- The Enemy (Key Words-stupor, resolution, strewed, repulsion, conviction, retching, ruthless, assassins, stubbornness, execution, prejudice)
Writing Skills	:	Article writing , Formal and Informal Invitation and replies.
Reading Skills	:	Practice of Comprehension Passage
Activity	:	Practice of Speaking skill- (Expressing Opinion) "If you were in Dr. Sadao's place what would you have done?"
Unit VI		
L. Reader	:	Ch.6 Poets and Pancakes (Key words : incandescent, hierarchy, ignominy, affluent, covertly, compunction, conjugal, pedestal, incongruity)
Writing Skills	:	Article Writing, Letter Writing (Letter to Editors)
Reading Skills	:	Practice of unseen passage
Activity	:	Practice of Listening& speaking skill, Project

		work to be taken up
Unit VII		
L. Reader	:	Poem – A Thing of Beaut (Key words-nothingness, dearth, rills, grandeur, brink)
S. Reader	:	Chapter – 6 On the Face of it (Key words-startled, whispered, peculiar, daft, Steady)
Writing Skills	:	Report writing
		Formal Letter Writing
Reading Skills	:	Practice of Unseen Passage
Activity	:	Practice of listening skill
	:	Report Writing on Science Symposium in your school
Unit VIII		
L. Reader	:	Ch 7 The Interview (Key words : extravagant, lionized, condemnatory, perpetrated, formidable, aesthetics, hypotheses, dissertation, seminal, spectacularly)
Poem	:	A Roadside stand (Key words: pathetically, squeal, swarm)
S. Reader	:	Ch 8 Memories of Childhood (Key words : belfry, spied, whither, peered, indignities, braids, tether, harangue)
Writing Skills	:	Formal Letter Writing, Article Writing

Reading Skills	:	Practice of Unseen Passage
Activity	:	Project work
Unit IX		
L. Reader	:	Poem : Aunt Jennifer's Tigers (Key words : Prance, Chivalric, Fluttering, Terrified, Ordeals, Panel, Sleek)
		Ch 8 Going places (Key words : earmarked, melancholy, instinctively, chastened, reverently, grimaced, despondent, envisage, lumbering, approbation )
Writing Skills	•	Formal and Informal Letter Writing, Article Writing
Activity	:	Practice of listening skill
Unit X	R	evision of Unit 1 &2
Writing Skills	:	Report Writing, Article Writing
Reading Skills	:	Practice of Unseen Passage
Activity	:	Practice of Listening & speaking skill
		Submission of Project work

## **Subject : Mathematics**

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.

### UNIT WISE DIVISION OF SYLLABUS TO BE FOLLOWED IN SCHOOL

UNIT No	CHAPTERS
I	CH 1-RELATIONS AND FUNCTIONS
П	CH 2-INVERSE TRIGONOMETRIC FUNCTIONS
	CH 3- MATRICES

111	CH4-DETERMINANTS
	CH 5- CONTINUITY AND DIFFERENTIABILITY
IV	CH 6-APPLICATIONS OF DERIVATIVES
V	CH 7- INTEGRALS
VI	CH 8-APPLICATIONS OF INTEGRALS
VII	CH9-DIFFERENTIAL EQUATIONS
	CH 10-VECTORS
VIII	CH 11 THREE DIMENSIONAL GEOMETRY
IX	CH 12- LINEAR PROGRAMMING
Х	CH 13- PROBABILITY
	DETAILED SYLLABUS
UNITI	
CHAPTER 1	Relations and Functions
	Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions
ACTIVITY 1	To verify that the relation R in the set L of all lines in a plane, defined by R = $\{(l, m) : l \perp m\}$ is symmetric but neither reflexive nor transitive.
ACTIVITY2	To demonstrate a function which is not one-one but is onto.
ACTIVITY 3	To demonstrate a function which is one-one but not onto.

### UNIT II

### CHAPTER 2 Inverse Trigonometric Functions

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

ACTIVITY4 To draw the graph of  $\sin^{-1} x$ , using the graph of  $\sin x$ and demonstrate the concept of mirror reflection (about the line y = x)

### CHAPTER 3 Matrices

Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operation on matrices: Addition and multiplication and multiplication with a scalar. Simple properties of addition, multiplication and scalar multiplication. On commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries).

UNIT III

### CHAPTER 4 Determinants

Determinant of a square matrix (up to 3 x 3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by

	examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.
CHAPTER 5	Continuity and Differentiability
	Continuity and differentiability, chain rule, derivative of inverse trigonometric functions, like $\sin^{-1} \underline{x}$ , $\cos^{-1} x$ and $\tan^{-1} x$ , derivative of implicit functions. Concept of exponential and logarithmic functions. Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives.
ACTIVITY 5	To find analytically the limit of a function $f(x)$ at $x = c$ and also to check the continuity of the function at that point.
ACTIVITY 6	To sketch the graphs of $a^x$ and $\log ax$ , $a > 0$ , $a^1 1$ and to examine that they are mirror images of each other.
UNITIV	
CHAPTER 6	Applications of Derivatives
	Applications of derivatives: rate of change of bodies, increasing/decreasing functions, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real life situations).
ACTIVITY 7	To understand the concepts of decreasing and increasing functions.

### **UNIT V**

CHAPTER 7

### Integrals

Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals of the following types and problems based on them.

$$\int \frac{dx}{x^2 \pm a^2}, \quad \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \quad \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^2 + bx + c}} \\ \int \frac{px + q}{ax^2 + bx + c} \, dx, \quad \int \frac{px + q}{\sqrt{ax^2 + bx + c}} \, dx, \\ \int \sqrt{a^2 \pm x^2} \, dx, \quad \int \sqrt{x^2 - a^2} \, dx.$$

Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.

### **UNIT VI**

### CHAPTER 8 Applications of integrals

Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only)

UNIT VII

### CHAPTER 9 Differential equations

Definition, order and degree, general and particular solutions of a differential equation. Solution of differential equations by method of separation of variables, solutions of homogeneous differential equations of first order and first degree. Solutions of

	linear differential equation of the type: $\frac{dy}{dx}$ + py = q, where p and q are functions of x or constants $\frac{dy}{dx}$ + px = q, where p and q are functions of y or constants.
CHAPTER 10	Vectors
	Vectors and scalars, magnitude and direction of a vector. Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors.
ACTIVITY 8	To verify geometrically that $\vec{c} \times (\vec{a} + \vec{b}) = \vec{c} \times \vec{a} + \vec{c} \times \vec{b}$
ACTIVITY 9	To verify that angle in a semi-circle is a right angle, using vector method.
UNIT VIII	
CHAPTER 11	Three dimensional geometry
	Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, skew lines, shortest distance between two lines. Angle between two lines.
UNITIX	
CHAPTER 12	Linear Programming
	Introduction, related terminology such as

constraints, objective function, optimization, graphical method of solution for problems in two variables, feasible and infeasible regions (bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

UNIT X

### CHAPTER 13 Probability

Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean of random variable.

ACTIVITY 10 To explain the computation of conditional probability of a givenevent A, when event B has already occurred, through an example of throwing a pair of dice.

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

Note: For activities NCERT Lab Manual may be referred.

### Assessment of Activity Work:

Throughout the year any 10 activities shall be performed by the student from the activities given in the NCERT Laboratory Manual for the respective class (XI or XII) which is available on the link: http://www.ncert.nic.in/ exemplar/labmanuals.htmla record of the same may be kept by the student. An year end test on the activity may be conducted The weightage are as under:

•The activities performed by the student throughout the year and record keeping:5 marks

- Assessment of the activity performed during the year end test: 3 marks
- Viva-voce: 2 marks

### Prescribed Books:

- 1) Mathematics Part I Textbook for Class XII, NCERT Publication
- 2) Mathematics Part II Textbook for Class XII, NCERT Publication
- 3) Mathematics Exemplar Problem for Class XII, Published by NCERT
- 4) Mathematics Lab Manual class XII, published by NCERT

# **Subject : Physics**

### Rationale

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 rigor 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.

### Objective

• 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

### Course structure (Theory)

CLASS XII (2022-23)

### PHYSICS (THEORY)

Time: 3hours	Max Marks: 70	
	No. of Periods	Marks
Unit–I Electrostatics	26	16
Chapter–1: Electric Charges and Fields		
Chapter-2: Electrostatic Potential and Capacitar	nce	
Unit-II Current Electricity		
Chapter-3: Current Electricity	18	
Unit-III Magnetic Effects of Current and		
Magnetism	25	17
Chapter–4: Moving Charges and Magnetism		
Chapter–5: Magnetism and Matter		
Unit-IV Electromagnetic Induction and Altern	ating Currents	
	24	
Chapter–6: Electromagnetic Induction		
Chapter 7: Alternating currents		
Unit–V Electromagnetic Waves	04	18

Chapter–8:Electromagnetic Waves		
Unit–VI Optics		
Chapter–9: Ray Optics and Optical Instruments		
Unit –VII	30	
Chapter–10: Wave Optics		
Unit–VIII Dual Nature of Radiation and Matter	08	12
Chapter–11: Dual Nature of Radiation and Matter		
Unit–IX Atoms and Nuclei		
Chapter–12: Atoms	15	
Chapter–13: Nuclei		
Unit–X Electronic Devices	10	7
Chapter–14: Semiconductor -Electronics:		
Materials, Devices and Simple Circuits		
Total	160	70
Unit I: Electrostatics		26 Periods

### Chapter-1: Electric Charges and Fields

Electric charges, Conservation of charge, Coulomb's law-force between twopoint charges, forces between multiple charges; superposition principle and continuous charge distribution. Electric field, electric field due to a point charge, electric field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field. Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside).

### Chapter-2: Electrostatic Potential and Capacitance

Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two-point charges and of electric dipole in an

electrostatic field. Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor (no derivation, formulae only).

### Unit II: Current Electricity

### 18 Periods

### **Chapter-3: Current Electricity**

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity, temperature dependence of resistance, Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel, Kirchhoff's rules, Wheatstone bridge.

### Unit III: Magnetic Effects of Current and Magnetism 25 Periods

### Chapter-4: Moving Charges and Magnetism

Concept of magnetic field, Oersted's experiment. Biot - Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long straight wire. Straight solenoid (only qualitative treatment), force on a moving charge in uniform magnetic and electric fields. Force on a current-carrying conductor in a uniform magnetic field, force between two parallel current-carrying conductors-definition of ampere, torque experienced by a current loop in uniform magnetic field; Current loop as a magnetic dipole and its magnetic dipole moment, moving coil galvanometerits current sensitivity and conversion to ammeter and voltmeter.

### Chapter–5: Magnetism and Matter

Bar magnet, bar magnet as an equivalent solenoid (qualitative treatment

only), magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis (qualitative treatment only), torque on a magnetic dipole (bar magnet) in a uniform magnetic field (qualitative treatment only), magnetic field lines. Magnetic properties of materials- Para-, dia- and ferro - magnetic substances with examples, Magnetization of materials, effect of temperature on magnetic properties.

### Unit IV: Electromagnetic Induction and Alternating Currents

### 24 Periods

### Chapter-6: Electromagnetic Induction

Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction.

### Chapter-7: Alternating Current

Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LCR series circuit (phasors only), resonance, power in AC circuits, power factor, wattless current. AC generator, Transformer.

### Unit V: Electromagnetic waves

### 4 Periods

30 Periods

### Chapter-8: Electromagnetic Waves

Basic idea of displacement current, Electromagnetic waves, their characteristics, their transverse nature (qualitative idea only). Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

### Unit VI: Optics

### Chapter-9: Ray Optics and Optical Instruments

Ray Optics: Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and optical fibers, refraction at spherical

surfaces, lenses, thin lens formula, lens maker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism. Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

### Unit VII : Optics

### Chapter-10: Wave Optics

Wave optics: Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for fringe width (No derivation final expression only), coherent sources and sustained interference of light, diffraction due to a single slit, width of central maxima (qualitative treatment only).

### Unit VIII: Dual Nature of Radiation and Matter 8 Periods

### Chapter-11: Dual Nature of Radiation and Matter

Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light. Experimental study of photoelectric effect Matter waves-wave nature of particles, de-Broglie relation.

### Unit IX: Atoms and Nuclei

### 15 Periods

### Chapter–12: Atoms

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model of hydrogen atom, Expression for radius of nth possible orbit, velocity and energy of electron in its orbit, Hydrogen line spectra (qualitative treatment only)

### Chapter-13: Nuclei

Composition and size of nucleus, nuclear force Mass-energy relation, mass

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

### **Unit X: Electronic Devices**

### **10 Periods**

# Chapter–14: Semiconductor Electronics: Materials, Devices and Simple Circuits

Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Intrinsic and extrinsic semiconductors- p and n type, p-n junction Semiconductor diode - I-V characteristics in forward and reverse bias, application of junction diode -diode as a rectifier.

### PRACTICALS

**Total Periods 60** 

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

- Record of at least 8 Experiments [with 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 performed by the students.
- The Report of the project carried out by the students.

### **Evaluation Scheme**

# Time 3 hoursMax. Marks: 30•Two experiments one from each section7 + 7 marks•Practical record [experiments and activities]5 marks•One activity from any section3 Marks•Investigatory Project3 Marks•Viva on experiments, activities and project5 marksTotal 30 marks

### EXPERIMENTS

### SECTION-A

- 1. To determine resistivity of two / three wires by plotting a graph for potential difference versus current.
- 2. To find resistance of a given wire / standard resistor using metre bridge.
- 3. To verify the laws of combination (series) of resistances using a metre bridge. OR To verify the laws of combination (parallel) of resistances using a metre bridge.
- 4. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
- To convert the given galvanometer (of known resistance and figure of merit) into a voltmeter of desired range and to verify the same. OR To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.
- 6. To find the frequency of AC mains with a sonometer.

### Activities

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

6. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.

### SECTION-B

### Experiments

- 1. To find the value of v for different values of u in case of a concave mirror and to find the focal length.
- 2. To find the focal length of a convex mirror, using a convex lens.
- 3. To find the focal length of a convex lens by plotting graphs between u and v or between 1/u and 1/v.
- 4. To find the focal length of a concave lens, using a convex lens.
- 5. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.
- 6. To determine refractive index of a glass slab using a travelling microscope.
- 7. To find the refractive index of a liquid using convex lens and plane mirror.
- 8. To find the refractive index of a liquid using a concave mirror and a plane mirror.
- 9. To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias.

### Activities

- 1. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items.
- 2. Use of multimeter to see the unidirectional flow of current in case of a diode and an LED and check whether a given electronic component (e.g., diode) is in working order.
- 3. To study effect of intensity of light (by varying distance of the source) on an LDR.
- 4. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
- 5. To observe diffraction of light due to a thin slit.
- 6. To study the nature and size of the image formed by a (i) convex lens, or (ii) concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror).
- 7. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.

### Suggested Investigatory Projects

- 1. To study various factors on which the internal resistance/EMF of a cell depends.
- To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.
- 3. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.

- 4. To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.
- 5. To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
- 6. To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.
- 7. To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.
- 8. To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer

### Prescribed Books:

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

# Subject : Chemistry

### Prescribed Books:

- 1. Chemistry Part -I, Class-XII, Published by NCERT.
- 2. Chemistry Part -II, Class-XII, 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.
- make students capable of studying chemistry in academic and professional courses (such as medicine, engineering, technology) at tertiary level.
- expose the students to various emerging new areas of chemistry and apprise them with their relevance in future studies and their application in various spheres of chemical sciences and technology.
- equip students to face various challenges related to health, nutrition, environment, population, weather, industries and agriculture.
- develop problem solving skills in students.
- expose the students to different processes used in industries and their technological applications.
- apprise students with interface of chemistry with other disciplines of science such as physics, biology, geology, engineering etc.
- acquaint students with different aspects of chemistry used in daily life.
- develop an interest in students to study chemistry as a discipline.
- integrate life skills and values in the context of chemistry.
### COURSE STRUCTURE

### CLASS XII (2022-23) (THEORY)

Time: 3 Hours

70 Marks

S.No.	Title	No. of Periods	Marks
1	Solutions	15	7
2	Electrochemistry	18	9
3	Chemical Kinetics	15	7
4	d -and f -Block Elements	18	7
5	Coordination Compounds	18	7
6	Haloalkanes and Haloarenes	15	6
7	Alcohols, Phenols and Ethers	14	6
8	Aldehydes, Ketones and Carboxylic Acids	15	8
9	Amines	14	6
10	Biomolecules	18	7
	Total	160	70

### UNIT I: Solutions

### (15 Periods)

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.

KEY WORDS-Osmotic pressure, Depression of freezing point, Elevation of boiling point Azeotropes, Raoult's law, Henry's Law, Normality, Molarity, Molality, Mole fraction, ideal and non-ideal solution, colligative property, molal elevation constant or ebullioscopic constant, molal depression constant or molal cryoscopic constant., endo-osmosis, exo- osmosis, isotonic solutions.

## UNIT II Electrochemistry (18 Periods)

Redox reactions, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion.

KEY WORDS : Cathodic protection, Molar conductivity, Electro chemical series, Equivalent conductance, Specific conductance. strong and weak electrolytes, Electrochemical cell, Electrolytic cell, conductance, specific conductance.

### UNIT III: Chemical Kinetics (15 Periods)

Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment), activation energy, Arrhenius equation.

KEY WORDS Differential rate law, Integrated rate equation ,The rate law, Rate determining step , Activated complex , Activation energy , Half- life of a reaction Order of a reaction , Molecularity , Rate constant, threshold energy, law of mass action.

### UNIT IV: "d" and "f" Block Elements (18 Periods)

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first-row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial

compounds, alloy formation, preparation and properties of K2Cr2O7 and KMnO4.

### Lanthanoids –

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

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

KEY WORDS-Magnetic moment, Reducing agent, oxo anions, Amphoteric nature, Disproportionation reaction, Interstitial compounds, Enthalpies of atomization, Lanthanoid contraction, Baeyer's reagent, coinage metals.

# UNIT V Coordination Compounds (18 Periods)

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

KEY WORDS Co-ordination compounds, Co-ordination Complex, Coordination Sphere, Double salts,Crystal field splitting energy(CFSE), Diamagnetic, Ligand, Chelate, Chelating effect, Coordination number,Ligand,

## UNIT VI: Haloalkanes and Haloarenes. (15 Periods)

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

Haloarenes: Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane,

iodoform, freons, DDT.

KEY WORDS : Achiral, alkyl halides, allylic halides, ambident nucleophiles, carbocation, dextrorotatory, diazonium salts, electrophillic substitution, elimination reaction, grignard reagent, optically active, stereo centre.

### UNIT VII: Alcohols, Phenols and Ethers (14 Periods)

Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol.

Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.

Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses.

KEY WORDS: Acidity, Aromatic ring, Benzylic alcohols, Cumene, Dehydrogenation, Electrophillic aromatic substitution, Polyhydric compounds, Vinylic alcohol, ferric chloride test for phenols. iodoform test, lucas test.

### UNIT VIII: Aldehydes, Ketones and Carboxylic (15 Periods) Acids

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

Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

KEY WORDS Aldehydes, Phenol, benzoic acid, Benzophenone,

Acetophenone, Benzaldehyde, Acetaldehyde, Electrophilic substitution, Inductive Effect, Aldol Condensation, Alkyl benzenes, Bacyer's reagent, Electron donating groups, Electron withdrawing groups, Ozonolysis, Polarity,Cannizzaro reaction, cross-aldol condensation,tollen's test,Fehling's test, estertest, acetal. cyanohydrin, ketal, oxime, imine.

## UNITIX: AMINES (14 Periods)

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.

Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.

KEY WORDS Zwitter ion , Nitration, Ammonolysis ,Primary, secondary and tertiary amines. Aromatic amines, Quaternary ammonium salts, acylation, carbylamines.

## UNIT X: Biomolecules (18 Periods)

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

Proteins -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure.

Vitamins - Classification and functions.

Nucleic Acids: DNA and RNA.

KEY WORDS Aldopentose, amino acids, amylopectin, amylase, animal

starch, oligosaccharides, polysaccharides denaturation of proteins, globular proteins, nucleoside, nucleotide, peptide linkage, Zwitter ion.

### Note:

The content indicated in NCERT textbooks as excluded for the year 2022-23 is not to be tested by schools.

### PRACTICALS

Evaluation Scheme for Examination	Marks
VolumetricAnalysis	08
SaltAnalysis	08
Content Based Experiment	06
Project Work	04
Class record and viva	04
Total	30

### PRACTICAL SYLLABUS

### 60 Periods

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

### A. Surface Chemistry

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

### B. Chemical Kinetics

(a) Effect of concentration and temperature on the rate of

reaction between Sodium Thiosulphate and Hydrochloric acid.

- (b) Study of reaction rates of any one of the following:
  - (i) Reaction of lodide ion with Hydrogen Peroxide at room temperature using different concentrations of lodide ions.
  - (ii) Reaction between Potassium lodate, (KIO3) and Sodium Sulphite: (Na2SO3) using starch solution as an indicator (clock reaction).

### C. Thermochemistry

Any one of the following experiments

- (a) Enthalpy of dissolution of Copper Sulphate or Potassium Nitrate.
- (b) Enthalpy of neutralization of strong acid (HCI) and strong base (NaOH).
- (c) Determination of enthaply change during interaction (Hydrogen bond formation) between Acetone and Chloroform.

### D. Electrochemistry

Variation of cell potential in Zn/Zn<sup>2+</sup>|| Cu<sup>2+</sup>/Cu with change in concentration of electrolytes (CuSO4 or ZnSO4) at room temperature.

## E. Chromatography

- (a) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rf values.
- (b) Separation of constituents present in an inorganic mixture

containing two cations only (constituents having large difference in Rf values to be provided).

### F. Preparation of Inorganic Compounds

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

### G. Preparation of Organic Compounds

Preparation of any one of the following compounds

i) Acetanilide ii) Di -benzalAcetone iii) p-Nitroacetanilide iv) Aniline yellow or 2 - Naphthol Anilinedye.

### H. Tests for the functional groups present in organic compounds:

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

- I. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs.
- J. Determination of concentration/ molarity of KMnO4 solution by titrating it against a standard solution of:
  - (a) Oxalic acid,
  - (b) Ferrous Ammonium Sulphate (Students will be required to prepare standard solutions by weighing themselves).

### K. Qualitative analysis

Determination of one anion and one cation in a given salt

## **INVESTIGATORY PROJECT**

Scientific investigations involving laboratory testing and collecting information from other sources A few suggested Projects.

- Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- Study the quantity of casein present in different samples of milk.
- Preparation of soybean milk and its comparison with natural milk with respect to curd formation, the effect of temperature, etc.
- Study of the effect of Potassium Bisulphate as a food preservative under various conditions (temperature, concentration, time, etc.)
- Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
- Comparative study of the rate of fermentation of the following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
- Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
- Study of common food adulterants in fat, oil, butter, sugar, turmeric power, chilli powder and pepper.

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

### PRESCRIBED BOOKS

- 1. Chemistry Part -I, Class-XII, Published by NCERT.
- 2. Chemistry Part -II, Class-XII, Published by NCERT.
- 3. Laboratory Manual of Chemistry
- 4. Other related books and manuals of NCERT including multimedia and online sources

# QUESTION PAPER DESIGN CLASS – XII (2022-23)

S.No.	Domains	Marks	%
1	<b>Remembering and Understanding:</b> 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	<b>Applying:</b> Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	21	30
3	Analyzing, 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, the 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

# Subject : Biology

### Prescribed Books:

1. Biology, Class XII, Published by NCERT

# Rationale

The present syllabus reinforces the ideas introduced till the secondary classes. It provides the students with new concepts along with an extended exposure to contemporary areas of the subject. The syllabus also aims at emphasizing on the underlying principles that are common to both animals and plants as well as highlighting the relationship of biology with other areas of knowledge. The format of the syllabus allows a simple, clear, sequential flow of concepts without any jarring jumps. The syllabus also stresses on making better connections among biological 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 syllabus also focuses on reducing the curriculum load while ensuring that ample opportunities and scope for learning and appreciating basic concepts of the subject continue to be available within its framework.

## **Objectives:**

- promote understanding of basic principles of Biology
- encourage learning of emerging knowledge and its relevance to individual and society.
- promote rational/scientific attitude to issues related to population, environment and development

- enhance awareness about environmental issues, problems and their appropriate solutions
- create awareness amongst the learners about diverity in the living organisms
- 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 syllabus in a more contextual and friendly manner as they study its various units.

### CLASS XII (2022-23) (THEORY)

### Time:3 Hours

### Max.Marks:70

Unit	Title	No. of Periods	Marks
VI	Reproduction	30	16
VII	Genetics and Evolution	40	20
VIII	Biology and Human Welfare	30	12
IX	Biotechnology and its Applications	30	12
X	Ecology and Environment	30	10
	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) 2022-23 Biology (044)

### Time :3hrs.

### Maximum Marks: 70Marks

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

- 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 ofKnowledge/Concepts** Calculate, illustrate, show, adapt, explain, distinguish, etc.
- Analyze, Evaluate and Create Interpret, analyse, compare, contrast, examine, evaluate, discuss, constru

### UNITWISE SYLLABUS

### **UNIT-1** Reproduction

### (Marks-6)

Keyword: vegetative reproduction, juvenile phase, senescent phase, dioecious, monoecious, pericarp, syngamy, meiocyte.

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

### Practical:

- Study pollen germination on a slide.
- Controlled pollination- emasculation, tagging and bagging (Spotting).
- Flowers adapted to pollination by different agencies (wind, insect, bird) (Spotting).
- Pollen germination on stigma through permanent slide (spotting).

### UNIT-2 Reproduction

### (Marks-10)

Keywords: Human reproduction, testis, ovary, gametogenesis, spermatogenesis, oogenesis, follicular atresia, menarche, ovulation, menopause, cleavage, implantation.

### CONTENT :

**Human reproduction:** male and female reproductive system; microscopic anatomy of testis and ovary; gametogenesis-spermatogenesis and oogenesis, menstrual cycle; fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea).

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

## PRACTICAL:

- Study and identify stages of gamete development i.e. T.S. testis and ovary through permanent slide (spotting).
- T.S. of blastula through permanent slide (spotting).

### **Unit-3 Genetics**

### (Marks-7)

Keywords: Heredity, Variations, Alleles, Phenotype, Genotype, Homozygote, Heterozygote, Dominant allele, Recessive allele, Pleiotropy, Multiple allelism, Co dominance, Monohybrid, Dihybrid.

## CONTENT:

**Heredity and variation:** Mendelian inheritance, Deviations from mendelism, incomplete dominance, Co dominance, Multiple alleles and inheritance of blood groups, Pleiotropy, Elementary idea of polygenic inheritance, Chromosome theory of inheritance, Chromosome and genes, Sex determination in human, Birds and honey bee, Linkage and crossing

over, Sex linked inheritance, haemophilia, Colour blindness, Thalassemia, Phenylketonuria. Mendelian disorders in humans, Chromosomal disorders in humans Down syndrome, Turners and Klinefelter's syndrome.

### Practical (spotting):

• Mendelian inheritance using seeds of different colour, size of any plant.

### **UNIT-4 Genetics**

Keywords: Replication, ori of replication, Nucleosome, Transcription, Replication fork, Translation, Silent mutations, Frame shift mutation, Operon, DNA probe.

### CONTENT: Molecular basis of inheritance (Marks-7)

Search for genetic material and DNA as genetic material, Structure of DNA and RNA, DNA packaging, DNA replication, Central dogma, Trancription, Genetic Code, Translation, Gene expression and regulation-lac operon, Genome and human genome project, DNA fingerprinting.

### PRACTICAL:

- Prepare pedigree chart of any one of genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness (spotting)
- Isolation of DNA from available plant material such as spinach, green pea seeds and papaya etc.

### UNIT-5 Evolution

### (Marks-6)

Keywords: Homologous organs, Analogous organs, Speciation, Genetic drift, Natural selection, Reproductive isolation, Embryology, Paleontology, Convergent evolution, Divergent evolution, Natural selection, Artificial selection.

### **CONTENT: Evolution**

Origin of life, Biological evolution and evidences for biological evolution,

Darwin's contribution, Modern synthetic theory of evolution, Mechanism of evolution, variation and natural selection with examples, Types of natural selection, Gene flow and genetic drift, Hardy-weinberg's principle, Adaptive radiation, Human evolution.

### PRACTICAL:

- Prepare a temporary mount of onion root tip to study mitosis.
- Flash cards models showing examples of homologous and analogous organs.
- Study various stages of meiosis in onion bud cell or grasshopper testes through permanent slides (spotting)

### **UNIT-6 Biology and Human Welfare**

### (Marks-6)

Keywords: Pathogens, antibodies, antigens, immunity, interferons, allergy, cancer, metastasis, tumours, retroviruses, drug abuse, adolescence, addiction.

### CONTENT:

**Human Health and diseases:** Pathogens; parasites causing human diseases (malaria, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm); Basic concepts of immunology-vaccines; cancer, HIV and AIDS; Adolescence, drug and alcohol abuse.

### PRACTICAL:

• Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, Any fungus causing Ringworm through permanent slides or specimens Comment on symptoms of disease (spotting).

### Activity: On AIDS days-Poster making or A Visit to hospital.

### UNIT-7 Biology and Human welfare (Marks-6)

Keywords: Plant breeding, germplasm, apiculture, somaclones, explant, implant, plant tissue culture, biofortification Prions, fermentors, Flocs, antibiotics, biogas, Baculo viruses.

### CONTENT:

Microbes in human welfare: Microbes In food processing, industrial production, sewage treatment, energy generation and as biocontrol agents and biofertilizers. Antibiotics; Production and judicious use

### UNIT-8 Biotechnology

### (Marks-12)

Keywords: Transgenic, gene cloning, plasmid, recombinant DNA, recognition site, palindromes, electroporation, gene therapy, microinjection, gene gun.

### CONTENT:

**Biotechmology- Principles and Processes** : Genetic Engineering (Recombinant DNA Technology).

### Biotechnology and its Applications;

Application of biotechnology in health and agriculture: Human insulin and vaccine production, gene therapy; genetically modified organisms-Bt crops; transgenic animals; biosafety issues, biopiracy and patents.

### Practical:

• Isolation of DNA from plant material such as spinach, green pea seed, papaya etc.

### UNIT-9 Ecology

### (Marks-4)

Keywords: Habitat, Niche, ecosystem, Birth rate, Mortality rate, Primary succession, climax community, obligate parasites 10% law, Mutualism.

### CONTENT:

**Organism and environment:** Population interactions; mutualism, competition, Predation, Parasitism, Population attributes, growth rate and birth rate, age distribution.

### PRACTICAL:

• Models/ specimens showing symbolic association in root nodules of leguminous plants, Cuscuta on host, Lichens.

# Activity: On nature conservation day- Tree plantation and poster making.

### UNIT-10 Environment

### (Marks-6)

Keyword: Biodiversity hostspots, endangered animals, Biosphere e-waste, Nuclear waste, Aforestation, Ozone depletion, Global warming, sacred forests, Cryopreservation.

### CONTENT:

**Ecosystem**: Patterns components, Productivity and decomposition, Energy flow, Pyramids of number, Biomass, Energy.

Biodiversity and its conservation: Concept of biodiversity; patterns of biodiversity; importance of biodiversity; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred grooves, biosphere reserves, national parks, wildlife, sanctuaries, Ramsar sites.

# Subject : Sociology

### Rationale

The syllabus is designed to help learners to reflect on what they hear and see in the course of everyday life and development a constructive attitude towards society in change. The curriculum of Sociology at this stage should enabled the learner to understand dynamics of human behaviour.

- Sociology studies society. The child's familiarity with the society in which she/ he lives in makes the study of Sociology a doubled edged experience. At one level sociology studies institutions such as family and kinship, class, caste and tribe religion and region-contexts with which children are familiar of, even if differentially.
- Sociology also makes it possible to understand other cultures as well as relearn about one's own culture.
- The chapters shall seek for a child centric approach that makes it possible to connect the lived reality of children with social structures and social processes that Sociology studies.
- A conscious effort will be made to build into the chapters a scope for exploration of society that makes learning a process of discovery.

### Objectives

- To enable learners to relate classroom teaching to their outside environment.
- To introduce them to the basic concepts of Sociology that would enable them to observe and interpret social life.
- > To be aware of the complexity of social processes.

- To appreciate diversity in Indian society and the world at large.
- To build the capacity of students to understand and analyze the changes in contemporary Indian society.

# (UNIT-1) THE DEMOGRAPHIC STRUCTURE OF INDIAN SOCIETY

- > Theories and concepts in demography
- Rural-Urban Linkages and Divisions
- Population Policy in India

# (UNIT-2) SOCIAL INSTITUTIONS: CONTINUITY AND CHANGE

- Caste and the Caste System
- > Tribal Communities
- Family and Kinship

# (UNIT-3) PATTERNS OF SOCIAL INEQUALITY AND EXCLUSION

- Social Inequality and Social Exclusion
- System justifying and perpetuating inequality-Caste, Tribe, the other backward classes
- Adivasi struggles
- > The struggle for women's Equality and Rights
- > The struggles of the Differently Abled

# (UNIT-4) THE CHALLENGES OF CULTURAL DIVERSITY

- Cultural communities and the nation state
- Regionalism in the Indian context
- > The Nation state and religion related issues and identities
- Communalism, secularism and the nation state
- State and civil society

# (UNIT-5) STRUCTURAL CHANGE

Understanding Colonialism, Industrialization, Urbanization

## (UNIT-6) CULTURAL CHANGE

SOCIAL Reform Movements

Different kinds of Social Change: Sanskritisation, Westernization, Modernization, Secularization

# (UNIT-7) CHANGE AND DEVELOPMENT IN RURAL SOCIETY

- Agrarian Structure: Caste and class in Rural India
- Land reforms, Green Revolution and Emerging Agrarian society
- Green revolution and its social consequences
- > Transformation in Rural Society
- Circulation of labour
- Globalization, Liberalization and Rural Society

# (UNIT-8) CHANGE AND DEVELOPMENT IN INDUSTRIAL SOCIETY

- From planned industrialization to Liberalization
- How people find jobs
- Work Processes: How work is carried out working conditions, home based work, strikes and Unions

# (UNIT-9) SOCIAL MOVEMENTS

- Concept of Social Movements
- > Theories and Classification of Social Movements
- Environmental Movements
- Class-Based Movements: Workers, Peasants

## PROJECT WORK --

Introduction

Statement of purpose

Research question

Methodology

Data analysis

Conclusion

# Subject : Political Science

### Rationale

At the senior secondary level, students who opt for Political Science are given an opportunity to get exposed to the diverse concepts of the discipline helping them to be a global citizen and develop skills to understand, apply and evaluate. At this level, there is a need to enable students to have the skills to engage with political processes that surround them and provide them with an understanding of the historical context that has shaped the present. The different courses expose the students to various streams of the discipline of Political Science: Political Theory, Indian Politics and International Politics.

### **Contemporary World Politics:**

- Competency: Understanding, analyzing the Contemporary World Politics
- Outcomes: After the course the students will:
- Understand the contemporary world.
- Understand the key political events and processes in the post-cold war era.
- Analyze various global institutions, processes and events shaping their lives.
- Politics in India after Independence:
- Competency: Critically evaluate and understand, analyze politics in India after Independence

- Outcomes: After the course the students will:
- Understand and analyze constitutional institutions, figures and their working in the post independence period; political events, trends, other facts and figures and contribution of eminent personalities from the post-independence to contemporary India.
- Develop their capacity to link political policies and processes with contemporary realities.
- Encourage the students to understand and analyse the challenges for contemporary India.

Units	Contents	Marks
1	The End of Bipolarity	8
2	New Centres of Power	
3	Contemporary South Asia	12
4	United Nations and its Organizations	10
5	Security in Contemporary World	
6	Environment and Natural Resources	10
7	Globalization	
	Total	40

Part A: Contemporary World Politics

#### Part B: Politics in India since Independence

Units	Contents	Marks
1	Challenges of Nation-Building	- 08
2	Planned Development	
3	India's Foreign Policy	08
4	Parties and Party System in India	- 12
5	Democratic Resurgence	
6	Regional Aspirations	12
7	Indian Politics: Recent Trends and Development	
	Total	40

### UNIT 1

## **Chapter 1 Challenges of Nation-Building**

- Nation and Nation Building
- Sardar Vallabh Bhai Patel and Integration of States
- Legacy of Partition: Challenge of Refugee, Resettlement, Kashmir Issue, Nehru's Approach to Nation Building
- Political Conflicts over Language and Linguistic Organization of States.

**Activity-** Students will collect all the stories from Let's Research' suggestions in this chapter and prepare the wallpaper that highlights the common experiences and has stories on the unique experiences.

### Chapter 6 Globalization

Globalization: Meaning, Manifestations and Debates.

**Activity**-Students are to write down their favourite TV programmes and find out who are makers/sponsors of it. Discuss how our globalisation has been impacting our lives.

### UNIT 2

## **Chapter 2 Planning and Development**

National Development Council, NITI Aayog.

Activity-Students will write an article on White Revolution.

Chapter 6 - Environment and Natural Resources

Environmental Movements, Global Warming and Climate Change, Conservation of Natural Resources.

### Unit 3

## Chapter 2 The End of Bipolarity

Disintegration of Soviet Union, Unipolar World, Middle East Crisis – Afghanistan, Gulf War, Democratic Politics and Democratization – CIS and the 21st Century (Arab Spring).

**Activity-** Make a list of the similarities between India and The USSR in their political and economic ideologies.

### UNIT 4

### **Book-Contemporary World Politics**

### Chapter 3 New Centres of Power

Organizations: European Union, ASEAN, SAARC, BRICS. Nations: Russia, China, Israel, India.

**Activity-** Chinese President XI Jinping Pald a visit to India in 2014 and a Prime Minister Narendra Modi visited China in 2015.Find out about the agreements signed during their visits.

### Chapter 3 India's Foreign Policy

Principles of Foreign Policy, India's Changing Relations with Other Nations: US, Russia, China, Israel

Activity- Collect information regarding 1965 and 1971 wars in India.

### UNIT 5

### **Chapter 3 Contemporary South Asia**

Conflicts and efforts for Peace Democratization in South Asia: Pakistan,

Nepal, Bangladesh, Sri Lanka, Maldives

Conflicts and efforts for Peace and Democratization in South Asia: Pakistan, Nepal, Bangladesh, Sri Lanka, Maldives

Activity: Powerpoint presentation on relationship between India and Pakistan

### UNIT 6

### Chapter 5 United Nations and its Organizations

Principal Organs, Key Agencies: UNESCO, UNICEF, WHO, ILO, Security

Council and the Need for its Expansion.

Activity-Students will make slogans for the formation of the UN.

### UNIT 7

### Chapter 4 Parties and the Party Systems in India

- Congress System
- Bi-party System
- Multi-party Coalition System

**Activity-** Ask the elders in your family and neighbourhood about their experience of participating in elections.

- 1. Did anyone vote in the first or second general elections? Who did they vote for and why?
- 2. Is there someone who has used all three methods of voting? Which one did they prefer?

3. In which ways they find the elections of those days different from the present one's?

## UNIT 8

### Chapter 5 Democratic Resurgence

- Jai Prakash Narayan and Total Revolution
- Ram Manohar Lohiya and Socialism
- Pandit Deendayal Upadhyaya and Integral Humanism
- National Emergency
- Democratic Upsurges– Participation of the Adults, Backwards and Youth.

**Activity-** Ask your parents or other elders in the family or neighbourhood about their experience during 1975-77. Take down notes on the following-

- 1. Their personal experience of the Emergency.
- 2. Any report of support or opposition to the emergency in your locality.
- 3. Their participation in the 1977 elections and why they voted the way they did.

Put your notes together and make a collective report on Emergency in my city/village

### Chapter 5 Security in Contemporary World Security

Meaning and Type; Terrorism.

Activity: Discussion of project work.

### UNIT 9

## Chapter 6 Regional Aspirations Rise of regional parties.

Punjab Crisis. The Kashmir Issue, Movements for Autonomy.

Activity: Art integration on symbols of regional parties.

### UNIT 10

### **Chapter 8 Indian Politics: Trends and Developments**

Era of Coalitions: National Front, United Front, United Progressive Alliance [UPA] – I & II, National Democratic Alliance [NDA] – I, II, III & IV, Issues of Development and Governance.

Activity-Find out about Mandal Commission and its history

# **Subject : Economics**

### **Prescribed Books:**

- 1. Introductory Macro Economics, Class XII, NCERT
- 2. Indian Economic Development, Class XII, NCERT
- 3. Supplementary Reading Material in Economics, Class XII, CBSE

### Rationale

Economics is one of the social sciences, which has great influence on every human being. As economic life and the economy go through changes, the need to ground education in children's own experience becomes essential. While doing so, it is imperative to provide them opportunities to acquire analytical skills to observe and understand the economic realities. At senior secondary stage, the learners are in a position to understand abstract ideas, exercise the power of thinking and to develop their own perception. It is at this stage, the learners are exposed to the rigor of the discipline of economics in a systematic way. The economics courses are introduced in such a way that in the initial stage, the learners are introduced to the economic realities that the nation is facing today along with some basic statistical tools to understand these broader economic realities. In the later stage, the learners are introduced to economics as a theory of abstraction. The economics courses also contain many projects and activities. These will provide opportunities for the learners to explore various economic issues both from their day-to-day life and also from issues, which are broader and invisible in nature. The academic skills that they learn in these courses would help to develop the projects and activities. The syllabus is also expected to

provide opportunities to use information and communication technologies to facilitate their learning process.

### **Objectives:**

- 1. Understanding of some basic economic concepts and development of economic reasoning which the learners can apply in their day-to-day life as citizens, workers and consumers.
- 2. Realisation of learners' role in nation building and sensitivity to the economic issues that the nation is facing today.
- 3. Equipment with basic tools of economics and statistics to analyse economic issues. This is pertinent for even those who may not pursue this course beyond senior secondary stage.
- 4. Development of understanding that there can be more than one view on any economic issue and necessary skills to argue logically with reasoning.

### DISTRIBUTION

Units		Marks	Periods		
Part	Part A: Introductory Macro economics				
1.	Money and Banking	06	15		
2.	Government Budget and the Economy	06	17		
3.	Balance of Payments	06	18		
4.	National Income and Related Aggregates	10	30		
5.	Determination of Income and Employment	12	30		
		(40)			

### Part B: Indian Economic Development

Part	C: Project Work		20
	Theory Paper		(40+40=80)
		40	(200)
10.	Development experience of India-A Comparison	08	12
	UNIT8&9	20	50
9.	Current Challenges facing Indian Economy-Part II		
8.	Current Challenges facing Indian Economy-Part I		
	UNIT6&7	12	28
7.	Economic Reforms since 1991		
6.	Development policies and Experience (1947-90)		

Marking Scheme for project work:

S. No.	Heading	Marks Allotted
1	Relevance of the topic	3
2	Knowledge Content/Research Work	6
3	Presentation Technique	3
4	Viva	8
	Total	20 Marks

## PART A: INTRODUCTORY MACROECONOMICS

### **Unit 1: Money and Banking**

Money – meaning and functions, supply of money - Currency held by the public and

net demand deposits held by commercial banks.

Money creation by the commercial banking system.

Central bank and its functions (example of the Reserve Bank of India): Bank of issue,

Govt. Bank, Banker's Bank, Control of Credit through Bank Rate, CRR, SLR, Repo

Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

Activity- Make a chart showing the monetary instruments of RBI along with the current rates

### Unit 2: Government Budget and the Economy

Government budget - meaning, objectives and components.

Classification of receipts - revenue receipts and capital receipts;

Classification of expenditure – revenue expenditure and capital expenditure.

Balanced, Surplus and Deficit Budget - measures of government deficit.

**Activity-** Give highlights and some facts of new budget presented for the year with your views on the good and the improvement points about the budget

### **Unit 3: Balance of Payments**

Balance of payments account - meaning and components;

Balance of payments - Surplus and Deficit

Foreign exchange rate - meaning of fixed and flexible rates and managed floating.

Determination of exchange rate in a free market, Merits and demerits of flexible and fixed exchange rate.

Managed Floating exchange rate system

Activity- Compare the exchange rates of Indian rupee with Us dollar of previous five year using time series graph

### Unit 4: National Income and related aggregates

What is Macroeconomics?

Basic concepts in macroeconomics: consumption goods, capital goods, final goods,

intermediate goods; stocks and flows; gross investment and depreciation.

Circular flow of income (two sector model); Methods of calculating National Income -

Value Added or Product method, Expenditure method, Income method.

Aggregates related to National Income:

Gross National Product (GNP), Net National Product (NNP), Gross Domestic Product

(GDP) and Net Domestic Product (NDP) - at market price, at factor cost; Real and

Nominal GDP.

GDP and Welfare

Activity-Using art and craft material explain how income is circulated in the economy (using two sector model)

### Unit 5: Determination of Income and Employment

Aggregate demand and its components.

Propensity to consume and propensity to save (average and marginal).

Short-run equilibrium output; investment multiplier and its mechanism.

Meaning of full employment and involuntary unemployment.

Problems of excess demand and deficient demand; measures to correct them -

changes in government spending, taxes and money supply.

Activity-Project work on the topic

# PART B: INDIAN ECONOMIC DEVELOPMENT

### Unit 6: Development Policies and Experience (1947-90)

A brief introduction of the state of Indian economy on the eve of independence.

Indian economic system and common goals of Five Year Plans.

Main features, problems and policies of agriculture (institutional aspects and new agricultural strategy), industry (IPR 1956; SSI – role & importance) and foreign trade.

Activity- Draw a mind map to show the state of Indian economy on the eve of independence on various sectors

### Unit 7: Economic Reforms since 1991

Features and appraisals of liberalisation, globalisation and privatisation (LPG policy);

Concepts of demonetization and GST

**Activity-** Draw a table of various GST slabs levied on any 5 sectors of the Indian economy

## Unit 8: Current challenges facing Indian Economy: Part I

Human Capital Formation: How people become resource; Role of human

capital in economic development; Growth of Education Sector in India

Rural development: Key issues - credit and marketing - role of cooperatives; agricultural diversification; alternative farming - organic farming

Activity- Make a Power Point Presentation on any one of the above challenges of Indian economy

### Unit 9: Current challenges facing Indian Economy: Part II

Employment: Growth and changes in work force participation rate in formal and informal sectors; problems and policies

Sustainable Economic Development: Meaning, Effects of Economic Development on Resources and Environment, including global warming

Activity-Make a poster on the effects of global economy warming.

### Unit 10: Development Experience of India

A comparison with neighbours

India and Pakistan

India and China

Issues: economic growth, population, sectoral development and other Human

**Development Indicators** 

Activity- Oral discussion on the developmental indicators on the three countries
# **Subject : Business Studies**

#### BOOKS: NCERT-1 NCERT-2

#### Rationale

The courses in Business Studies and Accountancy are introduced at + 2 stage of Senior Secondary Education as formal commerce education is provided after first ten years of schooling. Therefore, it becomes necessary that instructions in these subjects are given in such a manner that students have a good understanding of the principles and practices bearing in business (trade and industry) as well as their relationship with the society. Business is a dynamic process that brings together technology, natural resources and human initiative in a constantly changing global environment. To understand the framework in which a business operates, a detailed study of the organisation and management of business processes and its interaction with the environment is required. Globalization has changed the way organizations transact their business. Information Technology is becoming a part of business operations in more and more organisations. Computerized systems are fast replacing other systems. E-business and other related concepts are picking up fast which need to be emphasized in the curriculum. The course in Business Studies will prepare students to analyze, manage, evaluate and respond to changes which affect business. It provides a way of looking at and interacting with the business environment. It recognizes the fact that business influences and is influenced by social, political, legal and economic forces. It allows students to appreciate that business is an integral component of society and develops an understanding of many social and ethical issues. Therefore, to acquire basic

knowledge of the business world, a course in Business Studies would be useful. It also informs students of a range of study and work options and bridges the gap between school and work.

#### **Objectives:**

- To develop students with an understanding of the processes of business and its environment;
- To acquaint students with the dynamic nature and inter-dependent aspects of business;
- To develop an interest in the theory and practice of business, trade and industry;
- To familiarize students with theoretical foundations of the process of organizing and managing the operations of a business firm;
- To help students appreciate the economic and social significance of business activity and the social cost and benefits arising there from;
- To acquaint students with the practice of managing the operations and resources of business;
- To enable students to act more effectively and responsibly as consumers, employers, employees and citizens;
- To develop a business attitude and skills in students.
- To inculcate appropriate attitude and develop skills among students to pursue higher education.

#### **Business Studies**

#### CLASS-XII

Theory: 80 Marks Project: 20 Marks 3 Hours

Units		Periods	Marks
Part A	Principles and Functions of Management		
1.	Nature and Significance of Management	12	16
2	Principles of Management	14	
3	Business Environment	12	
4	Planning	14	14
5	Organising	15	
6	Staffing	16	20
7	Directing	15	
8	Controlling	12	
	Total	110	50
Part B	Business Finance and Marketing		
9	Financial Management	20	15
10	Financial Markets	18	
11	Marketing Management	30	15
12	Consumer Protection	12	
	Total	80	30
Part C	Project Work (One)	30	20

#### PART A: PRINCIPLES AND FUNCTIONS OF MANAGEMENT

#### UNIT1: Nature and significance of Management:

- Management Concept, Objectives and Importance
- Management as Science, Art and Profession.
- Levels of management
- Management functions Planning, Organizing, Staffing, Directing and Controlling.

• Coordination – Concept and Importance.

**Keywords:** Management, Levels, Planning, Organizing, Staffing, Directing, Controlling, Coordination.

Activity: Power Point Presentation on Nature and Significance of Management.

# UNIT 2(a): Principles of Management:

- Principles of Management Concept, and Significance
- Fayol's Principles of Management
- Taylor's Scientific Management Principles and Techniques.

**Key Words:** Principles, Techniques, Differential, Piece wage, Fatigue study, Mental Revolution.

**Activity:** Written Quiz on Principles of Management. (F. W. Taylor & Henry Fayol)

#### UNIT 2(b): Business Environment:

- Business Environment Concept and Importance.
- Dimensions of Business Environment Economic, Social, Technological, Political and Legal
- Demonetization concept and features

**Key words:** Economic Environment, Social political, technological and legal environment.

**Activity:** Prepare project on Changing role of the women in the past 25 years relating to joint families, nuclear families, women as bread earners of the family.

• The trend in changing interest rates and their effects on savings.

### UNIT 3: (a) Planning:

- Concept, Importance and Limitations.
- Planning Process.
- Single use and standing plans. Objectives, Strategy, Policy, Procedure, method, Rule, budget and Programme.

**Key Words:** Planning, Objectives, Strategy, Policy, Procedure, budget, programme and rule.

#### UNIT 3(b) Organizing:

- Concept and importance
- Organizing Process.
- Structure of organization Functional and Divisional. Formal and informal organisation-concept
- Delegation: Concept, Elements and Importance.
- Decentralization: Concept and Importance.

**Key words:** Organizing, Functional and Divisional Organization, Delegation, Decentralization.

#### UNIT 4: Staffing

- Concept and Importance of Staffing.
- Staffing as a part of Human Resource Management Concept
- Staffing Process:
- Recruitment Process
- Selection Process
- Training and Development Concept and Importance. Methods of

Training- On the job and off the job- Vestibule training, Apprenticeship training and Internship training.

**Key words:** Staffing, Recruitment, Selection, Internal and external source, Training, Vestibule, apprenticeship.

**Activity:** Online Visit a firm and find out recruitment policy. What source of recruitment they are using and why?

#### UNIT 5: Directing:

- Concept and importance
- Elements of Directing
- Motivation Concept, Maslow's hierarchy of needs; financial and non-financial incentives.
- Leadership Concept, Styles Authoritative, Democratic and Laissez faire.
- Communication Concept, Formal and Informal Communication; barriers to effective communication, how to overcome the barriers

**Key words:** Directing, Motivation, leadership, Authoritative, Democratic, Laissez faire, Financial and non-financial Incentive.

**Activity:** Prepare a PPT on different types of motivational incentives (Financial and non-financial incentives.

## UNIT 6: Controlling:

- Concept and Importance
- Relationship between planning and controlling
- Steps in the process of Control

Activity: Analyze the controlling process of a company.

# PART B: BUSINESS FINANCE AND MARKETING

#### UNIT 7: Financial Management:

- Concept, Role and Objectives of Financial Management.
- Financial Decisions: Investment, Financing and Dividend: Meaning and Factors affecting.
- Financial planning Concept and Importance.
- Capital Structure Concept and Factors affecting capital structure.

Fixed and Working Capital - Concept and Factors affecting their requirements.

**Key words:** Financing, Investing, Dividend, Capital Structure, Fixed and Working Capital.

### UNIT 8: Financial Markets:

- Financial Markets: Concept
- Money Market: Concept
- Capital market and its Types (Primary and Secondary)
- Stock Exchange Meaning, functions and trading procedure.
- Securities and Exchange Board of India (SEBI) Objectives and Functions.

**Key words:** Financial Market, Stock Exchange, Depository and D'Mat Account, Dematerialisation, Rematerialisation and SEBI.

**Activity:** Prepare a brief report on the history of Stock Exchange in India and prepare a list of 25 companies listed on Stock Exchange and make an imaginary portfolio.

## UNIT 9: Marketing Management:

- Marketing: Management Concept, functions and Philosophies
- Marketing Mix Concept and Elements
  - Product Branding, Labelling and Packaging- concept.

- Price – Concept, Factors determining price.

- Physical Distribution- Concept, components and channels of distribution

-Promotion -Concept and Elements; Advertising, Personal Selling, Sales Promotion and Public Relations.

**Key words:** Marketing, Selling, Branding, Labelling, Packaging, Advertising, Promotion, Personal Selling, Public Relation.

Activity: Project on marketing mix.

#### UNIT 10: Consumer Protection:

- Concept and Importance of Consumer Protection.
- The Consumer Protection Act, 2019:

Source: http://egazette.nic.in/WriteReadData/2019/210422.pdf

- Meaning of consumer.
- Rights and responsibilities of consumers.
- Who can file a complaint?
- Redressal machinery.
- Remedies available.
- Consumer awareness Role of consumer organizations and non-Governmental Organizations (NGOs).

Key words: Consumer, Redressal, Rights, Remedies.

Activity: Prepare a questionnaire to interview a consumer and find out whether he is aware about his rights, responsibilities etc.

**Project Work:** As per CBSE guidelines.

# Subject : Accountancy

#### Prescribed Books:

Accountancy I	Class XII	NCERT Publication
Accountancy II	Class XII	NCERT Publication

#### Rationale

The course in accountancy is introduced at plus two stage of senior second of school education, as the formal commerce education is provided after ten years of schooling. With the fast-changing economic scenario, accounting as a source of financial information has carved out a place for itself at the senior secondary stage. Its syllabus content provides students a firm foundation in basic accounting concepts and methodology and also acquaint them with the changes taking place in the preparation and presentation of financial statements in accordance to the applicable accounting standards and the Companies Act 2013.

The course in accounting put emphasis on developing basic understanding about accounting as an information system. The emphasis in Class XI is placed on basic concepts and process of accounting leading to the preparation of accounts for a sole proprietorship firm. The students are also familiarized with basic calculations of Goods and Services Tax (GST) in recording the business transactions. The accounting treatment of GST is confined to the syllabus of class XI.

The increased role of ICT in all walks of life cannot be overemphasized and is becoming an integral part of business operations. The learners of

accounting are introduced to Computerized Accounting System at class XI and XII. Computerized Accounting System is a compulsory component which is to be studied by all students of commerce in class XI; whereas in class XII it is offered as an optional subject to Company Accounts and Analysis of Financial Statements.

This course is developed to impart skills for designing need-based accounting database for maintaining book of accounts. The complete course of Accountancy at the senior secondary stage introduces the learners to the world of business and emphasize on strengthening the fundamentals of the subject.

#### **Objectives:**

- 1. To familiarize students with new and emerging areas in the preparation and presentation of financial statements.
- 2. To acquaint students with basic accounting concepts and accounting standards.
- 3. To develop the skills of designing need-based accounting database.
- 4. To appreciate the role of ICT in business operations.
- 5. To develop an understanding about recording of business transactions and preparation of financial statements.
- 6. To enable students with accounting for Not-for-Profit organizations, accounting for Partnership Firms and company accounts.

#### DISTRIBUTION

#### **100 MARKS**

UNITS	PERIODS	MARKS
UNIT-1 Accounting for Partnership firms-Fundamentals	22	
UNIT-2 Accounting for Partnership firms- Goodwill	13	
UNIT-3 Change in profit sharing ratio among existing partners	20	36
UNIT-4 Accounting for Partnership firms-Admission of a partner	20	
UNIT-5 Retirement and Death of a partner	15	
UNIT-6 Dissolution of Partnership firms	15	
UNIT-7 Accounting for share capital	33	
UNIT-8 Accounting for Debentures-Issue and Redemption	12	24
UNIT-9 Analysis of Financial Statements and Accounting Ratios	30	12
UNIT-10 Cash Flow Statements and Project Work	20	8+20

Project work will include:

Project File: 4 Marks

Written Test: 12 Marks (One Hour)

Viva Voce: 4 Marks

#### **Unit-1 Accounting for Partnership Firms-Fundamentals**

#### Technical words:

(Partnership Deed, Fixed Capital, Fluctuating Capital, Interest on Capital, Interest on Drawings, PastAdjustment, Goodwill)

Partnership: features, Partnership Deed.

• Provisions of the Indian Partnership Act 1932 in the absence of

partnership deed.

- Fixed v/s fluctuating capital accounts. Preparation of Profit and Loss Appropriation account- division of profit among partners, guarantee of profits.
- Past adjustments (relating to interest on capital, interest on drawing, salary and profit-sharing ratio).
- Note: Interest on partner's loan is to be treated as a charge against profits.

#### UNIT-2 Accounting for Partnership Firms- Goodwill

 Goodwill: meaning, factors affecting, need for valuation, methods for calculation (average profits, super profits and capitalization), adjusted through partners' capital/ current account or by raising and writing off goodwill (AS 26)

#### UNIT-3 Change in Profit Sharing Ratio

 Change in the Profit-Sharing Ratio among the existing partners sacrificing ratio, gaining ratio, accounting for revaluation of assets and reassessment of liabilities and treatment of reserves, accumulated profits and losses. Preparation of revaluation account and balance sheet.

#### UNIT-4 Accounting for Partnership firms-Admission of a partner

#### **Technical words:**

(Admission, Sacrificing Ratio Gaining Ratio, Premium, Reserves, Funds, Adjustment of Capital.)

 Admission of a partner - effect of admission of a partner on change in the profit-sharing ratio, treatment of goodwill (as per AS 26), treatment for revaluation of assets and reassessment of liabilities, treatment of reserves, accumulated profits and losses, adjustment of capital accounts and preparation of capital, current account and balance sheet.

#### UNIT-5 Retirement and Death of a partner

#### Technical words:

(Retirement, Death, Executor Account, Accumulated Profits, Loan Account.)

- Effect of retirement / death of a partner on change in profit sharing ratio, treatment of goodwill (as per AS 26), treatment for revaluation of assets and reassessment of liabilities, adjustment of accumulated profits, losses and reserves, adjustment of capital accounts and preparation of capital, current account and balance sheet. Preparation of loan account of the retiring partner.
- Calculation of deceased partner's share of profit till the date of death.
  Preparation of deceased partner's capital account and his executor's account.

#### UNIT-6. Dissolution of Partnership firms

#### Technical words:

- (Dissolution, Realization Account, Reassessment, Memorandum Balance Sheet.)
- Meaning of dissolution of partnership and partnership firm, types of dissolution of a firm. Settlement of accounts - preparation of realization account, and other related accounts: capital accounts of partners and cash/bank a/c (excluding piecemeal distribution, sale to a company and insolvency of partner(s)).

#### Note:

(i) If the realized value of tangible assets is not given it should be

considered as realized at book value itself.

- (ii) If the realized value of intangible assets is not given it should be considered as nil (zero value).
- (ii) In case, the realization expenses are borne by a partner, clear indication should be given regarding the payment thereof.

#### UNIT-7 Accounting for share capital

#### Technical words:

(Equity Share, Preference Share, Authorized Share Capital, Forfeiture, Prorata, Reissue, calls in arrears, Calls in Advance, Vendor.)

Features and types of companies Share and share capital: nature and types.

- Accounting for share capital: issue and allotment of equity and preferences shares. Public subscription of shares – over subscription and under subscription of shares; issue at par and at premium, calls in advance and arrears (excluding interest), issue of shares for consideration other than cash.
- Concept of Private Placement and Employee Stock Option Plan (ESOP), Sweat Equity.
- Accounting treatment of forfeiture and reissue of shares.
- Disclosure of share capital in the Balance Sheet of a company.

#### UNIT-8 Accounting for Debentures-Issue

#### Technical words:

(Debentures, Redemption, Collateral Security, Purchase Consideration.)

• Debentures: Meaning, types, Issue of debentures at par, at a premium and at a discount. Issue of debentures for consideration other than cash; Issue of debentures with terms of redemption;

debentures as collateral security-concept, interest on debentures. Writing off discount / loss on issue of debentures.

Note: Discount or loss on issue of debentures to be written off in the year debentures are allotted from Security Premium Reserve (if it exists) and then from Statement of Profit and Loss as Financial Cost (AS 16)

### UNIT-9 Analysis of Financial Statements and Accounting Ratios

Meaning, Nature, Uses and importance of financial Statement. Statement of Profit and Loss and Balance Sheet in prescribed form with major headings and sub headings (as per Schedule III to the Companies Act, 2013)

Note: Exceptional items, extraordinary items and profit (loss) from discontinued operations are excluded.

- Financial Statement Analysis: Meaning, Significance Objectives, importance and limitations.
- Tools for Financial Statement Analysis: Cash flow analysis, ratio analysis.
- Accounting Ratios: Meaning, Objectives, Advantages, classification and computation.
- Liquidity Ratios: Current ratio and Quick ratio.
- Solvency Ratios: Debt to Equity Ratio, Total Asset to Debt Ratio, Proprietary Ratio and Interest Coverage Ratio. Debt to Capital Employed Ratio.
- Activity Ratios: Inventory Turnover Ratio, Trade Receivables Turnover Ratio, Trade Payables Turnover Ratio, Fixed Asset Turnover Ratio, Net Asset Turnover Ratio and Working Capital Turnover Ratio.

Profitability Ratios: Gross Profit Ratio, Operating Ratio, Operating Profit Ratio, Net Profit Ratio and Return on Investment.

Note: Net Profit Ratio is to be calculated on the basis of profit before and after tax.

#### Unit 10: Cash Flow Statement

#### Technical words:

(Cash flow, Inflow, Outflow, Investing Activities, Operating Activities, Financing Activities, Cash and Cash Equivalents.)

Meaning, objectives Benefits, Cash and Cash Equivalents, Classification of Activities and preparation (as per AS 3 (Revised) (Indirect Method only)

#### Note:

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- (i) Adjustments relating to depreciation and amortization, profit or loss on sale of assets including investments, dividend (both final and interim) and tax.
- (ii) Bank overdraft and cash credit to be treated as short term borrowings.
- (iii) Current Investments to be taken as Marketable securities unless otherwise specified.

Note: Previous years' Proposed Dividend to be given effect, as prescribed in AS-4, Events occurring after the Balance Sheet date. Current years' Proposed Dividend will be accounted for in the next year after it is declared by the shareholders.

Activity: Analyzing Cash flow Statement of a Company.

#### Project Work

Please refer to the guidelines published by CBSE.

# **Subject : Physical Education**

#### RATIONALE

- Physical Education is concerned with total health of the learner and the community. Besides physical health, it includes mental and emotional health of the learners. Health is often a state of physical, mental, emotional, social and spiritual well-being and not merely the absence of disease.
- The aim of mainstreaming Health and physical education is to enable the student to attain an optimum state of health, by incorporating each of the aforementioned aspects.
- Research has demonstrated that there is a positive correlation between brain development and exercise which also has an impact on cognitive development thus helping to improve academic grades.
- At the Senior Secondary level, through the integrated PE approach, students will acquire the knowledge, skills, right attitudes and values towards the pursuit of a lifelong physically active and healthy lifestyle.

#### OBJECTIVES

- To develop awareness regarding the importance of physical fitness in individual and social life includes Life Skills.
- To bring the overall awareness of values with regard to personal health and fitness.
- To make the pupils physically, mentally and emotionally fit and to

develop such personal and social qualities that will help them to be good human beings.

- To develop interest in exercise, sports and games for selfsatisfaction and make it a part of life.
- To help children learn correct postural habits in standing, walking, running, sitting and other basic movements so as to avoid postural defects and physical deformities.
- To develop more positive attitude towards challenges, winning and losing, thus preparing students for life and for the workplace.

# Theory Max. Marks 70

#### Unit I Management of Sporting Events

- Functions of Sports Events Management (Planning, Organising, Staffing, Directing & Controlling)
- Various Committees & their Responsibilities (pre; during & post)
- Fixtures and its Procedures Knock-Out (Bye & Seeding) & League (Staircase & Cyclic)

**PRACTICAL-**General fitness-Warming up and cooling down

#### Unit II Children & Women in Sports

- Common Postural Deformities Knock Knee; Bow Legs; Flat Foot; Round Shoulders; Lordosis, Kyphosis, and Scoliosis and their corrective measures
- Special consideration (Menarche & Menstrual Dysfunction)
- Female Athletes Triad (Osteoporosis, Amenorrhea, Eating Disorders)

#### PRACTICAL- Game-Fundamental skills of Volleyball

#### Unit III Yoga as Preventive measure for Lifestyle Disease

- Obesity: Procedure, Benefits & Contraindications for Tadasana, Katichakrasana, Pavanmuktasana, Matsayasana, Halasana, Pachimottansana, Ardha – Matsyendrasana, Dhanurasana, Ushtrasana, Suryabedhan pranayama.
- Diabetes: Procedure, Benefits & Contraindications for Katichakrasana, Pavanmuktasana,Bhujangasana, Shalabhasana, Dhanurasana, Supta-vajarasana, Paschimottanasana, Ardha-Mastendrasana, Mandukasana, Gomukasana, Yogmudra, Ushtrasana,Kapalabhati.
- Asthma: Procedure, Benefits & Contraindications for Tadasana, Urdhwahastottansana, UttanMandukasana, Bhujangasana, Dhanurasana, Ushtrasana, Vakrasana, Kapalbhati, Gomukhasana Matsyaasana, Anuloma-Viloma.
- Hypertension: Procedure, Benefits & Contraindications for Tadasana, Katichakransan, Uttanpadasana, Ardha Halasana, Sarala Matyasana, Gomukhasana, UttanMandukasana, Vakrasana, Bhujangasana, Makarasana, Shavasana, Nadishodhanapranayam, Sitlipranayam.

**PRACTICAL-**Practice of yoga asana, meditation and pranayam

# Unit IV Physical Education & Sports for CWSN (Children with Special Needs - Divyang)

- Organizations promoting Disability Sports (Special Olympics; Paralympics; Deaflympics)
- Advantages of Physical Activities for children with special needs.

• Strategies to make Physical Activities assessable for children with special needs.

**PRACTICAL-**Athletics events-Short, middle and long races

### **Unit V Sports & Nutrition**

- Concept of balance diet and nutrition
- Macro and Micro Nutrients: Food sources & functions
- Nutritive & Non-Nutritive Components of Diet

#### PRACTICAL- Game-Volleyball-Fundamental skills

### Unit VI Test & Measurement in Sports

- Fitness Test SAI Khelo India Fitness Test in school: o Age group 5-8 yrs/ class 1-3: BMI, Flamingo Balance Test, Plate Tapping Test o Age group 9-18yrs/ class 4-12: BMI, 50mt Speed test, 600mt Run/Walk, Sit & Reach flexibility test, Strength Test (Abdominal Partial Curl Up, Push-Ups for boys, Modified Push-Ups for girls).
- Computing Basal Metabolic Rate (BMR)
- Rikli & Jones Senior Citizen Fitness Test I. Chair Stand Test for lower body strength II. Arm Curl Test for upper body strength III. Chair Sit & Reach Test for lower body flexibility IV. Back Scratch Test for upper body flexibility V. Eight Foot up & Go Test for agility VI. Six Minute Walk Test for Aerobic Endurance

## **PRACTICAL-** Motor Fitness test

# Unit VII Physiology & Injuries in Sports

- Physiological factors determining components of physical fitness
- Effect of exercise on Muscular System

- Effect of exercise on Cardio-Respiratory System
- Sports injuries: Classification (Soft Tissue Injuries -Abrasion, Contusion, Laceration, Incision, Sprain & Strain; Bone & Joint Injuries - Dislocation, Fractures - Green Stick, Comminuted, Transverse Oblique & Impacted

PRACTICAL-Senior Citizen Fitness Test

#### **Unit VIII Biomechanics & Sports**

- Newton's Law of Motion & its application in sports Equilibrium Dynamic & Static and Centre of Gravity and its application in sports
- Friction & Sports
- Projectile in Sports

#### **PRACTICAL-**Practice of Meditation and Pranayama

#### Unit IX Psychology & Sports

- Personality; its definition & types (Jung Classification & Big Five Theory)
- Meaning, Concept & Types of Aggressions in Sports
- Psychological Attributes in Sports Self Esteem, Mental Imagery, Self Talk, Goal Setting

PRACTICAL- Game-Volleyball-Rules and Terminologies

#### **Unit X Training in Sports**

Concept of Talent Identification and Talent Development in Sports

- Introduction to Sports Training Cycle Micro, Meso, Macro Cycle.
- Types & Method to Develop Strength, Endurance and Speed
- Types & Method to Develop Flexibility and Coordinative Ability

PRACTICAL-Isometric, Isotonic, Isokinetic exercise

Pract	ical	Max. Marks 30	
1.	Physical Fitness Test: SAI Khelo India Test Fitness Test (BPFT)*	, Brockport Physical 6 Marks	
2.	Proficiency in Games and Sports		
	(Skill of any one IOA recognised Sport/Game of Choice)**	7 Marks	
3.	Yogic Practices	7 Marks	
4.	Record File ***	5 Marks	
5.	Viva Voce (Health/ Games & Sports/ Yoga)	5 Marks	

- 6. \* Test for CWSN (any 4 items out of 27 items. One item from each component: Aerobic Function, Body Composition, Muscular strength & Endurance, Range of Motion or Flexibility) \*\*CWSN (Children With Special Needs Divyang): Bocce/Boccia, Sitting Volleyball, Wheel Chair Basketball, Unified Badminton, Unified Basketball, Unified Football, Blind Cricket, Goalball, Floorball, Wheel Chair Races and Throws, or any other Sport/Game of choice. \*\*Children With Special Needs can also opt any one Sport/Game from the list as alternative to Yogic Practices. However, the Sport/Game must be different from Test 'Proficiency in Games and Sports'
- 7. \*\*\*Record File shall include:
- 8. Practical-1: Fitness tests administration.

- 9. Practical-2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.
- 10. Practical-3: Any one IOA recognised Sport/Game of choice. Labelled diagram of Field & Equipment. Also mention its Rules, Terminologies & Skills.

# Subject : Information Technology

#### Prescribed Books:-

- 1. Employability Skills Class XII (Part A) by NCERT
- 2. Database Management Applications Class XII( Part B) by NCERT

#### Rationale

The present course curriculum offers an opportunity for students to understand the basics of computer software and hardware for working efficiently on computer. This course will enable students to hone skills to develop desktop based applications etc. With extensive demand of designers, the course aims at inculcating not only programming skills but also the understanding of graphics. Graphics in itself is a wide and very interesting area which helps in shaping the creativity of a student.

#### **Objectives:**

- The course will equip students with skills to analyze various problems and their trouble shooting.
- Content of the course has been designed as such to make students capable of independently working on a desktop and be able to develop applications to handle computations of small scale and record keeping.
- Students will develop following skills:
  - It will empower students with various skills required to work efficiently on computer.
  - Understand basic functional and computational units.
  - Understand networking and internet concepts
  - Recognize various internet devices and threats to cyber security.
  - Skills to work efficiently with basic office tools like word, spreadsheets, presentation

- Understand basics of databases and SQL to handle databases
- Develop programming skills in Java

Through this course students will not only gain knowledge about the basics of computer but will also develop confidence in developing small applications through programming.

	Unit	MAX. MARKS for Theory and Practical		
	Employability Skills			
	Unit 1 : Communication Skills - IV*	-		
◄	Unit 2 : Self-Management Skills - IV	3		
t	Unit 3 : ICT Skills - IV	3		
ñ	Unit 4 : Entrepreneurial Skills - IV	4		
	Unit 5 : Green Skills - IV*	-		
	Total	10		
	Subject Specific Skills	Marks		
	Unit 1 : Database Concepts - RDBMS Tool	15		
	Unit 2 : Operating Web Based Applications	10		
Part B	Unit 3 : JAVA - Fundamentals of Java programming, introduction to Java, Object Oriented Programming, Java Language Elements, Operators, Control Flow, Array, Class Design, Exception Handling, Assertions, Threads, Wrapper Classes, String Manipulation	20		
	Unit 4 : Work Integrated Learning IT - DMA	5		
	Total	50		
	Practical Work :			
	Java Program	10		
C	SQL Queries (Table Creation + 5 Queries)	10		
ť	Practical File : Must contain minimum 15 Java	40		
Pa	Programs and minimum 15 queries in MySQL	10		
	Viva	5		
	Total	35		
D	Project Work			
T	(Any application made using Java Netbeans IDE)	5		
Ъ,	Total	5		
	GRAND TOTAL	100		

# **COURSE STRUCTURE**

**Note :** \*marked units are to be assessed through Internal Assessment/ Student Activities. They are not to be assessed in Theory Exams.

Submit your Practical file with Project

**UNIT-1: COMMUNICATION SKILLS - IV:** Active Listening , Parts of Speech , Writing Sentences.

Activity: - Make a mind Map of different stages of Active listening

# Unit-2: DATABASE CONCEPTS – RDBMS TOOL

Basics of RDBMS, SQL – Creating and Opening Database, Creating and populating tables, Modifying the content and structure of table, Ordering and Grouping, Operating with multiple tables.\*

#### Practicals :-.

#### Consider the following Employee table:

Table Name: Employee

The primary key of this table is Employee\_ID and Manager\_ID is a foreign key that references Employee\_ID.

Employee_ID	Employee_Name	Job_Title	Salary	Bonus	Age	Manager_ID
1201	Divya	President	50000	NULL	29	NULL
1205	Amyra	Manager	30000	2500	26	1201
1211	Rahul	Analyst	20000	1500	23	1205
1213	Manish	Salesman	15000	NULL	22	1205
1216	Megha	Analyst	22000	1300	25	1201
1217	Mohit	Salesman	16000	NULL	22	1205

Write SQL commands for the following:

- (a) Create the above table.
- (b) Insert values as shown above.
- (c) Delete the Employee having Employee\_ID 1217.
- (d) Update the salary of "Amyra" to 40000.
- (e) Alter the table Employee so that NULL values are not allowed for

Age column.

- (f) Write a query to display names and salaries of those employees whose salary are greater than 20000.
- (g) Write a query to display details of employees who are not getting any bonus.
- (h) Write a query to display the names of employees whose name contains "a" as the last alphabet.
- (i) Write a query to display the name and Job title of those employees whose Manager\_ID is 1201.
- (j) Write a query to display the name and Job title of those employees aged between 26 years and 30 years (both inclusive)

# 2. A Railway company uses machines to sell tickets. The machine details and daily sales information are recorded in two table

Table Name: Sales

		Table Hame. Cales		
Table Na	me: Machine	Field	Data Type	
Field	Data Type	Machine_ID	CHAR (3)	
Machine_ID	CHAR (3)	Date	DATE	
Station	CHAR (30)	Tickets_Sold	INTEGER	
		Income	DECIMAL (8, 2)	

The primary key of the table Machine is Machine\_ID. Records in the table Sales are uniquely identified by the fields Machine\_ID and Date.

- (a) Create the tables Machine and Sales.
- (b) Write a query to find the number of ticket machines in each station.
- (c) Write a query to find the total ticket income of the station "New Delhi" of each day.

(d) Write a query to find the total number of tickets sold by the machine (Machine\_ID = 122) till date.

## UNIT-3: SELF-MANAGEMENT SKILLS: Motivation and Positive

Attitude, Result Orientation , Self-awareness

Activity:- Create a mind map of the sources of motivation and inspiration.

# UNIT-4: INFORMATION AND COMMUNICATION TECHNOLOGY

**SKILLS-IV**: Getting ,Working with Data and Formatting Text ,Advanced Features in Spreadsheet ,Presentation Software ,Opening, Closing, Saving and Printing a Presentation, Working with Slides and Text in a Presentation , Advanced Features used in Presentation

### Practicals:-

1. Create a spreadsheet enter marks obtained in English, Hindi, Maths and Science of 5 students. Calculate the total marks and find its percentage by using formulae.

2. Make a Presentation in Libre Office Impress on Topic:- " Online Education"

**UNIT-5: OPERATING WEB BASED APPLICATIONS :-** Online Reservation Systems, E-Governance, Online Shopping and Bill payments, Online Tutorials and Tests Project Management – Web Based Application development.

Activity-Make a PPT on "Web based Applications"

**UNIT-6: ENTREPRENEURIAL SKILLS – IV:** Entrepreneurship and Entrepreneur , Barriers to Entrepreneurship , Entrepreneurial Attitudes , Entrepreneurial Competencies

**Activity:** Make a table of Qualities and Functions of a successful Entrepreneur.

• **FUNDAMENTALS TO JAVA PROGRAMMING:-** Introduction to Java, Data types and variables, Operators, Control Flow.

#### Practicals:-

- 1. Create a program to find total marks and percentage of a student.
- 2. Create a program to find Square of a number.
- 3. Create a program to find Area of rectangle.

**UNIT 7 : FUNDAMENTALS TO JAVA PROGRAMMING:-** Array, User defined methods, Object Oriented Programming , Class Design, Java Libraries, Exception Handling

#### Practicals:-

- 1. Create a program in Java by importing libraries
- 2. Write a program to sort the marks using arrays.
- 3. Write a program to search the position of a number.
- 4. Write a program in java to print the square of every alternate number of an array.

**UNIT 8:- FUNDAMENTALS TO JAVA PROGRAMMING: -** Database Connectivity, Assertions,\* Threads,\* Wrapper Classes.

#### Practicals:-

- 1. Write a program in Java to enable user to handle divide by Zero exception.
- 2. Write a program to check whether input number is prime or not.
- 3. Write a program to find reverse of a number using while loop.
- 4. Write a program to check vowel or consonant using switch case.

**UNIT 9:- WORK INTEGRATED LEARNING IT – DMA :-** Identification of Work Areas, Work Experience.

Activity :- Create a project in any potential Work area

UNIT-10: GREEN SKILLS – IV: Green Jobs, Importance of Green Jobs

**Activity:-** Write an article on Intitiatives taken by Govt. of India for "Clean India Green India". What will be your contribution.