English (S.L)

Syllabus For Class IX

- **Prose (Section – A)**

1. The Selfish Giant
2. The Importance of Jute
3. A Daily Drama
4. Kolkata – Her Monuments and Eminent People
5. The Cherry Tree
6. Self-help for Cleaner Surroundings
7. Conversations
8. Salim Ali
9. The Fun They Had

- **Poems (Section – B)**

1. The Loveliest of Trees
2. Stupidity Street
3. The Daffodils
4. Silver

- **Grammar**

□ Types of sentences □ Transformation of sentences □ Main Clause and Dependent Clause
□ Direct and Indirect Speech
□ Appropriate Prepositions
□ Compound Words □ Use of Participles as noun modifiers
□ Expanding / Shortening sentences using –ed / –en words.
□ Use of Linkers □ Use of idiomatic Expressions
□ Time expressions □ Nominal Compounds, nominal clauses
□ Different Degrees of Adjectives □ Use of Phrasal Verbs
□ Proper form of Verbs – Simple Past, Past Continuous and Past Perfect Tense – Subject verb Agreement
□ Contracted forms of Verbs
□ Use of –ing words as continuous tense, Adjectives, Nouns
□ Use of Phrases □ Framing Simple Questions

- **Writing** items must be practised from the book 'Strengthen Your English' published by West Bengal Board of Secondary Education –

a) Paragraph Writing
b) Writing a Dialogue and Role Playing
c) Process Writing
d) Writing a Story
e) Writing a Summary
f) Letter Writing
g) Writing a Notice
h) Writing a Diary
i) Writing a Report
j) Writing Biographies
k) Giving Instructions
l) Summary of a Dialogue

Due importance should also be given to the Writing tasks set in the Text Book

English (SL)

Class IX

Distribution of marks – one paper – 100 marks (Written - 90; Oral – 10)

i) To Test Reading Skills – 40 marks (20 seen + 20 unseen)

ii) To Test Writing Skills – 30 marks (unseen)

iii) Grammar and Vocabulary – in proper communicative context – 20 marks

90 marks

+ Oral –10 marks

Total –100 marks

Class –IX

CONTENTS

6.		❒ proper form of verbs **Writing:** Taking notes, report	
7.	Conversations	❒ short responses in conversations ❒ contracted forms of verbs ❒ **Writing:** Report, paragraph, conversation	
8.	Salim Ali	❒ Use of –ing words as continuous tense, adjectives, nouns **Writing:** Composition, biography	
9.	The fun They Had	❒ Use of linkers **Writing:** Diary writing, paragraph	
1.	**Section – B** **Poems:** The Loveliest of Trees	❒ verb forms **Writing:** Paragraph	
2.	Stupidity Street	❒ Simple past and past continuous ❒ use of articles **Writing:** Paragraph	
3.	The Daffodils	❒ simple past and past perfect ❒ subject > verb agreement **Writing:** Paragraph	
4.	Silver	❒ use of phrases **Writing:** Paragraph	

English (S.L)

Syllabus for Class X

- **Prose (Section – A)**

1. Engine Trouble
2. The Refugees
3. A Great National Hero
4. Most Beautiful
5. The Gifts of the Wise
6. The Lost Child
7. The Birth of a White Seal

- **Poems (Section – B)**

1. Wander Thirst
2. Stopping by Woods on a Snowy Evening
3. If
4. Ring Out, Wild Bells
5. Sonnet to the Pupils of the Hindu College

- **List of Words**

- **Additional Material for Practice**

1. The Noble Prize – Acceptance Speech by Rabindranath Tagore
2. Practice Exercises

- **Index**

Class X

□ Grammar

Revision of all the grammar items treated in Class IX

+ These following items to be taught in Class X

- Use of Verbs → Finite & Non-finite, Simple auxiliaries & Modal-auxiliaries, Verbs with – ing / – ed / – en suffixes & their uses, Gerunds, Use of proper forms of Verbs in meaningful Contexts.

- Main Clause & Dependent Clause; different functions of dependent Clauses like Nominal Clause, Adjective Clause (Relative Clause), Adverb Clause; Complex & Compound sentences.

- Uses of Prefix & Suffixes

- Use of Passive Voice

- Time Expressions; Mid-position adverbs; Countable & Uncountable – Nouns

- Same word used as different parts-of-speech in sentences.

- Different words to describe the same action.

- Use of different derivative forms of words.

□ Writing items must be practised from the book 'Strengthen Your English' published by W.B.B.S.E.

□ All the writing items mentioned in Class IX should be practised again.

□ More stress should be given to the following items for Class X

- Paragraph Writing → in different formats and contexts: Describing a situation / birds & animals (a game) / – a festival / Comparing and Contrasting / expressing likes and dislikes /expressing opinion etc [vide the book 'Strengthen Your English' (W.B.B.S.E)].

- Process Writing → Using Pictures / Process (giving instructions) / Describing a process of making something etc. [vide the book 'Strengthen Your English' (W.B.B.S.E)].

- Writing a Notice → On school excursion / School events etc.

- Writing a Report → based on Newspaper Headline / Reporting on a burglary / Reporting an earthquake / Reporting an accident or any social problem etc. [vide the book 'Strengthen Your English' (W.B.B.S.E)].

- Writing a Biography → Biography based on information provided – Biography based on an interview etc. [vide the book 'Strengthen Your English' (W.B.B.S.E)]. To clarify the difference between a biography and an autobiography.

- Writing a Story → Developing a story on some given points – on given pictures – on a given Heading etc. [vide the book 'Strengthen Your English' (W.B.B.S.E)].

- Writing a Dialogue → ▫ Writing an imaginary conversation on any particular topic & situation mentioned in the question paper.
  ▫ Dialogue – based on pictures etc.
  [vide the book 'Strengthen Your English' (W.B.B.S.E)].

- Letter Writing → both formal and informal letters – Asking for permission, giving advice, giving suggestions; describing an event, telling about an experience, letter of enquiry, letter to the Editor etc. [vide the book 'Strengthen Your English' (W.B.B.S.E)].

English (SL)

Class X

Distribution of marks – one paper – 100 marks (Written - 90; Oral – 10)

iv) To Test Reading Skills – 40 marks (20 seen + 20 unseen)

v) To Test Writing Skills – 30 marks (unseen)

vi) Grammar and Vocabulary – in proper communicative context – 20 marks

90 marks

+ Oral –10 marks

Total –100 marks

+ refer to details given below:

Note that about three to four lakhs of students appear at the Madhyamik Pariksha at present and this numbe will go on

increasing every year. Hence though assessment of the oral-aural skills is important, it has not been included in the final school leaving examination because of various administrative difficulties. Nevertheless, this skill must be stressed throughout the Secondary courses since the functional and communicative approach has been accepted.

(i)(A) Reading a story, a report, any narrative material, a process, a description, a dialogue, an exemplification, etc. and being able to:

i) grasp the central thought of a communication,

ii) follow the structure of a communication, the inter-relationship of ideas and the development of the theme/ an argument,

iii) sequence correct order of facts or ideas as in the passage,

iv) identify ideas relevant to the development of the theme or argument,

v) identify irrelevant details,

vi) appreciate relationship of ideas in passage – order of presentation – evidence – conclusion etc.

Class -X

CONTENTS

		Writing: Biography	
4.	Most Beautiful	❒ Transitive and intransitive ❒ Phrasal Verbs ❒ Nominal Clause ❒ Prefixes **Writing:** Story, Character study	
5.	The Gifts of the Wise	❒ Time expressions ❒ Mid-position adverbs ❒ Countable and Uncountable Nouns ❒ Verb Forms **Writing:** Paragraph, Report in a Local Newspaper, Pictorial story	
6.	The Birth of a White Seal	❒ Kinds of sentences **Writing:** Paragraph, Composition	
7.	The Lost Child	❒ Participles ❒ Making comparisons ❒ Different words to describe the same action **Writing:** Pictorial story, Dialogue, Notice	
	Section – B		
1.	**Poems** Wander-Thirst	**Writing:** Letter Writing	
2.	Stopping by Woods on a Snowy Evening	**Writing:** Describing a scene, Letter Writing	
3.	If		

Break-up of Syllabus

(Unit wise)

English (SL), Class – IX

Unit Test	***Lesson***
First	Lesson 1 The Selfish Giant Lesson 2 The Importance of Jute [Reading comprehension (seen), Grammar, Vocabulary, Unseen passage for Reading Compression, writing] From Strengthen your English (WBBSE) for writing practice: Process writing, Dialogue writing.
Second	Lesson 3 A daily Drama Lesson 4 Kolkata – Her Monuments & Eminent people. Lesson 5 The Cherry Tree Poem The Loveliest of Trees [Reading Comprehension (seen), Grammar, Vocabulary, Unseen passage for Reading Comprehension, Writing] From Strengthen your English (WBBSE) for writing practice : Summary, Giving Instruction, Letter Writing – asking for permission.
Third	Lesson 8 Conversations Lesson 6 Self-help for cleaner surroundings Poem Stupidity Street, Silver

	[Reading Comprehension(seen), Grammar, Vocabulary, Unseen passage for Reading Comprehension, Writing] From Strengthen your English (WBBSE) for writing Practice : Notice Writing, Writing Report, Paragraph Writing.
Fourth	Lesson 9 Salim Ali Lesson 10 The fun they had Poem The Daffodils [Reading comprehension (seen), Grammar, Vocabulary, unseen passage for Reading Comprehension, Writing] From Strengthen your English (WBBSE) for writing practice : Writing biography, Paragraph writing.
Fifth	Revisions of Lessons done in class IX From Strengthen your English (WBBSE) for writing practice : Diary Writing, Story Writing Oral Test : Speaking, Reading, Conversation, Listening Comprehension.

SUBJECT : HISTORY

Classes IX–X

Aims of Studying History in Secondary Level

1. To get an overall idea of the past developments of human civilization.

2. To form a general understanding about the nature of modern and future events in the light of casual relationship of the past events.

3. To acquire general knowledge about the diverse features of ancient civilization and knowledge about its

communities.

4. To get an idea about the relationship between Man & Nature – Struggles and encounters in the process of transformation of civilization.

5. To acquire an idea about the types of States system in the various countries of the world and its rise and fall and transformation.

6. To get a general idea about the nature of the system of production for creating wealth in human society and the position of labouring community.

7. To get an idea about the impact of religion, education and culture on social changes – the role of the thinkers.

8. To have a general understanding about the nature of various events in the social changes and to create interest in search of truth.

9. To create a sense that the History of mankind is not limited by time and space – it has a certain degree of universalism.

HISTORY

Syllabus for Class IX

Topic I: Geographical factors of Indian History and Its Influence

a) Historical derivation of the name of the land – the names 'India' / Hindusthan are related with the Indus – the name is derived in accordance with the geographical position – not related with any particular race / religious community (to be treated as a very short introduction).

Geographical factors : Physical features of India (rivers, mountains, seas) reference to diversities according to divisions – influence.

b) Different ethnic groups (ethnic museum) and their evolution in India (very brief reference only). Concept of unity in diversity (brief).

c) Sources of ancient Indian history (with a special reference to archaeological sources)

Map – 1, illustration – 1

Topic II: Evolution of Indian Civilisation

a) The dawn of Indian Civilisation – evidence of civilisation of pre–historic age – Mehrgarh civilisation (only

location and extent).

Characteristics of Harappan culture (brief) – causes of decline of the civilisation – relation with contemporary civilisations.

Map – 1, illustrations – 4

b) Features of vedic civilisation – origin of the Aryans – coming of the Aryans in different groups – time and settlement (to be treated as a whole in a short introductory paragraph) – main features of social, political and economic life of the Aryans in brief – Vedic literature (brief) outer the differences in the Vedic and Harappan civilisation.

c) i. Economic and social evolution of ancient Indian civilisation–expansion of trade – rise of towns order of *sreni* and *jati* towards the end of Vedic period –towns, trade & trading community.

ii) Protest Movement– ideals of the movement–main teachings of Jainism and Buddhism and their impact.

Topic III

a) Growth of kingship (conflict among tribal groups in the post Vedic age) warfares –growth of kingship– Sixteen Mahajanapadas– rise of Magadha –causes of the rise.

b) Maurya empire –origin –Chandragupta Maurya –conflict with the Greeks –expansion of empire –Maurya administration (brief outline only)–Asoka– Dhammavijaya –decline of the Mauryas.

c) Rise of different royal dynasties in post Mourya era (Khusanas, Satabahanas).

d) Foundation of the Gupta dynasty –growth of Gupta Empire.

Topic IV

Decline of the Gupta Empire– growth of regional powers in North and South India–contest for political supremacy.

Topic V

a) Social transformation in ancient India–economic life–flourishing agriculture– feudalism (Indian characteristics are to be mentioned)–caste system –position of women –India's external trade.

b) Religion, art, literature , science , painting (between 4^{th} century B.C. and 12^{th} Century A.D.)

(Not examples only, new features of change with the changing time are to be mentioned)

Topic VI Islam and India

a) A brief outline of political history of the Delhi Sultanate (long dynastic history is not required)– the Arab conquest of Sind (only introduction) – Sultan Mahmud of Gazni – Muhammad Ghori – Establishment of the Delhi Sultanate – Qutb –ud–din Aibak– Iltutmish and Razia – Ghias–ud–din Balban–Khalji administration – Tughluqs – Mahammad–bin–

Tughluq–Firoz Shah Tughluq – Sayyids and Lodis(in brief)

b) Foundation of the Mughal Empire –Babur–Mughal –Afghan contest (as a whole) –administration of Sher Shah – expansion of Mughal Empire (Akbar to Aurangzeb in total outline) – centralised administration and integration under Mughals –Mansabdari system –Jagirdari crisis– regional rebellions (only mention the rebellions. No detail of any rebellion is required)–beginning of the decline of the Mughal Empire.

Topic VII Fusion of culture during the Sultanate and Mughal era

a) Sufi and Bhakti Movement (Definition and mention of the names of the Saints is sufficient . No detailed life sketch is required. A general idea of different trends leading to cultural fusion is required.)

b) Paintings, architecture, literature (reflection of culture fusion to be emphasised)

Illustrations : 4

Topic VIII

a) Expansion of trade and growth of manufactures in Mughal India (while giving emphasis to trade in the Mughal era impact of European trade should not be omitted)

b) Relation with the European traders

c) Relation of the Europeans with the regional states in first half of the eighteenth century.

Topic IX

First phase of colonial rule in India – Bengal and South India –foundation of colonial rule – European capitalism and colonial economy (that colonial economy was linked with European capitalism should be clearly mentioned)

Map–1, Illustration –2

HISTORY

Syllabus for Class X

Modern India and the World

Topic I

Expansion of British Empire in India (no detailed narratives of battles are required. Stages of imperial expansion should be clearly stated)–different stages (1765–1856 A.D.)

Foundation of the colonial administration (gradual growth of colonial structure of administration is to be reflected)

Topic II

British Raj – Colonial impact on Indian Economy – land revenue policy and breakdown of the agrarian economy – changes in the British Commercial Policy – decline of indigenous manufactures.

Topic III

Protest , resistance and uprisings during the first century of British rule (Peasant and tribal uprisings) – the uprisings that took place in Bengal in the 18th century are to be mentioned. For each uprisings a short paragraph may be used . Other than the underlined uprisings only brief mention of the rest will suffice . Viz. Sannyasi , Fakir, Farazi and Wahabi movements . Mopla insurrection in South India . Chuar, Santhal , Kol movements in Eastern India . Bhil and Kol insurrection in Western India . Revolt of 1857 (the characteristics of popular upsurge should be clearly reflected . (Unnecessary references to and quotations of historians should be avoided)

Map –1, Illustration –2

Topic IV

European background of 19th century nationalism in India (Reference to European nationalism of 19th century is required. Reference to how the Indians were influenced with the main trends of the European nationalism of 19th century is required. Some principal trends of European nationalism are to be mentioned) –genesis of Indian nationalism – education policy of the British–rise of the English educated middle class – social reform movement–awakening of national consciousness – first phase of nationalism – founding of the Indian National Congress.

Topic V

Early phase of the Indian National Congress – split between Moderates (much importance to be given) and the Extremists – militant nationalism – Partition of Bengal and Swadeshi movement –revolutionary movements.

Topic VI

a) Imperialism and the background of First World War (the learners are to be acquainted with the knowledge how the European imperialism contributed to the background of the War) –Post war Europe and India – Mahatma Gandhi and the transformation of Indian nationalism.

b) Non cooperation and civil disobedience movement .

Topic VII

a) Background of World War–II – Fascism in Germany and Italy (how the internal conditions of Italy and Germany influenced rise of Nazism and Fascism are to be mentioned)

,,

b) Fascist aggression ─ collapse of democracy ─ failure of the League of Nations. ,

c) Second World War (Causes of the War are not be dealt with in detail)

Topic VIII

a) Main stages of national movement in India in the decades 1930–1940 A.D. : Congress (mention varied trends proactive within the Congress to refer to the inner divisions in Congress (F.B., Socialist Group etc)

Left Politics (Rise of Communist Party)

Revolutionary movements (revolutionary politics during the Thirties – Punjab and Bengal)

1942 movement under the leadership of Gandhi & its features.

Subhas Chandra and I.N.A. (Subhas Bose and his Azad–Hind Fauz)

Post Second World War popular uprisings (Rashid Ali Day, RIN Revolt, Student movement)

b) Background of communal politics. Reflection of qualitative change in communal politics in the decade 1930–40 is required.

Two–nation Theory.

Partition of India and Indian Independence (background of partition of India to be discussed)

Topic – IX

Constitution of Independent India – Salient features.

Institutional framework of the Indian Democratic Republic.

Growth of parliamentary democracy in Independent India – instead of one–party domination multiparty system.

Topic – X

Search for peace in the post – war world.

Formation of the U.N.O.

Cold war : its origin.

National Liberation Movements in Asia and Africa.

India's policy of Nonalignment.

CLASS – IX

UNIT	TOPIC
FIRST	***1. Geographical Factors of Indian History***
	● Historical derivation of the country's name, Geographical factors, different ethnic groups
	● Unity in Diversity.
	● The sources of History.
	2. The Evolution of Indian Society
	● The Dawn of Indian Civilisation – Mehrgarh – Harappan Civilisation.
	● Features of Vedic Civilisation – comparison with Harappan civilization
	● Economic and Social Changes in Ancient India
	● Protest Movements
	● Jainism and Buddhism

	3. The Growth of King Ship
	● Evolution of Kingship – sixteen Maha Janapads – Rise of Magadha.
	● Chandragupta Maurya.
	● Mauryan Administration.
	● Ashoka and the downfall of the Mauryas.
	● Post Maurya period – the Kushanas
	● The Satavahanas.

SECOND	● Founding of the Gupta empire - Samudragupta
	● Chandragupta II, Skandagupta
	4. Decline of the Guptas
	● Decline of the Guptas, Rise of Regional Powers in North India.
	● Sashanka – Harshawardhana.
	● The Palas & the Senas
	● Chalukyas – Pallavas
	● Tripartite Struggle
	● Rashtrakutas – Cholas

	5. Social Change, Religion, Culture and Economy in Ancient India
	● Social changes in Ancient India – Caste System – Position of Women – Slavery.
	● Economic life – Predominance of Agriculture
THIRD	● Feudalism
	● External Trade
	● Religion
	● Literature
	● Art, Architecture, Painting
	● The Progress of Science.

FOURTH	***6. Islam and India***
	● Arab Invasion of Sind to Qutb-ud-din Aibak
	● Iltutmish - Raziya
	● Balban
	● Khalji Rule
	● Muhammad Bin Tughluq
	● Firoz Tughluq to Ibrahim Lodi
	● The Founding of the Mughal Empire – Babur
	● Mughal – Afghan Contest
	● Administration of Sher Shah
	● Expansion of Mughal Empire : Akbar to Aurangzeb
	● Centralised Administration of the Mughals – Mansabdari System.
	● Jagirdari Crisis, Regional Revolts, Downfall of the Mughal Empire

	7. Fusion of Culture During the Sultanate and Mughal Periods
	● Bhakti and Sufi Movements
	● Painting, Architecture and Literature
	8. Expansion of Trade and Growth of Manufacture in the Mughal Period
	● Expansion of trade and development manufacture in the Mughal period
FIFTH	● Relations with European traders
(ORAL)	● Relatons of the Europeans with Regional States.
	9. First Phase of Colonial Rule in India
	● The Deccan – The Carnatic Wars
	● Bengal-Siraj –ud-Daulah – Mir Kasim
	● Grant of Dewani – Double Government
	● European Capitalism and Colonial Economy

SUBJECT : GEOGRAPHY

The Aims and objectives of the study of Geography at the Secondary Stage

Classes IX-X

The aims of teaching Geography to the pupils of Secondary Schools are to help them to know their own state and people in the first instance and gradually to widen their geographical knowledge of other lands and people so that they could eventually conceive the entire world as the home to mankind and be able to develop national as well as international understanding of people living under different natural environments.

Of all school subjects, 'Geography' is perhaps the best suited to bring about the international understanding as geography can show not only how people have lived and are living, but also what they have contributed to the common heritage of mankind as a result of the synthesis between environments and human activities. It is, therefore, desirable that the fundamentals of geography of some typical regions where men live and work, with somewhat greater details of geography of the home country should be incorporated in the geography syllabus for classes VI – VIII in all secondary schools. A graded course of different aspects of physical and cultural environment for the different age groups should also be included to stimulate the desire of the pupils in learning geography as a synthetic science. The syllabi in Geography for the classes IX & X form the foundation of higher studies in Geography. It would provide the ideal bridge for moving to the next phase of learning.

***The Objectives* :-**

1. To develop the knowledge of geographical facts, principles and terms.
2. To develop the ability to recognise the effects of climate and topography on human activities.
3. To develop the understanding to relate geographic principles and knowledge to explain the socio-economic activities and characteristics of people in India in particular and in other parts of the world in general.
4. To develop the ability to understand the necessity for interdependence of regions and people.
5. To develop the ability to relate geographic principles and knowledge to problems involving the development of man and material resources.
6. To develop the ability to use space and time concepts in solving problems (in a very broad way).
7. To develop the ability to read and interpret maps.
8. To develop the ability to prepare maps, sketches, charts, diagrams and models.
9. To develop an understanding about environments and its relationship with human activities.
10. To develop a sense of awareness of the lives and activities of the people of India and some selected regions of the world.
11. To develop a sense of national integration of India and interdependence of the different regions and people of the world.
12. To make the learners aware of the natural process operative in the physical environment and also to make them conscious about the danger of unwarranted human interference inflicted on the nature.

Syllabus for Class IX

1. Meaning, nature and scope of Geography

2. **PHYSICAL:**

2.1 **Earth as a planet**

2.1.1 Movement of the earth –rotation and revolution and their effects, formation and length of days and nights, change of seasons, deflection of planetary winds.

2.1.2 Determination of the location of a place on the earth's surface –properties of parallels of latitude and meridians of longitude , angular measurements and their interrelationship. Longitude and time (Mathematical calculation necessary). International Date line and antipodes.

2.2 Lithosphere

2.2.1 Rocks, their broad classification based on their origin-igneous, sedimentary and metamorphic Rocks

2.2.2 Earthquakes-causes and effects.

2.3 Environmental Geography

2.3.1 Concept of environmental pollution with special reference to land, water and air pollution

3. **REGIONAL :**

3.1 India

3.1.1 Location of India, Political divisions of Indian Union into states and union territories , basis of their delineation

3.1.2 India's neighbouring countries: Nepal,Bhutan, Bangladesh,Myanmar, Srilanka and Pakistan

3.1.3 Economic Geography of India

3.1.3.1 Concept of resource , a broad overview of Indian resources.

3.1.3.2 Mineral and power resources-iron ore, bauxite, mica,coal, petroleum,electricity : thermal and hydel; non-conventional power resources

3.1.4 Population Geography of India

3.1.4.1 Population distribution and density

3.1.4.2 Centres of population concentration : major cities and ports

3.1.5 Type regions of India: **i)** The Hooghly Industrial Belt, **ii)** Haldia Industrial Complex, **iii)** Chhotanagpur region **iv)** Gujarat State.

3.2 **Asia**

3.2.1 Location and geographic importance

3.2.2 Type regions:

i) Yang-tse Kiang basin of China

ii) Tokyo-Yakohama and Kobe-Osaka Industrial Region of Japan

iii) Oil producing region of South-West Asia with special reference to Saudi Arabia and Iran

Desk Work: Drawing of Map, Identification of important places and natural/resource region or centres, sketches of physical features as per syllabus of Class IX

Syllabus for Class X

1. PHYSICAL

1.1. **LITHOSPHERE**

1.1.1 Landforms and their classification

1.1.2 Mountains-fold, block, volcanic and relict mountains

1.1.3 Plateaus-dissected, intermontane and lava plateaus

1.1.4 Plains-alluvial flood plains, deltaic plains and coastal plains

1.1.5 Weathering of the earth's crust-mechanical and chemical, their causes and effects –formation of soil.

1.1.6 Works of rivers, glaciers and winds as agents of erosion and deposition

1.2. **ATMOSPHERE**

1.2.1 Composition of the atmosphere

1.2.2. Major factors influencing air temperature and pressure, temperature and pressure belts of the world.

1.2.3 Mechanism and types of winds , humidity and precipitation(interrelationship among different elements of weather and climate wherever possible.

1. 3. HYDROSPHERE

1.3.1 Ocean Currents

1.3.2. Tides

2. REGIONAL

2.1 India

2.1.1 Physical Geography of India

2.1.1.1 Relief – Physiographic divisions with salient features

2.1.1.2 Drainage – major rivers and their characteristics

2.1.1.3 Climate – climatic regions, seasons, vagaries of monsoon – drought and flood

2.1.1.4 Natural vegetation and soil – major types and characteristics

2.1.2 Economic geography of India

2.1.2.1 Agriculture – importance and forms of irrigation major crops : food crops – rice ,wheat, plantation crops- tea and coffee, fibre crops- cotton and jute.

Industries : Textiles – cotton and jute; Iron and steel; Engineering – locomotives and automobiles;

petro-
chemical.

2.2 Asia

2.2.1 An outline of physical features- relief, drainage, climate and natural vegetation.

Desk work: Drawing of map, identification of important places and natural/resource region or centres, sketches of physical features as per syllabus of class X.

Applicable for Examinees of Secondary Examination :-

Selected topics from the syllabi of the classes vi, vii, and viii

1. West Bengal 2.Nile Basin 3. Lake Region of USA.

Class IX

UNIT	TOPIC
1st	• Meaning, nature and scope of Geography • Earth as a planet • Location of India, Political divisions of Indian Union into states and union territories , basis of their delineation • India's neighboring countries: Nepal, Bhutan, Bangladesh, Myanmar, Srilanka and Pakistan • Rocks, their broad classification based on their origin-igneous, sedimentary and metamorphic Rocks
2nd	• Movement of the earth –rotation and revolution and their effects, formation and length of days and nights, change of seasons, deflection of planetary winds. • Economic Geography of India • Concept of resource, a broad overview of Indian resources. • **Asia** • Location and geographic importance • Type regions: Yang-tse Kiang basin of China Tokyo-Yakohama and Kobe-Osaka Industrial Region of Japan

	Oil producing region of South-West Asia with special reference to Saudi Arabia and Iran
3rd	• Determination of the location of a place on the earth's surface –properties of parallels of latitude and meridians of longitude , angular measurements and their interrelationship, longitude and time (Mathematical calculation necessary). International date line and antipodesWater • Mineral and power resources-iron ore, bauxite, mica,coal, petroleum,electricity : thermal and hydel; non- conventional power resources • Type regions of India: **i)** The Hooghly Industrial Belt, **ii)** Haldia Industrial Complex, **iii)** Chhotanagpur region **iv)** Gujarat State.
4th	• **Environmental Geography** • Concept of environmental pollution with special reference to land, water and air pollution Nitrogen
5^{th} (Oral)	• Earthquakes-causes and effects • Population Geography of India • Population distribution and density • Centres of population concentration : major cities and ports

SUBJECT : LIFE SCIENCE

Classes IX –X

Aims and objectives

The aim of Life Science syllabus for secondary students is to pertain the basic concept of the origin, structure and maintenance of the life process in the living organisms. The teachers should introduce the fundamental knowledges to the student with a view to imbibe within them the interest of Life Science and to explore the possibility of the application of these knowledge in the human welfare. It will also help in the arousal of awareness and interest of human environment.

The objectives of the Study of Life Science

1. To awaken pupils' curiosity and interest in the plant, insect and animal life around him in his environment.
2. To form in the pupils' habits of accurate observation and of testing knowledge by experiment.
3. To arouse awareness in the pupils of mutual interdependence of life-forms in nature and their relationship with the environment as a whole.
4. To give pupils an intelligent and appreciative insight into the working of the life processes in nature's kingdom.
5. To kindle pupils' love for Animals (fauna) and plant (flora).
6. To develop in the pupils of upper forms a spirit of research with a view to enriching human life.
7. To develop knowledge, information and understanding about social problems which are essentially biological in nature.
8. To develop secular, liberal, scientific and reasoning mind among the students.
9. To develop physical, mental, intellectual and emotional aspects of the students in a balanced way.
10. To develop a sense of co-operation and understanding among the different people in different parts of the country and among different countries in relation to balanced distribution of natural wealth and resources.
11. To develop understanding and awareness of pollution, conservation and development of environmental resources. This is for sustainable development and to avoid wanton wastage of natural resources.
12. To develop ideas of unity among people, right to judicious exploitation of natural resources.
13. To develop national integration and international understanding in relation to Bio- diversity, natural resources and commonness about life processes and diversity in form and function thus promoting peace in the world perspective.
14. The overall knowledge about the living world, distribution of natural resources and man's position in nature would help to develop the sense of a good citizen of a democratic country.

SYLLABUS FOR CLASS IX

Topic I—Photosynthesis and Respiration:

A. Photosynthesis

Definition, explanation and overall reactions only. Components—CO_2, chlorophyll, Sunlight, Water – their sources and role, Site of photosynthesis, significance of photosynthesis: Entrapping of solar energy and its conversion to potential energy in food. Detail mechanism of Dark and Light reactions are not required. Conversion of glucose to starch and its transport to storage organs. $CO_2 - O_2$ balance.

B. **Respiration**

Definition and explanation, Site of respiration, Difference between respiration & combustion. Simple idea about aerobic,

anaerobic respiration and fermentation.

Difference between aerobic & anaerobic respiration.

Respiratory organs in animals – Body Surface, skin, gill, accessory respiratory organs, trachea, lung.

Significance of respiration – Release of energy, $O_2 - CO_2$ balance.

Topic II – Nutrition: Metabolism and Digestion, Food, Vitamins, Enzymes, minerals and water.

Nutrition – Definition, its significance and importance.

Food—as source of energy. Types – Carbohydrates, Fats, and proteins – their sources and importance in nutrition, Micro and Macro elements in plants& animals &its importance (classification not required).

Vitamins – its importance. A, B – Complex, C,D, E, K—sources of these vitamins and their deficiency symptoms in man (Chemical nature not required).

Water – Importance in nutrition.

Plant nutrition—Autotrophs & heterotrophs (Definition & example), Essential micro & macro—elements in nutrition & their sources.

Animal nutrition – Phases of nutrition (Ingestion, Digestion*, Absorption, Assimilation and Egestion along with the names of the structures concerned with reference to man).

*Enzymes—Definition, Characteristic features. Digestive enzymes with example and their role in digestion.

Diet – Definition. Metabolism – Anabolism and catabolism (definition only). B.M.R – definition only. Total calorie requirements of human being; concept of Balance diet.

Topic III –Circulation

A. **Plants**

Definition and medium of transport, Osmosis & diffusion – definition and its role in circulation. Ascent of sap through xylem, absorption through root, (root pressure, adhesion- cohesion force & transpiration pull to explain ascent of sap). Transportation of food through phloem (detail process not required).

Transpiration: Definition, factors affecting transpiration and importance. Experiment to demonstrate the rate of transpiration in plants.

B. **Animals**

Definition and medium of transport circulating fluid, Blood: Components of blood, Plasma, Thrombocytes, R.B.C, W.B.C.(detail types not required), respiratory pigments – mention heamoglobin & haemocyanin. Lymph and its importance; Blood groups in elementary way (mention A, B, O, groups RH factor and importance). Functions of blood –

(i) Transportation (food, vitamins, minerals, oxygen, carbon dioxide, hormones, metabolic waste).

(ii) Coagulation.

(iii) Immunity

(iv) Protective function and

(v) Regulation of temperature circulatory system, Components of circulatory system (heart, artery, vein, capillary – No description of individual system). Basic idea of open and closed circulation with example (Cockroach & Human). Blood circulation through human heart (with diagrammatic representation).

Topic IV – Movement and locomotion

Difference between movement and locomotion.

Purpose of locomotion.

Mention locomotory organs in amoeba, earthworm, cockroach and fish.

Mention the role of myotomes and fins in fish locomotion, Bipedal locomotion in Man – details of structure and mechanism not needed.

Absence of locomotory organs in majority of plants. Types of movements in plants: (i)Tactic (ii)Tropic (phototropic, Geotropic and Hydrotropic) (iii) Nastic.

Topic V – Environment, Ecosystem & Conservation

(A) Environment : Definition (mention: Lithosphere, Atmospheres, Biosphere, Hydrosphere) Bisophere – Definition. Biogeochemical cycles – Oxygen, Carbon and Nitrogen cycle.

(B) Ecosystem : Definition, Components of ecosystem (biotic & abiotic), definitions of Food chain, Food web, Ecological Pyramids and Energy flow in ecosystem.

(C) Conservation : Definition and importance :

Necessity & ways of water, soil & forest conservation. Wild life – Definition, Causes of wildlife depletion, necessity & ways for wildlife conservation. Definition of Sanctuary, National park, Reserve forest with examples.

SYLLABUS FOR CLASS X

Topic I – Excretion

Definition and explanation.

Plants : Means of removal of excretory products. Mention shedding of leaves, bark and fruits. Types of excretory products and its economic importance (gums, resins, alkaloid and latex).

Animal: Human nephron as structural and functional unit of kidney. Excretion of nitrogenous wastes through kidney after reabsorption of essential substances. Mention in brief the role of Skin. Lungs, Liver in animal excretion.

Topic II-- Nervous System and Sense organs with reference to human being

Nervous system: Outline classification and components of

Nervous System; Neurone- Structural and functional unit.

Nerves – afferent and efferent types, synapse, ganglion, reflex action with common examples. Central nervous system (Brain and Spinal cord – components & functions).

Sense organs:

(i) Eye: structure and function.

(ii) Ear structure and function (details not required).

(iii) Sensory functions of Tongue, Skin and Nose.

Topic III-- Hormones

Plant hormones:

General idea, definition, characteristics, site of formation, functions and common examples of natural and synthetic hormones of: Auxin, Gibberellin and Cytokinin.

Animal Hormones:

Endocrine, exocrine glands & mixed glands—definition & example. Site of secretion &function of the following hormones

in man: Anterior pituitary, (ACTH, GH, TSH, GTH), insulin (Pancreas), Thyroxin(Thyroid), Adrenalin(Adrenal), Oestrogen, Progesteron, Testosteron (Gonads).

Topic IV – Cell & Cell Division

Definition, Prokaryotic and Eukaryotic cells. Difference between Prokaryotic and Eukaryotic cells. Morphology of eukaryotic chromosome (mention chromatid and centromere). Composition of eukaryotic chromosome (mention—DNA, RNA & Protein). Definition of autosome, sex chromosome and gene. Cell division—Types: Amitosis & Mitosis & Meiosis (definition occurrence and significance with example).Cell cycle: definition and phases only.

Mitosis – in Plants & Animals – Stages of mitosis, important features with diagrams. Cytokinesis – definition and differences between plants and animals.

Topic V – Reproduction and Heredity

Definition & importance of vegetative, asexual, sexual reproduction & parthenogenesis. Examples from plants and animals. Alternation of generation : Definition and example. Heredity –Definition & explanation : Experiments on Mendel's monohybrid dihybrid cross (experiments). Mention Laws of Mendel, Mention the reasons for choosing pea plants for mendel's experiments. Mention 7 pairs of contrasting characters in pea plants. Mendelian inheritance in Guineapig/Drosophila. Outline concept of sex determination in Man.

Topic VI -- Evolution

Definition and Explanation. Evidence: morphological (basic similarity in certain organs like limbs, heart & vestigial organs) and palaentological (Horse). Theories of evolution – Lamarckism & Darwinism (as put forwarded by Lamarck & Darwin).

Topic VII – Adaptation

Definition and explanation. Adaptive features of the following plants &animals – Plants : Lotus, Cactus, Sundri.

Animals: Rohu fish, pigeon.

Topic VIII – Virus, Microbes, Diseases & Hygiene

(A) Virus : Definition and characteristics (detail structure not required).

Bacteriophage (definition, example & significance).

Pathogenic viruses – Influenza, HIV and Polio virus (mode of

transmission).

(B) Microbes – Definition and types (Bacteria, Fungi & Protozoa only).

Bacteria – Definition and significance-

(a) beneficial – Lactobacillius and Rhizobium,

(b) harmful – *Vibrio cholerae*, *Mycobacterium leprae*, *Mycobacterium tuberculosis* and *Salmonella typhosa*.

Fungus – Definition and significance –

(a) beneficial – *Penicillium* and *Saccharomyces cerevisiae*.

(b) Harmful – *Aspergillus* and *Puccinia graministritici*.

Protozoa – Definition and significance.

Pathogenic protozoa – *Plasmodium* and *Entamoeba*.

(C) Disease and hygiene –

Diseases caused by carriers – House- fly, Mosquito.

Diseases caused by blood transfusion mainly AIDS, Hepatitis and Malaria.

Use of Common disinfectants, Vaccination and Immunisation (outline ideas only).

CLASS IX

5th Topic
5th Topic
5th Topic

Unit Test	Topic	Unit
1st	1st Topic	• Photosynthesis and Respiration
2nd	2nd Topic	• Nutrition, Metabolism, Digestion, Food Vitamins,Enzymes,Minerals and Water
1st Remedial	1st Topic and	Mentioned earlier

	2nd Topic	
3rd	3rd Topic (b)	• Animal Circulation
4th	3rd Topic (a) and 4th Topic	• Plant Circulation • Movement and Locomotion
2nd Remedial	3rd, 4th Topic	Mentioned Earlier
5th (Oral)	5th Topic	• Environment , Ecosystem and Conservation

SUBJECT: PHYSICAL SCIENCE

Classes IX-X

Introduction:

1. In preparing the syllabus all the present syllabi of equivalent courses viz. ICSE, CBSE etc. have been considered in depth. It has been made uptodate keeping in mind the socio-economic needs of students in general of our state.

2. It will serve the purpose of terminal education at this stage and entry to Higher Secondary level.

Objectives:

1. To initiate students into the realm of play and interplay of the laws of science in life and matter around.

2. To rouse in young mind a spirit of enquiry about the nature of matter and forces in nature.

3. To develop scientific attitude and enable the students to know and understand some basic principles, concepts and laws involved in the natural phenomena around with special reference to Physical Science.

4. To make the students realise the impact of science and technology on the society and to enable the students to understand with insight the application of science and technology in the service of man and also to realise some evil effects of improper use of science and technology.

5. To develop respect for the philosopher-scientists whose contributions have benefited mankind.

6. To acquire problem solving and decision making skills through application of the knowledge and understanding of the subject towards tackling problems in the life situation.

7. To develop scientific values and to remain free from irrational beliefs and superstitions.

8. To understand the hazards of environmental pollution with particular reference to air, water, soil and noise and to suggest possible remedial measures particularly in local situation.

9. To enable the students to realise the necessity of judicious use of natural resources and to avoid unnecessary and wanton wastage and destruction of such resources and to inculcate among the students the idea of sustainable development.

10. To make the students appreciate the dignity of labour and the importance of learning by doing and to enable them to take up simple project work.

Syllabus for Class IX

Common to Physics and Chemistry

1. System of measurements and measuring devices:

Physical quantities, Scalar and vector quantities. Units of physical quantities. All physical quantities do not have units. Fundamental and derived units (CGS and SI units).

Idea of dimensions of physical quantities. Reason for using different smaller and larger units for measuring particular quantity. Measuring devices : ordinary scale, common balance, spring balance, measuring cylinder, clock and stopwatch. Measurement of density of an irregular solid by using common balance and measuring cylinder.

2. Matter and energy:

Mass and weight, distinction between mass and weight, measurement of mass by common balance and measurement of weight by spring balance (Mention). Conservation of mass – burning of magnesium and burning of candle (experiment), examples from everyday life (two examples). Conservation of energy, different forms of energy like heat energy, light energy, sound energy, electrical energy etc., transformation of energy (non-quantitative treatment). Transformation of energy in everyday life to be explained. Sun is the most important source of energy on earth. Energy crisis: awareness, non-conventional sources of energy – solar, wind, tidal. Mention of Einstein's idea regarding conversion of mass and energy ($E = mc^2$). Conservation of mass and energy as a whole (mention only).

3. Change of state:

Freezing, melting, boiling, evaporation and condensation. Melting point and boiling point: Factors (pressure & presence of other substance) affecting them – Constancy of temperature during melting and boiling. Regelation, Cutting of ice by metallic wire. Principle of pressure-cooker. Distinction between boiling and evaporation. Condensation. Formation of dew, fog and cloud.

Idea of latent heat – Cooling by evaporation due to latent heat e.g. cooling by pouring ether or methylated spirit on the hand. Cooling of water in an earthen pitcher. Freezing mixture-one common example and its use.

Physics

1. Rest and Motion:

Rest and Motion with respect to some fixed body. Rest or Motion of objects is a relative term.

2. Displacement, Speed, Velocity and Acceleration:

Definition and illustration, distinction between speed and velocity. Idea of average speed. Idea of acceleration negative or positive. Units of speed, velocity and acceleration.

Deduction of **v = u + ft** Simple numerical examples.

3. Newton's Laws of Motion:

(Rotational motion excluded) statement of laws, inertia of rest and inertia of motion. Definition of force and momentum. P = mf (Deduction not required). Force of reaction with two common examples and its application in modern jet planes and space rockets. Points of application of action and reaction to be explained.

Simple numerical examples.

4. Work, Power, Energy:

Definitions with suitable examples, units. Relation between power and work. Potential and Kinetic energy – definitions with examples, Mathematical expression (Deduction not required).

5. Simple Machines:

Lever, Inclined plane, Wheel and axle (non-mathematical) – Definitions with illustration. Mechanical advantage – in case of lever and inclined plane.

6. Light:

Characteristics of image formed by a plane mirror, regular and irregular reflection. Lateral inversion. Images formed by parallel and perpendicular plane mirrors.

Refraction of light: phenomenon of refraction, Laws of refraction. Deviation of rays towards and away from the normal. Two natural phenomena depending on refraction.

Critical angle and Total internal reflection –Condition of total internal reflection, illustration. Formation of mirage in desert only.

Simple idea of velocity of light and its high value.

7. Sound:

Sources of sound, propagation of sound, material medium necessary. Characteristics of wave motion, frequency, wavelength, velocity ($V= n\lambda$), amplitude, natural and forced vibration (qualitative) only, reflection of sound and Echo, simple practical application, minimum distance of reflector for momentary sound. Simple problems.

Musical sound and noise – Difference, characteristics of musical sound.

Noise pollution, hazardous effect on public health. Possible remedial measures.

Chemistry

1.i) Identification of matter: Physical and Chemical properties.

How matters (solid, liquid and gas) differ in physical properties (touch, colour, smell, solubility, magnetic property) and chemical properties (action of heat, treatment with water, acids and alkalis). Characterisation of solid by melting point and liquid by boiling point. Differentiation of matter by touch (graphite and chalk; glycerine and water) smell (ammonia and oxygen), colour (blue vitriol and chalk powder), magnetic property (iron and aluminium), by heating (magnesium and platinum wires), by the action of water (quicklime and sugar), by the action of acid (zinc and copper), by the action of alkali (ammonium chloride and sodium chloride).

ii) Physical and chemical change :

Distinction between physical and chemical change – explanation with illustration – slaking of lime**,** rusting of iron, burning of coal, candle, straw, burning of magnesium wire, melting of ice, heating of platinum wire.

Physical and chemical changes take place simultaneously, burning of candle.

Mention of one natural physical change (melting of glacier) and one natural chemical change (forest fire).

Factors which induce and regulate chemical change: contact, temperature, pressure, catalyst. Chemical reaction by contact (conc. H_2SO_4 and sugar, quicklime and water, mention of white phosphorous and iodine).

Slow and fast reactions (elementary idea with example only): Catalysis and catalyst : Definition only – catalyst enhances the rate of a chemical reaction by participating in it, but remaining unchanged at the end – example of catalytic role of MnO_2 in the preparation of O_2 from $KClO_3$ (autocatalysis, inhibitors etc. not required).

Importance of catalyst (mention only).

Exothermic and endothermic changes both physical and chemical: Typical examples: slaking of lime (chemical change), dissolution of NH_4Cl or NH_4NO_3 in water (Physical change).

iii) Separation of mixtures:

1. By fractional distillation of two miscible liquids.
2. By separating funnel of two immiscible liquids.
3. By simple paper chromatography of the colouring matters of ink (theory not required).
4. By sublimation – NH_4Cl and sand.

iv) Metals, non-metals and metalloids:

Basic characteristics with typical examples.

2. Solution:

Solvent and solute, solution of solid in liquid, liquid in liquid and gases in liquid (simple examples like air dissolved in water, aerated water), unsaturated, saturated and super-saturated solutions – definition with example, Identification of unsaturated and saturated solutions of solid in liquid. Simple idea of colloid on the basis of practicle size. Mention of suspended particulate matter in air leading to air pollution.

Solubility (Definition and examples – problems not required). Effect of temperature, and pressure (in case of gas in liquid only) on solubility (effect of temperature on the solubility of $CaSO_4$, KNO_3, NaCl – experimental determination of solubility, and solubility curve not required). Crystals and Crystallisation. Water of crystallisation. Efflorescent and deliquescent substances – definitions and examples. Drying agents (simple examples like anhydrous $CaCl_2$, anh. Na_2SO_4 and $MgSO_4$, conc. H_2SO_4).

Unit of concentration: in g/L, and in percentage (W/V only).

3. Chemical reaction and chemical equation:

Types of chemical reaction: Direct combination decomposition, double decomposition, acid-base, oxidation-reduction, addition, substitution, rearrangement (Definition with example only).

Chemical equation: Significance and Limitations of chemical equation, balancing of simple equations by trial & error method.

4. Oxygen:

i) Preparation of oxygen (statement and equation only) by heating $KClO_3$ and MnO_2, $KMnO_4$, $Pb(NO_3)_2$, (No experiment required).

ii) Reaction of oxygen with C, S, Ca, Mg (equations and statements only)

iii) Uses of oxygen. Identification, absorbent of oxygen.

iv) Gradual depletion of oxygen in atmospheric air and its possible remedy.

5. Oxides, acids, bases and salts:

Types of oxides – acidic, basic, neutral and amphoteric oxides (Definition with common examples). Arrhenius concept of acids and bases. Important properties with regard to indicators (litmus, phenolphthalein and methyl orange). Salts: normal and acid salts.

Neutralisation (definition with example).

Uses of indicators for the determination of end point (litmus, phenolphthalein and methyl orange) of neutralisation reaction. Vanishing colour.

6. Water:

Hard and soft water. Temporary and permanent hardness caused by soluble calcium and magnesium salts. Removal of temporary hardness by boiling and both types of hardness by ion-exchange process.

Deionised water.

Water as versatile solvent.

Action of sodium and calcium on cold water.

Simple idea of activity series of metals.

Water pollution (presence of As, F^- in natural water, by the use of fertilizers, insecticides, and pesticides, by dumping of chemical effluent. Supply of Ars-free water).

Water crisis, avoiding wastage of water and its judicious use. Harvesting of water for agriculture.

7. Nitrogen:

i) Laboratory method of preparation: Chemicals required, condition, collection, drying, equation and apparatus required.

ii) Physical properties – State, smell, density, solubility.

iii) Chemical Reactions with hydrogen, oxygen, magnesium and calcium carbide (formation of nitrolim).

Significance of the presence of nitrogen in air.

iv) Uses.

8.
Ammonia:

i) Laboratory preparation: Chemicals required, condition, collection, drying, chemical equation and apparatus required. Precautions to be taken during preparation of ammonia. Ammonia is obtained by heating any ammonium salt with base.

ii) Physical properties – Smell, density, solubility (fountain experiment) aqueous solution of ammonia alkaline, liquor ammonia.

iii) Chemical properties: Burning of NH_3 in Oxygen.

Reaction with acids (HCl, H_2SO_4, HNO_3), reaction with alkali metal (Na only) and non-metal (chlorine only).

Reducing property (reaction with CuO)

Reaction of aqueous ammonia with aluminium chloride and ferric chloride solutions (precipitation reaction).

iv) Precaution to be taken to combat the effect of NH_3 leaked from industries and ammonia tanks.

v) Identification.

vi) Uses of NH_3

9. Sulphuretted hydrogen (H_2S):

i) Laboratory preparation: Chemicals required, condition, collection, drying, chemical equation and apparatus required. Precautions to be taken during preparation and handling (Preparation in Kipp's apparatus not required). Choice of acid for the preparation of H_2S. (Why H_2SO_4 & not HCl or HNO_3)

ii) Physical properties – Smell, density, solubility (aqueous solution acidic).

iii) Chemical properties:

Combustible, not a supporter of combustion. Acidic properties: reaction with alkali (NaOH). Reducing properties: reaction with Cl_2, SO_2, HNO_3, H_2SO_4, $FeCl_3$. Simple precipitation reaction (reaction with $CuSO_4$ and $Pb(NO_3)_2$

iv) Identification.

v) Uses.

10. Carbon:

Allotropes of carbon (diamond, graphite & fullerene) physical properties & burning in oxygen.

Availability of carbon in different places in free state and in compound forms or as a by-product. Uses.

CO_2 : A green house gas, global warming.

Probable measures to keep the balance of CO_2 in air.

Pollution of air by CO.

11. Fuel: (carbonaceous)

i) Classification of fuel: solid, liquid, gaseous (examples only).

ii) Fossil: Coal, coke and coal gas (Industrial production of coke and coal gas not required). Uses of coke and coal gas.

Petroleum: Different fractions obtained by fractional distillation of petroleum (mention only and their uses). LPG and natural gas, CNG (simple discussion in a qualitative way), uses.

Air pollution due to combustion of fuels.

Syllabus for Class X

Common to Physics and Chemistry

1. Structure of Atom:

Concept of atom, Dalton's atomic theory (critical study not required). Nucleus, and extranuclear electrons. Structure of nucleus – constituents (protons and neutrons only). Simple mention of nuclear force.

Mass and charge of electron, proton, neutron.

Planetary model of atom – similarities and dissimilarities with solar systems.

Distribution of electrons in K,L,M,N shell: Electronic configuration upto Calcium.

Atomic number and mass number.

Atomic mass (based on $^{12}C = 12.00000$).

Nuclide (an atom with a particular atomic number and mass number).

Isotopes (Definition) – Isotopes of hydrogen, oxygen, carbon, chlorine. Isotopes have similar chemical properties. Ions – definition with example.

2. Properties of gases – pressure and temperature:

Boyle's Law: statement and explanation with mathematical expression.

Charles' Law: statement and explanation with mathematical expression. Concept of Kelvin (absolute) temperature. Kelvin Scale – relationship with Celsius scale.

Charles' Law in terms of Kelvin temperature.

Standard temperature and pressure (STP)

Combined Charles' Law and Boyle's Law $PV/T = Constant$

Simple numerical problems. Brief mention of the motion of gas molecules and dependence of pressure and temperature on such motion (very elementary non-mathematical discussion).

3. Avogadro's Law:

Concept of molecules.

Statement and explanation of Avogadro's Law.

Molecular mass based on $^{12}C = 12.00000$.

Gram atomic mass and gram molecular mass.

Molar Volume.

Statement of deductions from Avogadro's Law (deduction not required): Molecules of common elementary gases like hydrogen, oxygen, nitrogen are diatomic, Gram-molecular volume of all gases at STP is 22.4 litres.

Avogadro number (definition with explanation).

Mole – Unit of amount of substance.

4. Simple weight – weight calculations using chemical equation.

Physics

1. Heat:

Heat and temperature – (Definition and difference), Unit of heat. Celsius, Fahrenheit scale of temperature and numerical examples on conversion.

Factors determining the quantities of heat – idea of specific heat. Unit – cal/gm/°C, principle of calorimetry. Definition of thermal capacity and water equivalent. Simple numerical examples.

2. Light: Lens & Dispersion:

Lens – Convex and Concave, optical centre – Focussing action and focal length, linear magnification, distinction between real and virtual images; Formation of magnified real and virtual images by a convex lens; magnifying glass.

Dispersion of light – Definition, dispersion of white light by a prism. Spectrum – Pure and impure (distinction only).

3. Current Electricity & Electromagnetism:

Current – charges in motion

Concept of emf, potential difference – Ohm's Law and resistance; units of current, emf and resistance, dependence of resistance on length and cross-section, resistances in series and parallel, simple problems.

Demonstration with dry batteries, resistances, torch-light lamps and switch.

Heating effect of current – Joule's law with practical application to heater and electric iron; Electrical power and energy, household consumption.

Household circuits – switches, fuses, three-pin plugs, earthing, colour coding of wires.

Magnetic effect of current, Ampere's swimming rule. Action of magnet on current, Fleming's left hand rule, Burlow's wheel and application in case of a motor, electromagnet – its strength and use; use of voltameter and ammeter.

4. Modern Physics:

Thermionic emission (Basic idea – no analytical details) and hot cathode ray tube: diode valve (Principle only).

Principle of production of x-rays – properties and uses.

Natural Radioactivity – the nature of α, β and γ rays, (charge and mass), penetrating power; radioactivity – a nuclear phenomenon, hazards and safety precautions.

Simple idea of fission, fusion (only qualitative idea)

Chemistry

1. Periodic Table:

A. Periodicity of properties of elements.

Mendeleef's periodic law.

Modified Mendeleef's periodic law.

Periodic table based on modified periodic law (atomic number)

Periods, groups & sub-groups (mention only).

Periodic properties and their variations in periods (2nd & 3rd periods) and groups (Li, Na, K) and (F, Cl, Br, I), -- atomic size, metallic character, non-metallic character, electronegativity (Pauling's definition only).

Position of hydrogen, alkali metals, halogens and inert gases in the periodic table.

B. Modern long form of periodic table (IUPAC numbering of groups): Full table to be shown but to be studied upto period 3 (upto Kr).

(Whole topic to be discussed in elementary way.

Idea of transition elements not to be given).

2. Chemical Bonding:

What is a Chemical bond?

Simple idea of electrovalent and covalent bonds formed by transfer and sharing of electrons respectively. Characteristic properties of electrovalent and covalent compounds and difference between them. Electron – dot structures of: NaCl, CaO, H_2 , O_2, N_2, HCl, H_2O, CH_4.

3. Electronic theory of oxidation and reduction:

(Simple idea only)

Oxidation: Loss of electron

Reduction: Gain of electron.

Oxidant & Reductant.

Simple examples.

Oxidation and reduction take place simultaneously – electronic explanation.

4. Electrolysis: electrolytes and non-electrolytes:

Ions and migration of ions during electrolysis. Elementary idea of electrolytes and non-electrolytes. Acids, bases and salts as electrolytes.

Electrolysis (definition), voltameter and electrodes.

Electrolysis of water with Pt-electrodes, and electrolysis of copper sulphate with copper electrodes.

Application of electrolysis: (1) Electroplating (with copper), nickel and (2) Extraction of metals (example with the extraction of aluminium only. Only materials with their physical states and electrodes required. No technical description or equation required). (3) Prification of copper.

5. Hydrogen Chloride (and Hydrochloric acid), Nitric acid and Sulphuric acid:

Laboratory method of preparation of hydrogen chloride and hydrochloride acid from sodium chloride.

Preparation of nitric acid from chili salt petre. Fuming nitric acid. Catalytic oxidation of ammonia for the production of nitric acid. (only principle – conditions and equations. No technical discussion required).

Contact process for the manufacture of sulphuric acid (only principle – conditions and equations. No technical discussion, diagram, etc. required).

S → SO_2, SO_2 → SO_3 (condition only)

SO_3 —98% H_2SO_4→ H_2SO_4

Fuming sulphuric acid.

Pollution of air by SO_2 – from automobiles, metallurgical process of S–containing ores (mention only), from oil refineries. Danger to historical monuments like Tajmahal. (Stone cancer), possible remedial measures.

Physical properties of HCl, HNO_3, H_2SO_4: Colour, odour, solubility, density and boiling point.

Chemical properties of HCl, HNO_3, and H_2SO_4

Reactions: with alikali, with metals (Mg, Fe and Cu), with $AgNO_3$ and $BaCl_2$.

In case of HNO_3 reaction in hot and concentrated condition only with the above metals.

Oxidising action of conc. HNO_3 and conc. H_2SO_4 (on Cu-turnings and charcoal)

Dehydration action of conc. H_2SO_4

Ring test for HNO_3 (Demonstration)

Identification and distinction of the three acids – by $AgNO_3$, $BaCl_2$ and Cu-turnings.

Aqua regia (equation not required) – its use.

Pollution (of air, water) from goldsmith's workshop – its possible remedy, Acid rain (due to presence of SO_2 & NO_2 in air).

Uses of hydrochloric acid, sulphuric acid & nitric acid.

6. Some important substances – nature and uses:

Washing soda, common salt, bleaching powder, slaked lime, copper sulphate, ammonium sulphate, urea, soap, detergent, methylated spirit, vinegar, rectified spirit, naphthalene.

Regarding nature the following points are to be studied:

(i) solid, liquid or gas (ii) colour (iii) odour (iv) volatility (v) solubility in water (vi) acid, base or salt (vii) organic or inorganic (viii) hazard, if any.

Hazard of using ammonium sulphate repeatedly as a fertilizer, Health hazard of using copper sulphate for colouring vegetables and as pesticides.

7. Some metals: aluminium, magnesium, zinc, iron, copper:

Important ores (definition of ore to be given) and uses.

Reaction with (i) air, (ii) water, (iii) alkalis.

Alloy – an elementary idea.

Advantage of using alloys over pure metals (Qualitative idea)

Some important alloys: Brass, stainless steel, bronze, duralumin – their composition and uses only.

8. Organic Chemistry:

A. What is organic chemistry?

The role of organic compounds in life process, Biomolecules – definition, some biomolecules such as carbohydrates, amino acids, proteins, RNA, DNA – mention only in elementary way. Structures not required.

Bonding in organic compounds (covalent) – different from inorganic compounds (ionic and covalent)

Functional group and elementary classification: Hydrocarbons (saturated and unsaturated – alkane, alkene, alkyne), alcohols (only primary alcohols), aldehydes, ketones and carboxylic acids, examples (upto three carbon atoms).

Constitutional isomerism (Definition and example).

B. Alkane – definition and general formula : Methane (only) – Source (preparation not required), will-ó-the-wisp, and uses; burning in oxygen (its value as fuel) Mention that CH_4 is a green-house gas.

Substitution reaction (1^{st} Step of the reaction with chlorine only)

C. Alkene – definition and general formula : ethylene (only) : Source (mention only, laboratory preparation or production by any method not required) and uses ; addition reaction with hydrogen and bromine only.

D. Alkyne – definition and general formula :acetylene (only) : Source (Preparation not required) and uses; addition reaction with hydrogen and bromine only.

E. Monomer and polymer – only definition with example (addition, condensation polymer or polymerisation reaction not required)

Some common polymers : Polyethylene, Teflon, PVC – their monomer and uses (structures not required)

Hazards of using these substances – their non-biodegradability. Danger of using polyethylene materials indiscriminately and possible alternative.

Class IX

UNIT	TOPIC
1st	• System of measurement and measuring devices • Matter and energy • Change of state • Rest and motion
2nd	• Displacement, Speed, Velocity, Acceleration • Newton's Laws of Motion • Identification of Matter Physical and chemical change Separation of mixtures Metals, non-metals and metalloids
3rd	• Work, Power, Energy • Simple Machines • Solution • Chemical reactions & chemical equations • Oxygen • Oxides, Acids, Bases, Salts • Water
4th	• Light upto Total Internal Reflection • Sound upto Echo, practical application & simple problems • Nitrogen • Ammonia • Hydrogen Sulphide

5th (Oral)	• Sound: Musical sound, Noise onwards • Carbon and fuel