

ENGLISH (01)

Aims:

1. To develop and integrate the use of the four language skills i.e. listening, speaking, reading and writing for the purpose of effective communication.
2. To develop a functional understanding of the grammar, structure and idiom of the language.
3. To develop the capacity to read efficiently and access information effectively.
4. To develop an appreciation of good literature.
5. To experience, through literature, the thoughts and feelings of the peoples of the world.

There will be **two** papers:

Paper 1. English Language;

Paper 2. Literature in English.

Each of these papers will be of **two hours** duration.

Paper 1: English Language (80 Marks)
Internal Assessment (20 Marks)

Paper 2: Literature in English (80 Marks)
Internal Assessment (20 Marks)

PAPER 1 -- ENGLISH LANGUAGE

(Two hours) - 80 marks

Five questions will be set, all of which will be compulsory.

Question 1: Candidates will be required to write a composition of about **300– 350** words from a choice of subjects which will test their ability to: organise, describe, narrate, report, explain, persuade or argue, present ideas coherently with accuracy and precision, compare and contrast ideas and arrive at conclusions, present relevant arguments and use correct style and format.

The subjects will be varied and may be suggested by language or by other stimuli such as pictures. The subjects will be so chosen so as to allow the candidates to draw on first-hand experience or to stimulate their imagination.

With one subject, a number of suggestions about the content of the composition will be given, but the use of the suggestions will be optional and a candidate will be free to treat the subject in any way that he/she chooses.

The organisation of subject matter, syntax, punctuation, correctness of grammatical constructions and spelling will be expected to be appropriate to the mode of treatment required by the subject.

Question 2: Candidates will have to write a letter from a choice of two subjects requiring either a formal or an informal mode of treatment. Suggestions regarding the content of the letter may be given. The layout of the letter with address, introduction, conclusion, etc., will form part of the assessment. Special attention must be paid to the format of the letter with emphasis on vocabulary appropriate to the context.

Question 3: Candidates will be given a specific situation and will be required to:

- (a) Write the text for a notice based on given directions.
- (b) Write an e-mail on the same content as the notice.

Question 4: An unseen prose passage of about **450** words will be given. Uncommon items of vocabulary, or structure will be avoided. One question will be set to test vocabulary. Candidates will be required to show an understanding of the words/phrases in the context in which they have been used.

A number of questions requiring short answers will also be asked on the passage. These questions will test the candidates' ability to comprehend the explicit content and organisation of the passage and to infer information, intention and attitude from it.

The last question will consist of a summary that will test the candidates' ability to distinguish main ideas from supporting details and to extract salient points to re-write them in the form of a summary. Candidates will be given clear indications of what they are to summarise and of the length of the summary.

Question 5: There will be a number of short answer questions to test the candidates' knowledge of **functional** grammar, structure and use of the language.

All the items in this question will be compulsory. They will consist of correct use of prepositions, verbs and transformation of sentences.

PAPER 2 -- LITERATURE IN ENGLISH

(Two hours) - 80 marks

Candidates will be required to answer five questions from the prescribed textbooks, which include Drama, Prose (Short Stories) and Poetry.

Drama and Prose (Short Stories)

Questions set will be central to the text. Candidates will be required to show that they have understood the passage and are able to clearly give their interpretation of the questions set, which should be in their own words and relevant to the text.

Excerpts may be given from the drama and prose texts leading to questions on the specific book.

Poetry

A poem, or passages from poems, will be given and questions will be set to test the candidates' response to the poem. The questions will focus on the content, understanding and the personal response of candidates to the poem as a whole.

NOTE: *The Class IX examination will be conducted on the portion of this syllabus that is to be covered during the academic year.*

The Class X - ICSE examination paper will be set on the entire syllabus prescribed for the subject.

Syllabus to be covered in Class IX

1. THE MERCHANT OF VENICE
(Shakespeare's **unabridged** play by A.W. Verity)

Drama: *Act 1 – Scenes 1, 2 & 3, Act 2 – Scenes 1 to 9, Act 3 – Scene 1 ONLY.*

1. TREASURE TROVE - A collection of ICSE Poems and Short Stories ((Evergreen Publications)

POETRY:

- (i) *The Heart of the Tree* – Henry Cuyler Bunner
- (ii) *The Cold Within*–James Patrick Kinney
- (iii) *The Bangle Sellers* – Sarojini Naidu
- (iv) *After Blenheim* – Robert Southey
- (v) *Television* – Roald Dahl
- (vi) *Daffodils* – William Wordsworth

PROSE (Short Stories):

- (i) *Chief Seattle's Speech*
- (ii) *Old Man at the Bridge*–Ernest Miller Hemingway
- (iii) *A Horse and Two Goats*–R.K. Narayan
- (iv) *Hearts and Hands* – O. Henry
- (v) *A Face in the Dark* – Ruskin Bond
- (vi) *An Angel in Disguise*– T.S. Arthur

Syllabus to be covered in Class X for the ICSE Examination - Literature in English (English Paper – 2)*

2. THE MERCHANT OF VENICE
(Shakespeare's **unabridged** play by A.W. Verity - *Complete Play*)

3. TREASURE TROVE - A collection of ICSE Poems and Short Stories (Evergreen Publications)

POETRY: All poems to be studied.

- (i) *The Heart of the Tree* – Henry Cuyler Bunner
- (ii) *The Cold Within*–James Patrick Kinney
- (iii) *The Bangle Sellers* – Sarojini Naidu
- (iv) *After Blenheim* – Robert Southey
- (v) *Television* – Roald Dahl
- (vi) *Daffodils* – William Wordsworth
- (vii) *I know why the Caged Bird Sings* – Maya Angelou
- (viii) *The Patriot* – Robert Browning
- (ix) *Abu Ben Adhem* – Leigh Hunt
- (x) *Nine Gold Medals* – David Roth

PROSE (short stories): All short stories to be studied.

- (i) *Chief Seattle's Speech*
- (ii) *Old Man at the Bridge*–Ernest Miller Hemingway
- (iii) *A Horse and Two Goats*–R.K. Narayan
- (iv) *Hearts and Hands* – O. Henry
- (v) *A Face in the Dark* – Ruskin Bond
- (vi) *An Angel in Disguise*– T.S. Arthur
- (vii) *The Little Match Girl* – Hans Christian Andersen
- (viii) *The Blue Bead* – Norah Burke
- (ix) *My Greatest Olympic Prize* – Jesse Owens
- (x) *All Summer in a Day* – Ray Douglas Bradbury

*** Please note that the Class X - ICSE Examination paper will be set on the entire syllabus prescribed for the subject.**

Note: For list of prescribed text-books see Appendix- I.

INTERNAL ASSESSMENT

Paper 1 - English Language

1. Schools will prepare, conduct and record assessments of the **Listening and Speaking Skills** of candidates as follows:

Class IX: Three assessments in the course of the year.

Class X: Two assessments in the course of the year.

2. Pattern of Assessment

a) Listening Skills

A passage of about 300 words is read aloud by the examiner *twice*, the first time at normal reading speed (about 110 words a minute) and the next time at a slower speed. Candidates may make brief notes during the readings. They then answer an objective type test based on the passage, on the paper provided.

The recommended number of candidates at a sitting is 30.

b) Speaking Skills

Each candidate is required to make an oral presentation for about two minutes, which will be followed by a discussion on the subject with the examiners, for about three minutes.

Subjects for presentation may include narrating an experience, providing a description, giving directions how to make or operate something, expressing an opinion, giving a report, relating an anecdote or commenting on a current event.

A candidate may refer to brief notes in the course of the presentation but reading or excessive dependence on notes will be penalized.

It is recommended that candidates be given an hour for preparation of their subject for presentation and that they be given a choice of subject, on a common paper.

Evaluation

The assessment will be conducted jointly by the subject teacher and the external examiner who will each assess the candidate. (The External Examiner may be a teacher nominated by the Head of the School who could be from the faculty **but not teaching the subject in the section/class**. For example, a teacher of English of Class VIII may be deputed to be an External Examiner for Class X).

Award of Marks

Listening Skills: 10 marks

Speaking Skills: 10 marks

The total marks obtained out of 20 are to be sent to the Council by the Head of the School.

The Head of the School will be responsible for the online entry of marks on the Council's CAREERS portal by the due date.

Schools are required to maintain a record of all assessments conducted in **Listening and Speaking Skills** for candidates of Classes IX and X. These include copies of the assessment tests, topics for presentation and marks awarded. The record will be maintained for a period of 2 months after the ICSE (10) examinations of the candidates concerned.

Paper 2 - Literature in English

Schools will set, assess and record written assignments by the candidates as given below:

Class IX: *Two or three assignments of approximately 300 to 400 words each.*

Class X: *Two or three assignments of reasonable length (not exceeding 1500 words in total).*

SUGGESTED ASSIGNMENTS

Assignments should be based on the prescribed textbooks on the following lines:

- (i) Character/thematic analysis;
- (ii) Socio-economic, cultural, historical relevance / background;
- (iii) Summary / paraphrase.
- (iv) Appreciation of literary qualities.
- (v) Identifying with a character. Putting oneself in the place of a character in given circumstances and explaining one's actions.
- (vi) Imagine alternative outcomes or endings in a literary piece and the effect on all concerned.

EVALUATION

The assignments/projects are to be evaluated by the subject teacher and by an external examiner. (The External Examiner may be a teacher nominated by the Head of the school, who could be from the faculty, **but not teaching the subject in the section/class**. For example, a teacher of English of Class VIII may be deputed to be an External Examiner for Class X, English projects.)

The Internal Examiner and the External Examiner will assess the assignments independently.

Award of marks (20 Marks)

Subject Teacher (Internal Examiner) 10 marks

External Examiner 10 marks

The total marks obtained out of 20 are to be sent to the Council by the Head of the school.

The Head of the school will be responsible for the online entry of marks on the Council's CAREERS portal by the due date.

INTERNAL ASSESSMENT IN ENGLISH LANGUAGE-GUIDELINES FOR MARKING WITH GRADES - AURAL ASSIGNMENT (CLASSES IX & X)

Grade	Understanding/ Comprehension Main Idea, Central Theme	Recall	Vocabulary	Context/ Correlation to Other Areas	Marks
I	The candidate accurately understands the central idea of the passage as well as the relevant points in the selected passage/ talk.	The candidate recalls all the important points made (written/ verbal).	The candidate uses appropriate and correct vocabulary while recalling the points made.	The candidate clearly understands the context and can widely correlate the passage to the other areas.	3
II	The candidate gives ideas fairly close to the central / main idea of the passage as well as understands some of the relevant points heard in the selected passage/ talk.	The candidate recalls some of the important points made (written/ verbal).	The candidate uses correct but simple vocabulary while recalling the points made.	The candidate can moderately understand the context of the passage and can moderately correlate the passage to the other areas.	2
III	The candidate cannot fully comprehend the passage and gives only a few ideas related to the central theme of the passage.	The candidate recalls very few of the important points made (written/verbal).	The candidate makes various errors in vocabulary while recalling the points made.	The candidate can only faintly understand the context of the passage and relate it to the other areas.	1
IV	The candidate is neither able to understand the central/main idea of the passage; nor able to understand relevant points heard in the passage/talk.	The candidate is unable to recall the important points made (written/verbal)	The candidate uses incorrect vocabulary while recalling the points made.	The candidate is unable to understand the context of the passage and is unable to correlate the passage to the other areas.	0

INTERNAL ASSESSMENT IN ENGLISH LANGUAGE - GUIDELINES FOR MARKING WITH GRADES - ORAL ASSIGNMENT (CLASSES IX & X)

Grade	Fluency of Language	Subject Matter	Organization	Vocabulary/ Delivery	Understanding	Gesture	Marks
I	Speaks with fluency and has full operational command over the language.	Matter is relevant, rich in content and original.	Content is well sequenced and well organized.	Uses appropriate vocabulary and pronounces words correctly.	While speaking, the candidate emphasizes the important points.	Uses natural and spontaneous gestures that are not out of place.	3
II	The candidate speaks with fairly good fluency and has reasonable operational command of the language.	The subject matter is mostly relevant, consisting of a few original ideas.	The content is satisfactorily sequenced and well organized.	The candidate pronounces most words correctly and uses simple vocabulary.	While speaking, the candidate emphasizes most important points.	Uses some natural gestures.	2
III	The candidate speaks with poor fluency and does not communicate except for the most basic information.	The subject matter is irrelevant and lacks originality.	The subject content is very poor and lacks organisational structure.	The candidate pronounces many words incorrectly and uses inappropriate vocabulary.	While speaking, the candidate emphasizes some important points.	Uses very few natural gestures.	1
IV	The candidate cannot communicate even the most basic information.	The subject matter is negligible.	The subject content comprises of mere words with no structured sentences.	The candidate is unable to correctly pronounce most words and has a limited vocabulary.	While speaking, the candidate is unable to emphasize important points.	Uses no natural gestures.	0

INTERNAL ASSESSMENT IN LITERATURE IN ENGLISH -GUIDELINES FOR MARKING WITH GRADES (CLASSES IX & X)

Grade	Understanding of Text (Narrative)	Examples from Text	Understanding of text- Interpretation and Evaluation	Appreciation of Language, Characterization	Critical Appreciation - Personal Response	Marks
I	The candidate demonstrates expertise in giving an appropriate account of the text, with well-chosen reference to narrative and situation.	The account is suitably supported by relevant examples from the text.	The candidate understands the text with due emphasis on interpretation and evaluation.	The candidate appreciates and evaluates significant ways (structure, character, imagery) in which writers have achieved their effects.	The candidate is able to effectively reflect personal response (critical appreciation) to the text.	4
II	The candidate demonstrates a high level of competence in giving an account of the text, with appropriate references to the narrative and situation.	The account is supported by examples from the text.	The candidate understands text with some emphasis on interpretation and evaluation.	The candidate appreciates and evaluates significant ways in which writers have achieved their effects.	The candidate is able to reflect a personal response to the text.	3
III	The candidate demonstrates competence in giving an account of the text with some reference to the narrative and situation.	The candidate understands the text and shows a basic recognition of the theme and can support it by a few examples.	The candidate recognizes some aspects of the text used by authors to present ideas.	The candidate recognizes some of the significant ways in which the writers have used the language.	The candidate is able to communicate a personal response, which shows appreciation.	2
IV	The candidate gives a broad account of the text with reference to the narrative and situation.	The candidate understands the basic meaning of the text.	The candidate relates the text to other texts studied.	The candidate recognizes differences in the way authors write.	The candidate communicates a straightforward personal response to the text.	1
V	The candidate is unable to demonstrate an understanding of the basic events in the text.	The candidate is unable to understand the text or support it with any examples.	The candidate is unable to relate the text to the other texts studied.	The candidate is unable to recognize the differences in the way authors write.	The candidate is unable to give a personal view of the text studied.	0

SECOND LANGUAGE

Aims:

1. To appreciate the language as an effective means of communication.
2. To acquire knowledge of the elements of the language.
3. To develop an interest in the language.
4. To understand the language when spoken at normal conversational speed.
5. To understand the basic structural patterns of the language, vocabulary and constructions.

INDIAN LANGUAGES

CLASSES IX AND X

Papers will be set in the following languages:

Ao-Naga, Assamese, Bengali, Dzongkha, Garo, Gujarati, Hindi, Kannada, Khasi, Lepcha, Malayalam, Manipuri, Marathi, Mizo, Nepali, Odia, Punjabi, Sanskrit, Tamil, Tangkhul, Telugu, Urdu or any other language of an Indian community approved by the Council.

There will be one paper of three hours duration carrying 80 marks and Internal Assessment of 20 marks.

The paper will be divided into two sections, Section A and Section B.

Section A: Language 40 marks

Section B: Prescribed Texts 40 marks

*Candidates will be required to attempt **all** questions from Section A. They must attempt **four** questions from Section B from **ONLY two** of the prescribed textbooks.*

SECTION A: LANGUAGE - 40 Marks

This section will consist of four questions, all of which will be compulsory.

1. **Composition:** Candidates will be required to write one composition, in the language, which may include short explanations, directions, descriptions or narratives. There will be a choice of subjects, which will be varied and may be suggested by language or other stimuli such as pictures and objects. 15 Marks

2. **Letter:** Candidates will be required to write a letter from a choice of two subjects. Suggestions may be given. The layout of the letter with address, introduction, conclusion, etc., will form part of the assessment. ... 7 Marks

3. **Comprehension:** An unseen passage of about 250 words will be given in the language. Questions on the passage will be set for answers in the language, designed to test the candidates' understanding of the content of the passage. ... 10 Marks

4. **Grammar:** This will consist of tests in the use of language vocabulary, syntax and idioms, synthesis in sentence construction, formation of sentences in the language correctly embodying given words or forms. The question will not require any knowledge of grammatical terms. ... 8 Marks

SECTION B: PRESCRIBED TEXTS - 40 Marks

The question paper will consist of structured and short answer questions. Candidates will be required to answer four questions from **ONLY two** of the prescribed text books. All questions will be set in the language and candidates will be required to answer in the language. The questions set will be designed to test the candidates' understanding of the subject matter of the prescribed books.

Note: For list of Prescribed Textbooks, see Appendix - I.

The Class X – ICSE examination paper will be set on the entire syllabus prescribed for the subject. The Class IX internal examination is to be conducted on the portion of this syllabus that is covered during the academic year. ***The Council has not prescribed bifurcation of the syllabus prescribed for this subject.***

INTERNAL ASSESSMENT

Language and Literature:

Class IX: Two or three assignments of reasonable length/duration of which two should be written assignments – one from the language and one from the literature component of the syllabus.

Class X: Two or three assignments of reasonable length/duration of which two should be written assignments – one from the language and one from the literature component of the syllabus.

SUGGESTED ASSIGNMENTS

Language:

Class IX: Creative Writing: Students are to write short compositions (approximately 300 to 400 words each), the stimuli being:

- (i) a piece of recorded music;
- (ii) a recorded series of sounds;
- (iii) a picture/photograph;
- (iv) an opening sentence or phrase;
- (v) a newspaper/magazine clipping or report;

One piece of factual writing which should be informative or argumentative; one piece of expressive writing which is descriptive and imaginative; preparation of film/book review.

Aural: Listening to a conversation/talk/reading of a short passage and then writing down the relevant or main points in the specified number of words and answering the given questions.

Class X: Oral: Prepared speech/ declamation; impromptu speech/ debate/ discussion; report/interview; elocution; role-play/general conversation on selected topics.

Creative Writing: Students are to write short compositions (approximately 300 to 400 words each), the stimuli being:

- (i) a piece of recorded music;
- (ii) a recorded series of sounds;

- (iii) a picture/photograph;
- (iv) an opening sentence or phrase;
- (v) a newspaper/magazine clipping or report;

One piece of factual writing which should be informative or argumentative; one piece of expressive writing which is descriptive and imaginative; preparation of film/book review.

Literature (Prescribed Texts):

Classes IX and X

Assignments should be based on the prescribed textbooks on the following lines:

- (i) Character/thematic analysis.
- (ii) Socio-economic, cultural, historical relevance / background.
- (iii) Summary / paraphrase.

EVALUATION

The assignments/project work are to be evaluated by the subject teacher and by an External Examiner. (The External Examiner may be a teacher nominated by the Head of the school, who could be from the faculty, **but not teaching the subject in the section/class**. For example, a teacher of the language of Class VIII may be deputed to be an External Examiner for Class X projects in the language.)

The Internal Examiner and the External Examiner will assess the assignments independently.

Award of marks (20 Marks)

Subject Teacher (Internal Examiner) 10 marks

External Examiner 10 marks

The total marks obtained out of 20 are to be sent to the Council by the Head of the school.

The Head of the school will be responsible for the online entry of marks on the Council's CAREERS portal by the due date.

**INTERNAL ASSESSMENT IN INDIAN LANGUAGES - GUIDELINES FOR MARKING WITH GRADES - CREATIVE WRITING
(CLASSES IX & X)**

Grade	Content/Analysis of Idea, Thought/ Feeling.	Expression/ Effective Expression of Idea	Structure/ Organisation of Material	Vocabulary/ Use of Words, Phrases	Originality/ Imaginative/ Innovative	Marks
I	The candidate analyses the ideas, feelings and experiences effectively. Reasoning is logical and effective.	The candidate expresses the ideas, thoughts and feelings effectively.	The work is very well structured with a sense of introduction, body, middle and conclusion, paragraphing and appropriate sentence construction.	The use of vocabulary exhibits a high level of competence in handling language.	The work is imaginative, interesting and engrossing.	4
II	The candidate analyses the ideas, feelings and experiences with well-defined explanations, reasoning is logical and persuasive.	The candidate expresses the ideas, thoughts and feelings well and with clarity.	The work is very well structured with some sense of conclusion and of paragraph lengths.	The vocabulary exhibits competence of word usage; correctness of grammar and spelling.	The candidate's work is quite interesting and engrossing.	3
III	The candidate analyses the ideas, feelings and experiences with a fair degree of detail and explanation. Reasoning is fairly logical and persuasive.	The candidate expresses the ideas, thoughts and feelings fairly well and with a fair degree of clarity.	The work is fairly well structured; candidate follows simple paragraphing.	The candidate uses straightforward vocabulary and fairly good pattern of spellings.	The candidate demonstrates the ability to sustain the interest of the reader.	2
IV	The candidate attempts to analyze ideas, feelings and experiences with simple explanation and detail. Reasoning and arguments are not very convincing.	The candidate expresses the ideas, thoughts and feelings intelligibly and in simple language.	The work shows some understanding of paragraphing and structure.	The candidate's vocabulary is limited and the spelling, punctuation and grammar is sometimes poor.	The candidate is, to some extent, able to sustain the interest of the reader.	1
V	The candidate attempts a basic analysis of ideas, feelings and experiences with few simple explanations and few details. Is unable to present proper arguments.	The candidate is unable to express the ideas, thoughts and feelings, uses simple language and the work is not very intelligible.	The candidate does not display an understanding of structure and paragraphing.	There is consistent weakness in spelling, punctuation and grammar.	The candidate is unable to sustain the interest of the reader.	0

**INTERNAL ASSESSMENT IN INDIAN LANGUAGES - GUIDELINES FOR MARKING WITH GRADES
AURAL ASSIGNMENT (CLASS IX)**

Grade	Understanding/ Comprehension Main Idea, Central Theme	Recall	Vocabulary	Context/ Correlation to Other Areas	Marks
I	The candidate accurately understands the central idea of the passage as well as the relevant points in the selected passage/ talk.	The candidate recalls all the important points made (written/ verbal).	The candidate uses appropriate and correct vocabulary while recalling the points made.	The candidate clearly understands the context and can widely correlate the passage to the other areas.	3
II	The candidate gives ideas fairly close to the central / main idea of the passage as well as understand some of the relevant points heard in the selected passage/ talk.	The candidate recalls some of the important points made (written/ verbal).	The candidate uses correct but simple vocabulary while recalling the points made.	The candidate can moderately understand the context of the passage and can moderately correlate the passage to the other areas.	2
III	The candidate cannot fully comprehend the passage and gives only a few ideas related to the central theme of the passage.	The candidate recalls very few of the important points made (written/verbal).	The candidate makes various errors in vocabulary while recalling the points made.	The candidate can only faintly understand the context of the passage and relate it to the other areas.	1
IV	The candidate is neither able to understand the central/main idea of the passage; nor able to understand relevant points heard in the passage/talk.	The candidate is unable to recall the important points made (written/verbal)	The candidate uses incorrect vocabulary while recalling the points made.	The candidate is unable to understand the context of the passage and is unable to correlate the passage to the other areas.	0

**INTERNAL ASSESSMENT IN INDIAN LANGUAGES - GUIDELINES FOR MARKING WITH GRADES
ORAL ASSIGNMENT (CLASS X)**

Grade	Fluency of Language	Subject Matter	Organization	Vocabulary/ Delivery	Understanding	Gesture	Marks
I	Speaks with fluency and has full operational command over the language.	Matter is relevant, rich in content and original.	Content is well sequenced and well organized.	Uses appropriate vocabulary and pronounces words correctly.	While speaking, the candidate emphasizes the important points.	Uses natural and spontaneous gestures that are not out of place.	3
II	The candidate speaks with fairly good fluency and has reasonable operational command of the language.	The subject matter is mostly relevant, consisting of a few original ideas.	The content is satisfactorily sequenced and well organized.	The candidate pronounces most words correctly and uses simple vocabulary.	While speaking the candidate emphasizes most important points.	Uses some natural gestures.	2
III	The candidate speaks with poor fluency and does not communicate except for the most basic information.	The subject matter is irrelevant and lacks originality.	The subject content is very poor and lacks organisational structure.	The candidate pronounces many words incorrectly and uses inappropriate vocabulary.	While speaking, the candidate emphasizes some important points.	Uses very few natural gestures.	1
IV	The candidate cannot communicate even the most basic information.	The subject matter is negligible.	The subject content comprises of mere words with no structured sentences.	The candidate is unable to correctly pronounce most words and has a limited vocabulary.	While speaking, the candidate is unable to emphasize important points.	Uses no natural gestures.	0

**INTERNAL ASSESSMENT IN INDIAN LANGUAGES (LITERATURE - PRESCRIBED TEXTS) - GUIDELINES FOR MARKING
WITH GRADES (CLASSES IX & X)**

Grade	Understanding of Text (Narrative)	Examples from Text	Understanding of text- Interpretation and Evaluation	Appreciation of Language, Characterization	Critical Appreciation -Personal Response	Marks
I	The candidate demonstrates expertise in giving an appropriate account of the text, with well-chosen reference to narrative and situation.	The account is suitably supported by relevant examples from the text.	The candidate understands the text with due emphasis on interpretation and evaluation.	The candidate appreciates and evaluates significant ways (structure, character, imagery) in which writers have achieved their effects.	The candidate is able to effectively reflect personal response (critical appreciation) to the text.	4
II	The candidate demonstrates a high level of competence in giving an account of the text, with appropriate references to the narrative and situation.	The account is supported by examples from the text.	The candidate understands the text with some emphasis on interpretation and evaluation.	The candidate appreciates and evaluates significant ways in which writers have achieved their effects.	The candidate is able to reflect a personal response to the text.	3
III	The candidate demonstrates competence in giving an account of the text with some reference to the narrative and situation.	The candidate understands the text and shows a basic recognition of the theme and can support it by a very few examples.	The candidate recognizes some aspects of the text used by authors to present ideas.	The candidate recognizes some of the significant ways in which the writers have used the language.	The candidate is able to communicate a personal response which shows appreciation.	2
IV	The candidate gives broad account of the text with reference to the narrative and situation.	The candidate understands the basic meaning of the text.	The candidate relates the text to other texts studied.	The candidate recognizes differences in the way authors write.	The candidate communicates straight forward personal response to the text.	1
V	The candidate is unable to demonstrate an understanding of the basic events in the text.	The candidate is unable to understand the text or support it with any examples.	The candidate is unable to relate to the other text studied.	The candidate is unable to recognize the differences in the way authors write.	The candidate is unable to give a personal view of the text studied.	0

HISTORY, CIVICS AND GEOGRAPHY (50)

HISTORY AND CIVICS

H.C.G. - Paper - 1

[Candidates offering History, Civics and Geography (Thailand) are not eligible to offer History, Civics and Geography]

Aims:

1. To provide an understanding of the working of the Indian government necessary for the students to grow into responsible, enlightened citizens in a secular democracy.
2. To enrich the understanding of those aspects of Indian historical development which are crucial to the understanding of contemporary India.
3. To awaken a desirable understanding in pupils of the various streams which have contributed to the development and growth of the Indian nation and its civilisation and culture.
4. To develop a world historical perspective of the contributions made by various cultures to the total heritage of mankind.

CLASS IX

*There will be **one** paper of **two** hours duration carrying 80 marks and an Internal Assessment of 20 marks.*

*The paper will be divided into **two** parts, Part I and Part II.*

***Part I** (30 marks) will contain short answer questions set from the entire syllabus.*

*Candidates will be required to answer **all** questions.*

***Part II** (50 marks) will consist of Section A and Section B. Candidates will be required to answer **two** out of **three** questions from Section A and **three** out of **five** questions from Section B. The sections will correspond to the sections indicated in the syllabus.*

SECTION A: CIVICS

An elementary study is required of this section without verbatim study of the Constitutional Articles in detail.

1. Our Constitution

Definition of Constitution - date of adoption, date of enforcement and its significance. Features: Single Citizenship, Universal Adult Franchise, Fundamental Rights and Fundamental Duties, Directive Principles of State Policy (meaning), Welfare State.

2. Elections

Meaning; Composition of Election Commission (in brief); Direct and Indirect election; General election; Mid-term election and By-election.

3. Local Self Government

- (i) *Rural: Three-tier system of Panchayati Raj – Gram Panchayat, Panchayat Samiti, Zila Parishad – their meaning and functions.*
- (ii) *Urban: Municipal Committees and Municipal Corporations – meaning and functions.*

SECTION B: HISTORY

1. The Harappan Civilisation

Sources: Great Bath, Citadel, seals, bearded man, dancing girl, dockyard, script.

Origin, extent, urban planning, trade, art & craft, and its decline.

2. The Vedic Period

Sources: Vedas and Epics (brief mention); Iron Artifacts and Pottery.

Brief comparative study of Early and Later Vedic society and economy.

3. Jainism and Buddhism

Sources: Angas, Tripitikas and Jatakas (brief mention).

Causes for their rise in the 6th century B.C.;
Doctrines

4. The Mauryan Empire

Sources: Arthashastra, Indika, Ashokan Edicts, Sanchi Stupa.

Political history and administration (Chandragupta Maurya and Ashoka); Ashoka's Dhamma.

5. The Sangam Age

Sources: Tirukkural and Megaliths.

A brief study of society and economy.

6. The Age of the Guptas

Sources: Account of Fa-hien; Allahabad Pillar Inscription.

Political history and administration (Samudragupta and Chandragupta Vikramaditya); Contribution to the fields of Education (Nalanda University), Science (Aryabhatta) and Culture (works of Kalidasa, Deogarh temple)

7. Medieval India

(a) The Cholas

Sources: Inscriptions; Brihadishwara Temple. Political history and administration (Rajaraja I, Rajendra I).

(b) The Delhi Sultanate

Sources: Inscriptions; Qutab Minar. Political history and administration (Qutbuddin Aibak, Alauddin Khilji and Muhammad Bin Tughlaq).

(c) The Mughal Empire

Sources: Ain-i-Akbari, Taj Mahal, Jama Masjid and Red Fort. Political history and administration (Babur, Akbar and Aurangzeb).

(d) Composite Culture

Sources: Bijak, Guru Granth Sahib, Ajmer Sharief, St. Francis Assisi Church (Kochi). Significance of Bhakti Movements and Sufism (Mirabai, Sant Jnaneswar and Hazrat Nizamuddin). Influence of Christianity (St. Francis Xavier).

8. The Modern Age in Europe

(a) Renaissance

Definition, causes (capture of Constantinople, decline of Feudalism, new trade routes, spirit of enquiry and invention of the printing press) and impact on art, literature and science (Leonardo Da Vinci, William Shakespeare and Copernicus).

(b) Reformation

Causes of reformation (dissatisfaction with the practices of the Catholic Church and new learning); Martin Luther's contribution, Counter Reformation.

(c) Industrial Revolution

Definition of the term. Comparative study of Socialism and Capitalism.

INTERNAL ASSESSMENT

Any **one** project/assignment related to the syllabus.

Suggested Assignments

- 'The Indian constitution protects the rights of children, women, minorities and weaker sections.' Elaborate on the basis of a case study.
- 'Fundamental Duties complement Fundamental Rights.' Illustrate with the help of a Power Point Presentation.
- Highlight the civic issues of your locality and what suggestions would you offer to address them.
- Visit a museum or local site of historical importance and discuss its significance.
- Discuss the art and architectural features of any of these monuments: Buddhist Caves, Ajanta; Iron Pillar, Mehrauli; Gol Gumbaz, Bijapur; Mattancherry Synagogue, Cochin; Kamakhya Temple, Guwahati; St. Thomas Basilica, Chennai; Tower of Silence, Mumbai.
- Make a pictorial presentation of inventions and innovations as a result of the Industrial Revolution.
- Make a comparative study of the Harappan and the Mesopotamian Civilisations.

CLASS X

There will be **one** paper of **two** hours duration carrying 80 marks and an Internal Assessment of 20 marks.

The paper will be divided into **two** parts, Part I and Part II.

Part I (30 marks) will contain short answer questions set from the entire syllabus.

Candidates will be required to answer **all** questions.

Part II (50 marks) will consist of Section A and Section B. Candidates will be required to answer **two** out of **three** questions from Section A and **three** out of **five** questions from Section B. The sections will correspond to the sections indicated in the syllabus.

SECTION A: CIVICS

1. The Union Legislature

Meaning of the federal setup in India.

(i) Lok Sabha - term, composition, qualifications for membership. Parliamentary procedures: a brief idea of sessions, quorum, question hour, adjournment and no-confidence motion. Speaker – election and functions.

(ii) Rajya Sabha – composition, qualifications for membership, election, term, Presiding Officer.

Powers and functions of Union Parliament – (legislative, financial, judicial, electoral, amendment of the Constitution, control over executive). Exclusive powers of the two Houses.

2. The Union Executive

(a) The President:

Qualifications for election, composition of Electoral College, reason for indirect election, term of office, procedure for impeachment.

Powers (executive, legislative, financial, judicial, discretionary and emergency)

(b) The Vice-President:

Qualifications for election, term of office and powers.

(c) Prime Minister and Council of Ministers: *Appointment, formation of Council of Ministers, tenure, functions - policy making, administrative, legislative, financial, emergency. Position and powers of the Prime Minister. Collective and individual responsibility of the members of the Cabinet.*

Distinction between the Council of Ministers and the Cabinet.

3. The Judiciary

(a) The Supreme Court:

Composition, qualifications of judges, appointment, independence of judiciary from the control of executive and legislature; Jurisdiction and functions: Original, Appellate, Advisory, Revisory, Judicial Review and Court of Record. Enforcement of Fundamental Rights and Writs.

(b) The High Courts:

Composition, qualifications of judges, appointment; Jurisdiction and functions: Original, Appellate, Revisory, Judicial Review and Court of Record. Enforcement of Fundamental Rights and Writs.

(c) Subordinate Courts:

Distinction between Court of the District Judge and Sessions Court.

Lok Adalats: meaning and advantages.

SECTION B: HISTORY

1. The Indian National Movement (1857 – 1917)

(a) The First War of Independence, 1857

Only the causes (political, socio-religious, economic and military) and consequences will be tested. [The events, however, need to be mentioned in order to maintain continuity and for a more comprehensive understanding.]

(b) Factors leading to the growth of Nationalism – *economic exploitation, repressive colonial policies, socio-religious reform movements (brief mention of contribution of Raja Rammohan Roy and Jyotiba Phule) and role of the Press.*

Foundation of the Indian National Congress - the Indian National Association (Surendranath Banerjee) and the East India Association (Dadabhai Naoroji) as precursors. Immediate objectives of the Indian National Congress - the first two sessions and their Presidents should be mentioned.

- (c) First Phase of the Indian National Movement (1885-1907) - *objectives and methods of struggle of the Early Nationalists. Any two contributions of Dadabhai Naoroji, Surendranath Banerjee and Gopal Krishna Gokhale.*

Second Phase of the Indian National Movement (1905-1916) - *Brief mention of the causes of the Partition of Bengal and its perspective by the Nationalists. Brief mention of Surat Split of 1907; objectives and methods of struggle of the Radicals. Any two contributions of Bal Gangadhar Tilak, Bipin Chandra Pal and Lala Lajpat Rai. The Muslim League; Factors leading to the formation of the Muslim League and its objectives. Brief mention of the significance of the Lucknow Pact - 1916.*

2. Mass Phase of the National Movement (1915-1947)

- (a) Mahatma Gandhi - *Non-Cooperation Movement : causes (Khilafat Movement, Rowlatt Act, Jallianwala Bagh Tragedy), programme and suspension – Chauri Chaura incident and impact of the Movement; the Civil Disobedience Movement: causes (reaction to the Simon Commission, Declaration of Poorna Swaraj at the Lahore Session of 1929), Dandi March, programme and impact of the Movement, Gandhi-Irwin Pact and the Second Round Table Conference; the Quit India Movement: causes (failure of the Cripps Mission, Japanese threat), Quit India Resolution and the significance of the Movement.*
- (b) Forward Bloc (*objectives*) and INA (*objectives and contribution of Subhas Chandra Bose*).
- (c) Independence and Partition of India – *Cabinet Mission Plan (clauses only); Mountbatten Plan (clauses and its acceptance); and the Indian Independence Act of 1947 (clauses only).*

3. The Contemporary World

- (a) The First World War
Causes (Nationalism and Imperialism, Armament Race, division of Europe and Sarajevo crisis) and Results (Treaty of Versailles, territorial rearrangements, formation of League of Nations).

- (b) Rise of Dictatorships

Causes for the rise of Fascism in Italy and the rise of Nazism in Germany. A comparative study of Mussolini's Fascist and Hitler's Nazi ideologies.

- (c) The Second World War

Causes (Dissatisfaction with the Treaty of Versailles, Rise of Fascism and Nazism, Policy of Appeasement, Japanese invasion of China, Failure of League of Nations and Hitler's invasion of Poland). Brief mention of the attack on Pearl Harbour and bombing of Hiroshima and Nagasaki. Consequences (Defeat of Axis Powers, Formation of the United Nations and Cold War).

- (d) United Nations

- (i) The objectives of the U.N.

The composition and functions of the General Assembly, the Security Council, and the International Court of Justice.

- (ii) Major agencies of the United Nations: *UNICEF, WHO and UNESCO - functions only.*

- (e) Non-Aligned Movement.

Brief meaning; objectives; Panchsheel; role of Jawaharlal Nehru; Names of the architects of NAM.

INTERNAL ASSESSMENT

Any one project/assignment related to the syllabus.

Suggested Assignments

- Compare the Parliamentary and Presidential forms of Government with reference to India and the U.S.A.
- Conduct a mock Court and record the proceedings.
- Present a life sketch and contributions of any one of the following Presidents of India –
- Dr. Rajendra Prasad, Dr. S. Radhakrishnan and Dr. A.P.J. Abdul Kalam (or any other).
- Present a book review of any one of the following works: Dadabai Naoroji's 'Poverty and un-British rule in India', Gandhi's 'The Story of my Experiments with Truth', Nehru's 'Discovery of India', Bhagat Singh's 'Why I am an Atheist', Vijayalakshmi Pandit's 'The Scope of Happiness: A Personal Memoir', Abdul Kalam's 'Wings of Fire'.

- Discuss the relevance of any one of the following films to understand the history of 20th Century Europe: The Book Thief, Schindler’s List, Escape to Victory, The Boy in Striped Pyjamas, Life is Beautiful, The Sound of Music, Gandhi (Richard Attenborough), Sardar (Ketan Mehta), Netaji Subhas Chandra Bose - The Forgotten Hero (Shyam Benegal).
- Highlight the work and achievements of any one Nobel Laureate - Malala Yousafzai or Kailash Satyarthi.
- Make a powerpoint presentation on India’s Independence and Partition.
- Make a presentation on the influence of Gandhian principles on Martin Luther King / Nelson Mandela.
- Prepare a report on the contributions of any one of the following agencies of the United Nations – UNESCO / WHO / UNICEF / ILO / UNDP / FAO.
- Present a case study of any recent human rights violations and redressal mechanisms available to prevent such instances in the future.

EVALUATION

The assignments/project work is to be evaluated by the subject teacher and by an External Examiner. (The External Examiner may be a teacher nominated by the Head of the School, who could be from the faculty, **but not teaching the subject in the section/class**. For example, a teacher of History of Class VIII may be deputed to be an External Examiner for Class X, History projects.)

The Internal Examiner and the External Examiner will assess the assignments independently.

Award of marks (20 Marks)

Subject Teacher (Internal Examiner)	10 marks
External Examiner	10 marks

The total marks obtained out of 20 are to be sent to the Council by the Head of the School.

The Head of the school will be responsible for the online entry of marks on the Council’s CAREERS portal by the due date.

INTERNAL ASSESSMENT IN HISTORY & CIVICS - GUIDELINES FOR MARKING WITH GRADES

Grade	Preparation/ Research	Information	Concepts	Thinking Skills	Presentation	Marks
I	<ul style="list-style-type: none"> ▪ Follows instructions with understanding. ▪ Masters research techniques easily. ▪ Reference work is orderly. 	<ul style="list-style-type: none"> ▪ A good deal of relevant matter. ▪ Uses wide range of sources. 	<ul style="list-style-type: none"> ▪ Good understanding of historical concepts - sequence/ reconstruction- causes and consequences- continuity and change ▪ Empathy. 	<ul style="list-style-type: none"> ▪ Different interpretations of evidence. ▪ Can draw Inferences/ deductions/ conclusions. 	<ul style="list-style-type: none"> ▪ Matter presented is clear and is in coherent form (sub-headings, sections, chapters etc.) ▪ Work is neat and tidy and not over elaborate. 	4
II	<ul style="list-style-type: none"> ▪ Follows instructions but needs a little help in research techniques. ▪ Reference notes quite orderly. 	<ul style="list-style-type: none"> ▪ Selects matter relevant to context. ▪ Limited use of references/ sources. 	<ul style="list-style-type: none"> ▪ Understanding of concepts is adequate. 	<ul style="list-style-type: none"> ▪ Limited / Single interpretation of evidence with some examples. ▪ Some inferences/ conclusions are drawn. 	<ul style="list-style-type: none"> ▪ Matter is presented in coherent form but not organized into sections etc. ▪ Presentation neat and tidy but not elaborate. 	3
III	<ul style="list-style-type: none"> ▪ Follows instructions but needs constant guidance. ▪ Reference notes at times disorderly. 	<ul style="list-style-type: none"> ▪ Relevant matter but limited reference work. ▪ Matter is sketchy. 	<ul style="list-style-type: none"> ▪ Displays limited use of concepts. 	<ul style="list-style-type: none"> ▪ Few examples /single example to support reasoning. 	<ul style="list-style-type: none"> ▪ Work is presented in an orderly way, but not organized into sections. ▪ Over use of ‘cosmetics’ to hide lack of substance. ▪ Work is quite neatly presented. 	2
IV	<ul style="list-style-type: none"> ▪ Struggles with research methods and needs constant guidance. ▪ Reference notes copied without reference to keywords. 	<ul style="list-style-type: none"> ▪ Hardly any reference material. ▪ Use of irrelevant matter. ▪ Matter is sketchy. 	<ul style="list-style-type: none"> ▪ Minimal competency in concepts. ▪ A few of the required concepts. 	<ul style="list-style-type: none"> ▪ Finds it difficult to make conclusions/ deductions/ inferences. ▪ No examples to support reasoning. 	<ul style="list-style-type: none"> ▪ Matter presented in a confused way at times (no sub-headings, chapters, etc.) ▪ Tendency to copy from reference books. ▪ Use of “cosmetics” to hide lack of substance. 	1
V	<ul style="list-style-type: none"> ▪ Cannot follow instructions. ▪ Works ‘blindly’ without reference to keywords. 	<ul style="list-style-type: none"> ▪ No reference work/copied from other textbooks/ sketchy matter. 	<ul style="list-style-type: none"> ▪ Unable to demonstrate concepts. 	<ul style="list-style-type: none"> ▪ Unable to make inferences/ deductions or come to any conclusions. 	<ul style="list-style-type: none"> ▪ Matter presented in an incoherent/ disorganized way. ▪ Copied from textbooks “blindly”. ▪ Use of “cosmetics” to hide lack of substance. ▪ Untidy work. 	0

HISTORY, CIVICS AND GEOGRAPHY (THAILAND) (58)

GEOGRAPHY (THAILAND)

H.C.G.(Thailand) - Paper - 2

[Candidates offering History, Civics and Geography are not eligible to offer History, Civics and Geography(Thailand).]

Aims:

1. To develop an understanding of terms, concepts and principles related to Geography.
2. To explain the cause- effect relationships of natural phenomena.
3. To understand the use of natural resources and development of regions.
4. To acquire knowledge of and appreciate the interdependence of nations and different regions of the world.
5. To understand and encourage human efforts made to conserve and protect the natural environment.
6. To acquire practical skills related to the meaning and use of maps and their importance in the study of Geography.

CLASS IX

There will be one paper of two hours duration carrying 80 marks and Internal Assessment of 20 marks.

The question paper will consist of Part I and Part II.

Part I (compulsory): will consist of two questions. Question 1 will consist of short answer questions from the entire syllabus and Question 2 will consist of a question based on **World Map**.

Part II: Candidates will be required to choose any five questions.

Candidates will be expected to make the fullest use of sketches, diagrams, graphs and charts in their answers.

Questions may require answers involving the interpretation of photographs of geographical interest.

PRINCIPLES OF GEOGRAPHY

1. Our World

- (i) Earth as a planet

Shape of the earth. Earth as the home of humankind and the conditions that exist.

- (ii) Geographic grid - Latitudes and Longitudes

Concept of latitudes: main latitudes, their location with degrees, parallels of latitude and their uses.

Concept of longitudes - Prime Meridian, time [local, standard and time zones, Greenwich Mean Time (GMT) and International Date Line (IDL)]. Eastern and Western hemisphere. Using latitudes and

longitudes to find location. Calculation of time.

Great Circles and their use.

- (iii) Rotation and Revolution.

Rotation – direction, speed and its effects (occurrence of day and night, the sun rising in the east and setting in the west, Coriolis effect)

Revolution of the earth and its inclined axis – effects: the variation in the length of the day and night and seasonal changes with Equinoxes and Solstices.

2. Structure of the Earth

- (i) Earth's Structure

Core, mantle, crust – meaning, extent and their composition.

- (ii) Landforms of the Earth

Mountains, plateaus, plains (definition, types and their formation):

Mountains – fold, residual and block.

Plateaus – intermont and volcanic.

Plains – structural and depositional.

Examples from the world and Thailand

- (iii) Rocks

Rocks - difference between minerals and rocks, types of rocks: igneous, sedimentary, metamorphic, their characteristics and formation; rock cycle.

(iv) Volcanoes

Meaning, Types – active, dormant and extinct.

Effects – constructive and destructive.

Important volcanic zones of the world.

(v) Earthquakes

Meaning, causes and measurement.

Effects: destructive and constructive.

Earthquake zones of the World

(vi) Weathering and Denudation.

Meaning, types and effects of weathering.

Types: Physical Weathering – block and granular disintegration, exfoliation;

Chemical Weathering – oxidation, carbonation, hydration and solution;

Biological Weathering – caused by humans, plants and animals.

Meaning and agents of denudation; work of river and wind.

Stages of a river course and associated land forms – V-shaped valley, waterfall, meander and delta.

Wind – deflation hollows and Sand dunes.

3. Hydrosphere

Meaning; Tides; Ocean Currents.

Meaning of hydrosphere; Tides - formation and pattern; Ocean Currents – their circulation pattern and effects. (Specifically of Gulf Stream, North Atlantic Drift, Labrador Current, Kuro Shio, Oya Shio, Andaman Sea of the Indian Ocean, eastern shoreline of the Malay Peninsula and Pacific Ocean).

4. Atmosphere

(i) Composition and structure of the atmosphere.

Troposphere, Stratosphere, Ionosphere and Exosphere; Ozone in the Stratosphere, its depletion. Global warming, its impact.

(ii) Insolation

- *Meaning of insolation and terrestrial radiation.*
- *Factors affecting temperature: latitude, altitude, distance from the sea, slope of land, winds and ocean currents.*

(iii) Atmospheric Pressure and Winds.

- *Meaning and factors that affect atmospheric pressure.*

- *Major pressure belts of the world.*
- *Factors affecting direction and velocity of wind – pressure gradient, Coriolis Effect.*
- *Permanent winds – Trades, Westerlies and Polar Easterlies.*
- *Periodic winds - Land and Sea breezes, Monsoons.*
- *Local winds - Loo, Chinook, Foehn and Mistral.*
- *Variable winds - Cyclones and Anticyclones of China*
- *Jet Streams- Meaning and importance.*

(iv) Humidity

- *Humidity – meaning and difference between relative and absolute humidity.*
- *Condensation – forms (clouds, dew, frost, fog and mist).*
- *Precipitation - forms (rain, snow, and hail).*
- *Types of rainfall – relief/orographic, convectional, cyclonic/ frontal with examples from the different parts of the world.*

5. Pollution

(a) Types - air, water (fresh and marine), soil, radiation and noise.

(b) Sources

- *Noise: Traffic, factories, construction sites, loud speakers, airports.*
- *Air: vehicular, industrial, burning of garbage.*
Water: domestic and industrial waste.
- *Soil: chemical fertilizers, bio medical waste and pesticides.*

(c) Effects - on the environment and human health.

(d) Preventive Measures

Car pools, promotion of public transport, no smoking zone, restricted use of fossil fuels, saving energy and encouragement of organic farming.

6. Natural Regions of the World

Location, area, climate, natural vegetation and human adaptation.

Equatorial region, Tropical grasslands, Tropical Deserts, Tropical Monsoon, Mediterranean, Temperate grasslands, Taiga and Tundra.

7. Map Work

On an outline map of the **World**, candidates will be required to **locate, mark** and **name** the following:

1. *The major Natural Regions of the world - Equatorial, Tropical Monsoon, Tropical Deserts, Mediterranean type, Tropical grasslands, Temperate grasslands, Taiga and Tundra.*
2. *The Oceans, Seas, Gulfs and Straits - all Major Oceans, Caribbean Sea, North Sea, Black Sea, Caspian Sea, South China Sea, Mediterranean Sea, Gulf of Carpentaria, Hudson Bay, Persian Gulf, Gulf of Mexico, Gulf of Guinea, Bering Strait, Strait of Gibraltar, Strait of Malacca.*
3. *Rivers – Mississippi, Colorado, Amazon, Paraguay, Nile, Zaire, Niger, Zambezi, Orange, Rhine, Volga, Danube, Murray, Darling, Hwang Ho, Yangtse Kiang, Indus, Ganga, Mekong, Irrawaddy, Tigris, Euphrates.*
4. *Mountains – Rockies, Andes, Appalachian, Alps, Himalayas, Pyrenees, Scandinavian Highlands, Caucasus, Atlas, Drakensburg, Khinghan, Zagros, Urals, Great Dividing Range.*
5. *Plateaus – Canadian Shield, Tibetan Plateau, Brazilian Highlands, Patagonian Plateau, Iranian Plateau, Mongolian Plateau.*

INTERNAL ASSESSMENT

PRACTICAL WORK/ PROJECT WORK

1. A record file having any **three** of the following exercises will be maintained. (The file will be evaluated out of 10 marks).
 - (a) Uses of important types of maps.
 - (b) Directions and how to identify them - an illustrative diagram.
 - (c) Reading and using statement of scale, graphic scale and scale shown by representative fraction method. (No drawing work, only explaining their meanings).
 - (d) Reading of one town guide map or an atlas map. (Recognising the symbols and colours used, identifying directions and distances).

(e) Drawing and recognising forms of important contours viz. valleys, ridges, types of slopes, conical hill, plateau, escarpment and sea cliff.

(f) Drawing at least one sketch map to organize information about visiting an important place, a zoo or a monument.

2. Candidates will be required to prepare a project report on any **one** topic. The topics for assignments may be selected from the list of suggested assignments given below. Candidates can also take up an assignment of their choice under any of the four broad areas given below. (The project will be evaluated out of 10 marks).

Suggested list of Assignments:

- (a) **Weather records:** Maintaining and interpreting weather records as found in the newspaper for at least one season.
- (b) **Collection of data from secondary sources** (Using Modern techniques i.e. GPS, Remote Sensing, Aerial Photography and Satellite imageries): Preparing a Power Point presentation on current issues like – use of earth resources/ development activities/dangers of development and ecological disasters like droughts, earthquakes, volcanoes, floods, landslides cyclones and tornadoes in the world.
- (c) **Physical Features:** Collection of data from primary and secondary sources or taking photographs and preparing notional sketches of features found in the vicinity or areas visited during the year as a part of school activity.
- (d) Find out the sources of pollution of water bodies in the locality and determine the quality of water.
- (e) Collect information on global environmental issues and problems and communicate your findings through appropriate modes (posters, charts, collages, cartoons, handouts, essays, street plays and PowerPoint presentation).
- (f) **Area Studies:** Choosing any aspect from World Studies and preparing a PowerPoint presentation or a write up on it.
- (g) **Meteorological Instruments and their uses** – Six's maximum and minimum thermometer, mercury barometer, aneroid barometer, wind vane, anemometer, rain gauge and hygrometer.

CLASS X

There will be **one** paper of **two** hours duration carrying 80 marks and Internal Assessment of 20 marks.

The Paper will consist of **two** parts, Part I and Part II.

Part I (compulsory) will consist of **two** questions. Question 1 will be based on **Topographical Map** and questions related to the given map.

Question 2 will be based on an **outline Map of Thailand**.

Part II: Candidates will be expected to answer any **five** questions.

Candidates will be expected to make the fullest use of sketches, diagrams, graphs and charts in their answers.

Questions set may require answers involving the interpretation of photographs of geographical interest.

PART – I: MAP WORK

1. Interpretation of Topographical Maps

- Locating features with the help of a four figure or a six-figure grid reference.
- Identification of landforms marked by contours lines (steep slope, gentle slope, hill, valley, ridge, plateau, saddle-shaped, U-shaped valley, spur, escarpment) by contour cross-section method.
- Identifying and drawing of the conventional symbols.
- Definition of contour lines, contour interval, definitions of different types of scales (statement of scale, linear scale, representative fraction), triangulated height, nucleated settlement, dispersed settlement, water-divide, ridge
- Markings directions between different locations, using eight cardinal points.

2. Map of Thailand

On an outline map of Thailand, candidates will be required to locate, mark and name the following:

Mountains, Peaks: Daen Lao Range, Sankalakhiri, Doi Inthanon, Thanon Thong Chai Range;

Plateaus, plains, peninsula and islands: Khorat plateau, plains in central Thailand, Malay Peninsula, phi phi island;

Longitude: Indo China Time (105°E);

Rivers: Ping river, Wang river, Yom river, Nan river, Chao Phraya river, Tha Chin River

Water Bodies: Songkhla Lake, Gulf of Thailand, Andaman Sea, South China Sea.

Direction of Winds: South West Monsoon, North East Monsoon.

Distribution of Minerals: Oil and coal in Kamphaeng phet city; Tin in Phuket, Gem stones in Chantaburi, Erawan Natural Gas field.

Soil Distribution – Alluvial Soil (Sandy soil, clayey soil, shallow soil, sandy loam soil), Laterite soil.

Cities - Bangkok, Chinag Mai, Chaing Rai, Phuket, Ayuthaya, Sukhothai, Krabi, Nonthaburi, Nakhon Ratchasima, Hat Yai, Udon Thani, Pak Kret, Pattaya.

Population - Distribution of Population (dense and sparse).

PART – II: GEOGRAPHY OF THAILAND

3. Location, Extent, Physical features

- Position and Extent of Thailand (through Map only).
- The physical features of Thailand – Archipelagos, mountains, plateaus, plains and rivers. (through Map only).
- Northern Thailand, North-eastern Thailand, Central Thailand, Eastern Thailand, Western Thailand, Southern Thailand.

4. Climate

Distribution of Temperature, Rainfall, winds in Summer and Winter and factors affecting the climate. Monsoon and its mechanism. Seasons – Hot Season- March to Mid-May, Rainy Season- Mid May to October affected by South West Monsoon; Dry, Cool Season-November to February affected by North-East Monsoon.

5. Soil Resources

- *Types of soil: Alluvial (Sandy soil, clayey soil, shallow soil, sandy loam soil), Laterite soil.*
- *Distribution, composition and characteristics such as colour, texture, minerals and crops associated.*
- *Soil Erosion: causes, prevention and conservation.*

6. Natural Vegetation

- *Importance of forests.*
- *Types of vegetation (tropical semi-evergreen, tropical deciduous monsoon, savanna); distribution and Characteristics and adaptation with their environment*
- *Significance of Forest conservation and importance of community forests.*

7. Water Resources

- *Sources (Surface water and ground water).*
- *Need for conservation and conservation practices, water harvesting (Watershed management). Irrigation: Importance and methods (canal, well, tube well- advantages and disadvantages of each).*

8. Mineral and Energy Resources

- *Iron ore, Feldspar, Tin and Lead – uses and their distribution.*
- *Conventional Sources: Coal, Natural gas (distribution, advantages and disadvantages).*
- *Hydel Power generation and advantages; examples of Bhumibol Dam, Srinagarind Dam and the rivers on which they are constructed.*
- *Non-conventional Sources: Solar, wind (generation and advantages).*

9. Agriculture in Thailand

- *Agriculture: role in the economy; problems of agriculture.*
- *Types of farming in Thailand: subsistence: shifting, intensive; Commercial: extensive, plantation and mixed - characteristics, advantages and disadvantages of each.*
- *Climatic conditions, soil requirements, methods of cultivation, processing and distribution of the following crops:*
 - *Rice and Maize*
 - *Rubber and Sugarcane*
 - *Palm and Soyabean*

10. Manufacturing Industries

- *Importance and classification of industries (agro based, mineral based);*
- *Agro based Industry - Sugar, rice, food processing, fisheries and textile (economic importance and problems of each);*
- *Mineral based Industry – Iron and Steel in Samut Prakan city of Thailand-sources of raw materials and power; significance to the economy; Electronics in Ayutthaya city of Thailand- importance; cement and automobile industries (sources of raw materials and power; significance to the economy).*

11. Transport

Importance of transport; Modes – Roadways, Railways, Airways and Waterways - advantages and disadvantages.

12. Tourism

Definition of tourism, advantages, important places-natural and cultural, positive and negative impacts of tourism.

13. Waste Management

- *Impact of waste accumulation - spoilage of landscape, pollution, health hazards, effect on terrestrial, aquatic (fresh water and marine) life.*
- *Need for waste management.*
- *Methods of safe disposal - segregation, dumping and composting.*
- *Need and methods for reducing, reusing and recycling waste.*

INTERNAL ASSESSMENT

PRACTICAL / PROJECT WORK

Candidates will be required to prepare a project report on any **one** topic. The topics for assignments may be selected from the list of suggested assignments given below. Candidates can also take up an assignment of their choice under any of the broad areas given below.

Suggested list of assignments:

1. Geography of Thailand
 - (a) Land use pattern in different regions of Thailand – a comparative analysis.
 - (b) The survey of a local/ floating markets on the types of shops and services offered.
2. Environment: Wildlife conservation efforts in Thailand.

3. Current Geographical Issues: Development of tourism in Thailand.
4. Transport in Thailand: Development of Road, Rail, Water and Air routes.
5. List different type of industries in the provinces and collect information about the types of raw materials used, modes of their procurement and disposal of wastes generated. Classify these industries as polluting or environment friendly and suggest possible ways of reducing pollution caused by these units.
6. Visit a water treatment plant, sewage treatment plant or garbage dumping or vermicomposting sites in the locality and study their working.
7. Need for industrialization in Thailand, the latest trends and its impact on economy of Thailand.

EVALUATION

The assignments/project work is to be evaluated by the subject teacher and by an External Examiner. (The External Examiner may be a teacher nominated by the Head of the school, who could be from the faculty, **but not teaching the subject in the section/class.**

The Internal Examiner and the External Examiner will assess the assignments independently.

Award of Marks (20 Marks)

Subject Teacher (Internal Examiner) 10 marks

External Examiner 10 marks

The total marks obtained out of 20 are to be sent to the Council by the Head of the school.

The Head of the school will be responsible for the online entry of marks on the Council's CAREERS portal by the due date.

INTERNAL ASSESSMENT IN GEOGRAPHY (Thailand) - GUIDELINES FOR MARKING WITH GRADES

Criteria	Preparation	Procedure/ Testing	Observation	Inference/Results	Presentation
Grade I (4 marks)	Gives complete theoretical information using relevant geographical terms	States the objectives and defines the aspects to be studied.	Studies text and source material and makes a list.	States theoretical information in a coherent and concise manner using geographical terminology. Uses a variety of techniques. Shows resourcefulness. Supports investigation with relevant evidence.	Neatly and correctly stated statement of intent and conclusion matches with objectives.
Grade II (3 marks)	Provides adequate information using appropriate terms.	States objectives but not the limitations of the study.	Makes a limited list of source material only from secondary sources.	Uses sound methodology-using methods suggested. Makes a valid statement about the data collected. Attempts to develop explanations using available information.	Limited use of reference material and a presentation, which is routine.
Grade III (2 marks)	States objectives using some geographical terms but mostly in descriptive terms.	Only lists the aspects to be studied.	References are minimal.	Uses methodology in which selective techniques are applied correctly. Makes descriptive statement. Analysis is limited. Relates and describes systematically the data collected. Tries to relate conclusion to original aim.	Simple and neat with correct placement of references, acknowledgements, contents, maps and diagrams.
Grade IV (1 mark)	States intent without using relevant geographical terms but explaining them correctly.	Shows evidence of what to look for and how to record the same.	Uses methodology with some techniques but is unable to systematically record data and collect information.	Makes few relevant statements. Does analyze data that is not presented or tends to copy analysis available from other sources. Makes superficial conclusions. Link between the original aim and conclusion is not clear.	Neat but lacking in correct placement of table of contents, maps, diagrams and pictures.
Grade V (0 marks)	Does not make any use of geographical terms.	Has not collected any relevant data and has not presented sources correctly.	Does not use any logical technique and does not follow the methodology suggested.	Does not analyze data. Does not use the suggested methods. Makes conclusions but does not relate them to the original aim.	Presents the report without reference.

MATHEMATICS (51)

Aims:

1. To acquire knowledge and understanding of the terms, symbols, concepts, principles, processes, proofs, etc. of mathematics.
2. To develop an understanding of mathematical concepts and their application to further studies in mathematics and science.
3. To develop skills to apply mathematical knowledge to solve real life problems.
4. To develop the necessary skills to work with modern technological devices such as calculators and computers in real life situations.
5. To develop drawing skills, skills of reading tables, charts and graphs.
6. To develop an interest in mathematics.

CLASS IX

There will be **one** paper of **two and a half** hours duration carrying 80 marks and Internal Assessment of 20 marks.

The paper will be divided into **two** sections, Section I (40 marks) and Section II (40 marks).

Section I: will consist of compulsory short answer questions.

Section II: Candidates will be required to answer **four** out of **seven** questions.

The solution of a question may require the knowledge of more than one branch of the syllabus.

1. Pure Arithmetic

Rational and Irrational Numbers

Rational, irrational numbers as real numbers, their place in the number system. Surds and rationalization of surds. Simplifying an expression by rationalizing the denominator.

2. Commercial Mathematics

Compound Interest

(a) Compound interest as a repeated Simple Interest computation with a growing Principal. Use of this in computing Amount over a period of 2 or 3 years.

(b) Use of formula $A = P\left(1 + \frac{r}{100}\right)^n$. Finding CI from the relation $CI = A - P$.

- Interest compounded half-yearly included.
- Using the formula to find one quantity given different combinations of A, P, r, n, CI and SI; difference between CI and SI type included.

- Rate of growth and depreciation.

Note: Paying back in equal installments, being given rate of interest and installment amount, **not included**.

3. Algebra

(i) Expansions

Recall of concepts learned in earlier classes.

$$(a \pm b)^2$$

$$(a \pm b)^3$$

$$(x \pm a)(x \pm b)$$

$$(a \pm b \pm c)^2$$

(ii) Factorisation

$$a^2 - b^2$$

$$a^3 \pm b^3$$

$ax^2 + bx + c$, by splitting the middle term.

(iii) Simultaneous Linear Equations in two variables. (With numerical coefficients only)

- Solving algebraically by:

- Elimination
- Substitution and
- Cross Multiplication method

- Solving simple problems by framing appropriate equations.

(iv) Indices/ Exponents

Handling positive, fractional, negative and "zero" indices.

Simplification of expressions involving various exponents

$$a^m \times a^n = a^{m+n}, a^m \div a^n = a^{m-n}, (a^m)^n = a^{mn}$$

etc. Use of laws of exponents.

(v) Logarithms

(a) *Logarithmic form vis-à-vis exponential form: interchanging.*

(b) *Laws of Logarithms and their uses.*

Expansion of expression with the help of laws of logarithms

$$\text{e.g. } y = \frac{a^4 \times b^2}{c^3}$$

$$\log y = 4 \log a + 2 \log b - 3 \log c \text{ etc.}$$

4. Geometry

(i) Triangles

(a) Congruency: four cases: SSS, SAS, AAS, and RHS. Illustration through cutouts. Simple applications.

(b) Problems based on:

- *Angles opposite equal sides are equal and converse.*
- *If two sides of a triangle are unequal, then the greater angle is opposite the greater side and converse.*
- *Sum of any two sides of a triangle is greater than the third side.*
- *Of all straight lines that can be drawn to a given line from a point outside it, the perpendicular is the shortest.*

Proofs not required.

(c) Mid-Point Theorem and its converse, equal intercept theorem

(i) *Proof and simple applications of mid-point theorem and its converse.*

(ii) *Equal intercept theorem: proof and simple application.*

(d) Pythagoras Theorem

Area based proof and simple applications of Pythagoras Theorem and its converse.

(ii) Rectilinear Figures

(a) Proof and use of theorems on parallelogram.

- *Both pairs of opposite sides equal (without proof).*
- *Both pairs of opposite angles equal.*
- *One pair of opposite sides equal and parallel (without proof).*
- *Diagonals bisect each other and bisect the parallelogram.*
- *Rhombus as a special parallelogram whose diagonals meet at right angles.*
- *In a rectangle, diagonals are equal, in a square they are equal and meet at right angles.*

(b) Constructions of Polygons

Construction of quadrilaterals (including parallelograms and rhombus) and regular hexagon using ruler and compasses only.

(c) Proof and use of Area theorems on parallelograms:

- *Parallelograms on the same base and between the same parallels are equal in area.*
- *The area of a triangle is half that of a parallelogram on the same base and between the same parallels.*
- *Triangles between the same base and between the same parallels are equal in area (without proof).*
- *Triangles with equal areas on the same bases have equal corresponding altitudes.*

(iii) Circle:

(a) Chord properties

- A straight line drawn from the centre of a circle to bisect a chord which is not a diameter is at right angles to the chord.
- The perpendicular to a chord from the centre bisects the chord (without proof).
- Equal chords are equidistant from the centre.
- Chords equidistant from the centre are equal (without proof).
- There is one and only one circle that passes through three given points not in a straight line.

(b) Arc and chord properties:

- If two arcs subtend equal angles at the centre, they are equal, and its converse.
- If two chords are equal, they cut off equal arcs, and its converse (without proof).

Note: Proofs of the theorems given above are to be taught unless specified otherwise.

5. Statistics

Introduction, collection of data, presentation of data, Graphical representation of data, Mean, Median of ungrouped data.

- (i) Understanding and recognition of raw, arrayed and grouped data.
- (ii) Tabulation of raw data using tally-marks.
- (iii) Understanding and recognition of discrete and continuous variables.
- (iv) Mean, median of ungrouped data
- (v) Class intervals, class boundaries and limits, frequency, frequency table, class size for grouped data.

(vi) Grouped frequency distributions: the need to and how to convert discontinuous intervals to continuous intervals.

(vii) Drawing a frequency polygon.

6. Mensuration

Area and perimeter of a triangle and a quadrilateral. Area and circumference of circle. Surface area and volume of Cube and Cuboids.

(a) Area and perimeter of triangle (including Heron's formula), rhombus, parallelogram and trapezium.

(b) Circle: Area and Circumference. Direct application problems including Inner and Outer area.

Areas of sectors of circles other than quarter-circle and semicircle are not included.

(c) Surface area and volume of 3-D solids: cube and cuboid including problems of type involving:

- Different internal and external dimensions of the solid.
- Cost.
- Concept of volume being equal to area of cross-section \times height.
- Open/closed cubes/cuboids.

7. Trigonometry

(a) Trigonometric Ratios: sine, cosine, tangent of an angle and their reciprocals.

(b) Trigonometric ratios of standard angles- 0, 30, 45, 60, 90 degrees. Evaluation of an expression involving these ratios.

(c) Simple 2-D problems involving one right-angled triangle.

(d) Concept of trigonometric ratios of complementary angles and their direct application:

$$\sin A = \cos (90 - A), \cos A = \sin (90 - A)$$

$$\tan A = \cot (90 - A), \cot A = \tan (90 - A)$$

$$\sec A = \operatorname{cosec} (90 - A), \operatorname{cosec} A = \sec (90 - A)$$

8. Co-ordinate Geometry

Cartesian System, plotting of points in the plane for given coordinates, solving simultaneous linear equations in 2 variables graphically and finding the distance between two points using distance formula.

(a) *Dependent and independent variables.*

(b) *Ordered pairs, co-ordinates of points and plotting them in the Cartesian plane.*

(c) *Solution of Simultaneous Linear Equations graphically.*

(d) *Distance formula.*

INTERNAL ASSESSMENT

A minimum of two assignments are to be done during the year as prescribed by the teacher.

Suggested Assignments

- Conduct a survey of a group of students and represent it graphically - height, weight, number of family members, pocket money, etc.
- Planning delivery routes for a postman/milkman.

- Running a tuck shop/canteen.
- Study ways of raising a loan to buy a car or house, e.g. bank loan or purchase a refrigerator or a television set through hire purchase.
- Cutting a circle into equal sections of a small central angle to find the area of a circle by using the formula $A = \pi r^2$.
- To use flat cutouts to form cube, cuboids and pyramids to obtain formulae for volume and total surface area.
- Draw a circle of radius r on a $\frac{1}{2}$ cm graph paper, and then on a 2mm graph paper. Estimate the area enclosed in each case by actually counting the squares. Now try out with circles of different radii. Establish the pattern, if any, between the two observed values and the theoretical value (area = πr^2). Any modifications?

CLASS X

There will be **one** paper of **two and a half** hours duration carrying 80 marks and Internal Assessment of 20 marks.

The paper will be divided into **two** sections, Section I (40 marks), Section II (40 marks).

Section I: Will consist of compulsory short answer questions.

Section II: Candidates will be required to answer **four** out of **seven** questions.

1. Commercial Mathematics

(i) Goods and Services Tax (GST)

Computation of tax including problems involving discounts, list-price, profit, loss, basic/cost price including inverse cases. Candidates are also expected to find price paid by the consumer after paying State Goods and Service Tax (SGST) and Central Goods and Service Tax (CGST) - the different rates as in vogue on different types of items will be provided. Problems based on corresponding inverse cases are also included.

(ii) Banking

Recurring Deposit Accounts: computation of interest and maturity value using the formula:

$$I = P \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$MV = P \times n + I$$

(iii) Shares and Dividends

(a) Face/Nominal Value, Market Value, Dividend, Rate of Dividend, Premium.

(b) Formulae

- $\text{Income} = \text{number of shares} \times \text{rate of dividend} \times \text{FV}$.
- $\text{Return} = (\text{Income} / \text{Investment}) \times 100$.

Note: Brokerage and fractional shares **not included**

2. Algebra

(i) Linear Inequations

Linear Inequations in one unknown for $x \in N, W, Z, R$. Solving

- Algebraically and writing the solution in set notation form.
- Representation of solution on the number line.

(ii) Quadratic Equations in one variable

(a) Nature of roots

- Two distinct real roots if $b^2 - 4ac > 0$
- Two equal real roots if $b^2 - 4ac = 0$
- No real roots if $b^2 - 4ac < 0$

(b) Solving Quadratic equations by:

- Factorisation
- Using Formula.

(c) Solving simple quadratic equation problems.

(iii) Ratio and Proportion

(a) Proportion, Continued proportion, mean proportion

(b) Componendo, dividendo, alternendo, invertendo properties and their combinations.

(c) Direct simple applications on proportions only.

(iv) Factorisation of polynomials:

(a) Factor Theorem.

(b) Remainder Theorem.

(c) Factorising a polynomial completely after obtaining one factor by factor theorem.

Note: $f(x)$ not to exceed degree 3.

(v) Matrices

(a) Order of a matrix. Row and column matrices.

(b) Compatibility for addition and multiplication.

(c) Null and Identity matrices.

(d) Addition and subtraction of 2×2 matrices.

(e) Multiplication of a 2×2 matrix by

- a non-zero rational number
- a matrix.

(vi) Arithmetic and Geometric Progression

- Finding their General term.
- Finding Sum of their first 'n' terms.
- Simple Applications.

(vii) Co-ordinate Geometry

(a) Reflection

(i) Reflection of a point in a line:

$x=0, y=0, x=a, y=a$, the origin.

(ii) Reflection of a point in the origin.

(iii) Invariant points.

(b) Co-ordinates expressed as (x,y) , Section formula, Midpoint formula, Concept of slope, equation of a line, Various forms of straight lines.

(i) Section and Mid-point formula (Internal section only, co-ordinates of the centroid of a triangle included).

(ii) Equation of a line:

- Slope –intercept form $y = mx + c$
- Two- point form $(y-y_1) = m(x-x_1)$

Geometric understanding of 'm' as slope/ gradient/ $\tan\theta$ where θ is the angle the line makes with the positive direction of the x axis.

Geometric understanding of 'c' as the y-intercept/the ordinate of the point where the line intercepts the y axis/ the point on the line where $x=0$.

- Conditions for two lines to be parallel or perpendicular.

Simple applications of all the above.

(iii) Three conditions: SSS, SAS, AA. Simple applications (proof not included).

(iv) Applications of Basic Proportionality Theorem.

(v) Areas of similar triangles are proportional to the squares of corresponding sides.

(vi) Direct applications based on the above including applications to maps and models.

(b) Loci

Loci: Definition, meaning, Theorems and constructions based on Loci.

(i) The locus of a point at a fixed distance from a fixed point is a circle with the fixed point as centre and fixed distance as radius.

(ii) The locus of a point equidistant from two intersecting lines is the bisector of the angles between the lines.

(iii) The locus of a point equidistant from two given points is the perpendicular bisector of the line joining the points.

Proofs not required.

(c) Circles

(i) Angle Properties

- The angle that an arc of a circle subtends at the centre is double that which it subtends at any point on the remaining part of the circle.

- Angles in the same segment of a circle are equal (without proof).

- Angle in a semi-circle is a right angle.

(ii) Cyclic Properties:

- Opposite angles of a cyclic quadrilateral are supplementary.

- The exterior angle of a cyclic quadrilateral is equal to the opposite interior angle (without proof).

3. Geometry

(a) Similarity

Similarity, conditions of similar triangles.

(i) As a size transformation.

(ii) Comparison with congruency, keyword being proportionality.

(iii) Tangent and Secant Properties:

- The tangent at any point of a circle and the radius through the point are perpendicular to each other.
- If two circles touch, the point of contact lies on the straight line joining their centres.
- From any point outside a circle, two tangents can be drawn, and they are equal in length.
- If two chords intersect internally or externally then the product of the lengths of the segments are equal.
- If a chord and a tangent intersect externally, then the product of the lengths of segments of the chord is equal to the square of the length of the tangent from the point of contact to the point of intersection.
- If a line touches a circle and from the point of contact, a chord is drawn, the angles between the tangent and the chord are respectively equal to the angles in the corresponding alternate segments.

Note: Proofs of the theorems given above are to be taught unless specified otherwise.

(iv) Constructions

- (a) Construction of tangents to a circle from an external point.
- (b) Circumscribing and inscribing a circle on a triangle and a regular hexagon.

4. Mensuration

Area and volume of solids – Cylinder, Cone and Sphere.

Three-dimensional solids - right circular cylinder, right circular cone and sphere: Area (total surface and curved surface) and Volume. Direct application problems including cost, Inner and Outer volume and melting and recasting method to find the volume or surface area of a new solid. Combination of solids included.

Note: Problems on Frustum are not included.

5. Trigonometry

(a) Using Identities to solve/prove simple algebraic trigonometric expressions

$$\sin^2 A + \cos^2 A = 1$$

$$1 + \tan^2 A = \sec^2 A$$

$$1 + \cot^2 A = \operatorname{cosec}^2 A; 0 \leq A \leq 90^\circ$$

(b) Heights and distances: Solving 2-D problems involving angles of elevation and depression using trigonometric tables.

Note: Cases involving more than two right angled triangles excluded.

6. Statistics

Statistics – basic concepts, Mean, Median, Mode. Histograms and Ogive.

(a) Computation of:

- Measures of Central Tendency: Mean, median, mode for raw and arrayed data. Mean*, median class and modal class for grouped data. (both continuous and discontinuous).

* Mean by all 3 methods included:

$$\text{Direct} \quad : \quad \frac{\sum fx}{\sum f}$$

$$\text{Short-cut} \quad : \quad A + \frac{\sum fd}{\sum f} \text{ where } d = x - A$$

$$\text{Step-deviation: } A + \frac{\sum ft}{\sum f} \times i \text{ where } t = \frac{x - A}{i}$$

(b) Graphical Representation. Histograms and Less than Ogive.

- Finding the mode from the histogram, the upper quartile, lower Quartile and median etc. from the ogive.
- Calculation of inter Quartile range.

7. Probability

- Random experiments
- Sample space
- Events
- Definition of probability
- Simple problems on single events

Note: SI units, signs, symbols and abbreviations

(1) Agreed conventions

- (a) Units may be written in full or using the agreed symbols, but no other abbreviation may be used.
- (b) The letter ‘s’ is never added to symbols to indicate the plural form.
- (c) A full stop is not written after symbols for units unless it occurs at the end of a sentence.
- (d) When unit symbols are combined as a quotient, e.g. metre per second, it is recommended that it should be written as m/s, or as $m\ s^{-1}$.
- (e) Three decimal signs are in common international use: the full point, the mid-point and the comma. Since the full point is sometimes used for multiplication and the comma for spacing digits in large numbers, it is recommended that the mid-point be used for decimals.

(2) Names and symbols

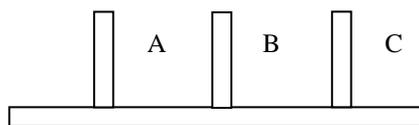
In general			
Implies that	\Rightarrow	is logically equivalent to	\Leftrightarrow
Identically equal to	\equiv	is approximately equal to	\gg
In set language			
Belongs to	\in	does not belong to	\notin
is equivalent to	\leftrightarrow	is not equivalent to	\nleftrightarrow
union	\cup	intersection	\cap
universal set	ξ	is contained in	\subset
natural (counting) numbers	N	the empty set	\emptyset
integers	Z	whole numbers	W
		real numbers	R
In measures			
Kilometre	km	Metre	m
Centimetre	cm	Millimetre	mm
Kilogram	kg	Gram	g
Litre	L	Centilitre	cL
square kilometre	km^2	Square meter	m^2
square centimetre	cm^2	Hectare	ha
cubic metre	m^3	Cubic centimetre	cm^3
kilometres per hour	km/h	Metres per second	m/s

INTERNAL ASSESSMENT

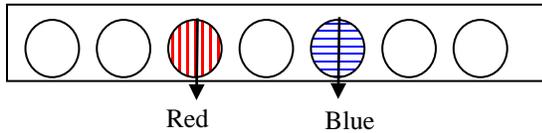
The minimum number of assignments: Two assignments as prescribed by the teacher.

Suggested Assignments

- Comparative newspaper coverage of different items.
- Survey of various types of Bank accounts, rates of interest offered.
- Planning a home budget.
- Conduct a survey in your locality to study the mode of conveyance / Price of various essential commodities / favourite sports. Represent the data using a bar graph / histogram and estimate the mode.
- To use a newspaper to study and report on shares and dividends.
- Set up a dropper with ink in it vertical at a height say 20 cm above a horizontally placed sheet of plain paper. Release one ink drop; observe the pattern, if any, on the paper. Vary the vertical distance and repeat. Discover any pattern of relationship between the vertical height and the ink drop observed.
- You are provided (or you construct a model as shown) - three vertical sticks (size of a pencil) stuck to a horizontal board. You should also have discs of varying sizes with holes (like a doughnut). Start with one disc; place it on (in) stick A. Transfer it to another stick (B or C); this is one move (m). Now try with two discs placed in A such that the large disc is below, and the smaller disc is above (number of discs = $n=2$ now). Now transfer them one at a time in B or C to obtain similar situation (larger disc below). How many moves? Try with more discs ($n = 1, 2, 3, \text{etc.}$) and generalise.



- The board has some holes to hold marbles, red on one side and blue on the other. Start with one pair. Interchange the positions by making one move at a time. A marble can jump over another to fill the hole behind. The move (m) equal 3. Try with 2 ($n=2$) and more. Find the relationship between n and m .



- Take a square sheet of paper of side 10 cm. Four small squares are to be cut from the corners of the square sheet and then the paper folded at the cuts to form an open box. What should be the size of the squares cut so that the volume of the open box is maximum?
- Take an open box, four sets of marbles (ensuring that marbles in each set are of the same size) and some water. By placing the marbles and water in the box, attempt to answer the question: do larger marbles or smaller marbles occupy more volume in a given space?
- An eccentric artist says that the best paintings have the same area as their perimeter (numerically). Let us not argue whether such sizes increase the viewer's appreciation, but only try and find what sides (in integers only) a rectangle must have if its area and perimeter are to be equal (Note: there are only two such rectangles).

- Find by construction the centre of a circle, using only a 60-30 set square and a pencil.
- Various types of "cryptarithm".

EVALUATION

The assignments/project work are to be evaluated by the subject teacher and by an External Examiner. (The External Examiner may be a teacher nominated by the Head of the school, who could be from the faculty, **but not teaching the subject in the section/class**. For example, a teacher of Mathematics of Class VIII may be deputed to be an External Examiner for Class X, Mathematics projects.)

The Internal Examiner and the External Examiner will assess the assignments independently.

Award of marks (20 Marks)

Subject Teacher (Internal Examiner) : 10 marks

External Examiner : 10 marks

The total marks obtained out of 20 are to be sent to the Council by the Head of the school.

The Head of the school will be responsible for the online entry of marks on the Council's CAREERS portal by the due date.

INTERNAL ASSESSMENT IN MATHEMATICS- GUIDELINES FOR MARKING WITH GRADES

Criteria	Preparation	Concepts	Computation	Presentation	Understanding	Marks
Grade I	Exhibits and selects a well-defined problem. Appropriate use of techniques.	Admirable use of mathematical concepts and methods and exhibits competency in using extensive range of mathematical techniques.	Careful and accurate work with appropriate computation, construction and measurement with correct units.	Presents well stated conclusions; uses effective mathematical language, symbols, conventions, tables, diagrams, graphs, etc.	Shows strong personal contribution; demonstrate knowledge and understanding of assignment and can apply the same in different situations.	4 marks for each criterion
Grade II	Exhibits and selects routine approach. Fairly good techniques.	Appropriate use of mathematical concepts and methods and shows adequate competency in using limited range of techniques.	Commits negligible errors in computation, construction and measurement.	Some statements of conclusions; uses appropriate math language, symbols, conventions, tables, diagrams, graphs, etc.	Neat with average amount of help; assignment shows learning of mathematics with a limited ability to use it.	3 marks for each criterion
Grade III	Exhibits and selects trivial problems. Satisfactory techniques.	Uses appropriate mathematical concepts and shows competency in using limited range of techniques.	Commits a few errors in computation, construction and measurement.	Assignment is presentable though it is disorganized in some places.	Lack of ability to conclude without help; shows some learning of mathematics with a limited ability to use it.	2 marks for each criterion
Grade IV	Exhibits and selects an insignificant problem. Uses some unsuitable techniques.	Uses inappropriate mathematical concepts for the assignment.	Commits many mistakes in computation, construction and measurement.	Presentation made is somewhat disorganized and untidy.	Lack of ability to conclude even with considerable help; assignment contributes to mathematical learning to a certain extent.	1 mark for each criterion
Grade V	Exhibits and selects a completely irrelevant problem. Uses unsuitable techniques.	Not able to use mathematical concepts.	Inaccurate computation, construction and measurement.	Presentation made is completely disorganized, untidy and poor.	Assignment does not contribute to mathematical learning and lacks practical applicability.	0 mark

SCIENCE (52)
PHYSICS
SCIENCE Paper - 1

Aims:

1. To acquire knowledge and understanding of the terms, facts, concepts, definitions, laws, principles and processes of Physics.
2. To develop skills in practical aspects of handling apparatus, recording observations and in drawing diagrams, graphs, etc.
3. To develop instrumental, communication, deductive and problem-solving skills.
4. To discover that there is a living and growing physics relevant to the modern age in which we live.

CLASS IX

There will be one paper of two hours duration carrying 80 marks and Internal Assessment of practical work carrying 20 marks.

The paper will be divided into two sections, Section I (40 marks) and Section II (40 marks).

Section I (compulsory) will contain short answer questions on the entire syllabus.

Section II will contain six questions. Candidates will be required to answer any four of these six questions.

Note: Unless otherwise specified, only SI Units are to be used while teaching and learning, as well as for answering questions.

1. Measurements and Experimentation

- (i) International System of Units, **the required SI units with correct symbols are given at the end of this syllabus.** Other commonly used system of units - fps and cgs.
- (ii) Measurements using common instruments, Vernier callipers and micro-metre screw gauge for length, and simple pendulum for time.

Measurement of length using, Vernier callipers and micro-metre screw gauge. Decreasing least-count leads to an increase in accuracy; least-count (LC) of Vernier callipers and screw gauge, zero error (basic idea), (no numerical problems on callipers and screw gauge), simple pendulum; time period, frequency, graph of length l vs. T^2 only; slope of the graph. Formula $T=2\pi\sqrt{l/g}$ [no derivation]. Only simple numerical problems.

2. Motion in One Dimension

Scalar and vector quantities, distance, speed, velocity, acceleration; graphs of distance-time and speed-time; equations of uniformly accelerated motion with derivations.

Examples of Scalar and vector quantities only, rest and motion in one dimension; distance and displacement; speed and velocity; acceleration and retardation; distance-time and velocity-time graphs; meaning of slope of the graphs; [Non-uniform acceleration excluded].

Equations to be derived: $v = u + at$;

$S = ut + \frac{1}{2}at^2$; $S = \frac{1}{2}(u+v)t$; $v^2 = u^2 + 2aS$. [Equation for S_n^{th} is not included].

Simple numerical problems.

3. Laws of Motion

- (i) Contact and non-contact forces; cgs & SI units.

Examples of contact forces (frictional force, normal reaction force, tension force as applied through strings and force exerted during collision) and non-contact forces (gravitational, electric and magnetic). General properties of non-contact forces. cgs and SI units of force and their relation with Gravitational units.

- (ii) Newton's First Law of Motion (qualitative discussion) introduction of the idea of inertia, mass and force.

Newton's first law; statement and qualitative discussion; definitions of inertia and force from first law, examples of inertia as illustration of first law. (Inertial mass not included).

- (iii) Newton's Second Law of Motion (including $\mathbf{F} = m\mathbf{a}$); weight and mass. Detailed study of the second law. Linear momentum, $p = mv$; change in momentum $\Delta p = \Delta(mv) = m\Delta v$ for mass remaining constant, rate of change of momentum;

$$\Delta p / \Delta t = m\Delta v / \Delta t = ma \text{ or}$$

$$\left\{ \frac{p_2 - p_1}{t} = \frac{mv - mu}{t} = \frac{m(v - u)}{t} = ma \right\};$$

Simple numerical problems combining

$F = \Delta p / \Delta t = ma$ and equations of motion. Units of force - only cgs and SI.

- (iv) Newton's Third Law of Motion (qualitative discussion only); simple examples.

Statement with qualitative discussion; examples of action - reaction pairs, (F_{BA} and F_{AB}); action and reaction always act on different bodies.

- (v) Gravitation

Universal Law of Gravitation. (Statement and equation) and its importance. Gravity, acceleration due to gravity, free fall. Weight and mass, Weight as force of gravity comparison of mass and weight; gravitational units of force, (Simple numerical problems), (problems on variation of gravity excluded)

4. Fluids

- (i) Change of pressure with depth (including the formula $p = h\rho g$); Transmission of pressure in liquids; atmospheric pressure.

Thrust and Pressure and their units; pressure exerted by a liquid column $p = h\rho g$; simple daily life examples, (i) broadness of the base of a dam, (ii) Diver's suit etc. some consequences of $p = h\rho g$; transmission of pressure in liquids; Pascal's law; examples; atmospheric pressure; common manifestation and consequences. Variations of pressure with altitude, (qualitative only); applications such as weather forecasting and altimeter. (Simple numerical problems)

- (ii) Buoyancy, Archimedes' Principle; floatation; relationship with density; relative density; determination of relative density of a solid.

Buoyancy, upthrust (F_B); definition; different cases, $F_B >, = \text{ or } <$ weight W of the

body immersed; characteristic properties of upthrust; Archimedes' principle; explanation of cases where bodies with density $\rho >, = \text{ or } <$ the density ρ' of the fluid in which it is immersed.

RD and Archimedes' principle. Experimental determination of RD of a solid and liquid denser than water. Floatation: principle of floatation; relation between the density of a floating body, density of the liquid in which it is floating and the fraction of volume of the body immersed; ($\rho_1/\rho_2 = V_2/V_1$); apparent weight of floating object; application to ship, submarine, iceberg, balloons, etc.

Simple numerical problems involving Archimedes' principle, buoyancy and floatation.

5. Heat and Energy

- (i) Concepts of heat and temperature.

Heat as energy, SI unit – joule,

$1 \text{ cal} = 4.186 \text{ J}$ exactly.

- (ii) Anomalous expansion of water; graphs showing variation of volume and density of water with temperature in the 0 to 10°C range. Hope's experiment and consequences of Anomalous expansion.

- (iii) Energy flow and its importance:

Understanding the flow of energy as Linear and linking it with the laws of Thermodynamics- 'Energy is neither created nor destroyed' and 'No Energy transfer is 100% efficient.

- (iv) Energy sources.

Solar, wind, water and nuclear energy (only qualitative discussion of steps to produce electricity). Renewable versus non-renewable sources (elementary ideas with example).

Renewable energy: biogas, solar energy, wind energy, energy from falling of water, run-of-the river schemes, energy from waste, tidal energy, etc. Issues of economic viability and ability to meet demands.

Non-renewable energy – coal, oil, natural gas. Inequitable use of energy in urban and rural areas. Use of hydro electrical powers for light and tube wells.

- (v) Global warming and Green House effect:
Meaning, causes and impact on the life on earth. Projections for the future; what needs to be done.
Energy degradation – meaning and examples.

6. Light

- (i) Reflection of light; images formed by a pair of parallel and perpendicular plane mirrors;
Laws of reflection; experimental verification; characteristics of images formed in a pair of mirrors, (a) parallel and (b) perpendicular to each other; uses of plane mirrors.

- (ii) Spherical mirrors; characteristics of image formed by these mirrors. Uses of concave and convex mirrors. (Only simple direct ray diagrams are required).

Brief introduction to spherical mirrors - concave and convex mirrors, centre and radius of curvature, pole and principal axis, focus and focal length; location of images from ray diagram for various positions of a small linear object on the principal axis of concave and convex mirrors; characteristics of images.

$f = R/2$ (without proof); sign convention and direct numerical problems using the mirror formulae are included. (Derivation of formulae not required)

Uses of spherical mirrors.

Scale drawing or graphical representation of ray diagrams not required.

7. Sound

- (i) Nature of Sound waves. Requirement of a medium for sound waves to travel; propagation and speed in different media; comparison with speed of light.

Sound propagation, terms – frequency (f), wavelength (λ), velocity (V), relation $V = f\lambda$. (Simple numerical problems) effect of different factors on the speed of sound; comparison of speed of sound with speed of light; consequences of the large difference in these speeds in air; thunder and lightning.

- (ii) Infrasonic, sonic, ultrasonic frequencies and their applications.

Elementary ideas and simple applications only. Difference between ultrasonic and supersonic.

8. Electricity and Magnetism

- (i) Simple electric circuit using an electric cell and a bulb to introduce the idea of current (including its relationship to charge); potential difference; insulators and conductors; closed and open circuits; direction of current (electron flow and conventional)

Current Electricity: brief introduction of sources of direct current - cells, accumulators (construction, working and equations excluded); Electric current as the rate of flow of electric charge (direction of current - conventional and electronic), symbols used in circuit diagrams. Detection of current by Galvanometer or ammeter (functioning of the meters not to be introduced). Idea of electric circuit by using cell, key, resistance wire/resistance box/rheostat, qualitatively.; elementary idea about work done in transferring charge through a conductor wire; potential difference $V = W/q$.

(No derivation of formula) simple numerical problems.

Social initiatives: Improving efficiency of existing technologies and introducing new eco-friendly technologies. Creating awareness and building trends of sensitive use of resources and products, e.g. reduced use of electricity.

- (ii) Induced magnetism, Magnetic field of earth. Neutral points in magnetic fields.

Magnetism: magnetism induced by bar magnets on magnetic materials; induction precedes attraction; lines of magnetic field and their properties; evidences of existence of earth's magnetic field, magnetic compass. Uniform magnetic field of earth and non-uniform field of a bar magnet placed along magnetic north-south; neutral point; properties of magnetic field lines.

- (iii) Introduction of electromagnet and its uses.

INTERNAL ASSESSMENT OF PRACTICAL WORK

Candidates will be asked to carry out experiments for which instructions are given. The experiments may be based on topics that are not included in the syllabus but theoretical knowledge will not be required. A candidate will be expected to be able to follow simple instructions, to take suitable readings and to present these readings in a systematic form. He/she may be required to exhibit his/her data graphically. Candidates will be expected to appreciate and use the concepts of least count, significant figures and elementary error handling.

A set of 6 to 10 experiments may be designed as given below or as found most suitable by the teacher. Students should be encouraged to record their observations systematically in a neat tabular form - in columns with column heads including units or in numbered rows as necessary. The final result or conclusion may be recorded for each experiment. Some of the experiments may be demonstrated (with the help of students) if these cannot be given to each student as lab experiments.

1. Determine the least count of the Vernier callipers and measure the length and diameter of a small cylinder (average of three sets) - may be a metal rod of length 2 to 3 cm and diameter 1 to 2 cm.
2. Determine the pitch and least count of the given screw gauge and measure the mean radius of the given wire, taking three sets of readings in perpendicular directions.
3. Measure the length, breadth and thickness of a glass block using a metre rule (each reading correct to a mm), taking the mean of three readings in each case. Calculate the volume of the block in cm^3 and m^3 . Determine the mass (not weight) of the block using any convenient balance in g and kg. Calculate the density of glass in cgs and SI units using mass and volume in the respective units. Obtain the relation between the two density units.
4. Measure the volume of a metal bob (the one used in simple pendulum experiments) from the readings of water level in a measuring cylinder using displacement method. Also calculate the same volume from the radius measured using Vernier callipers. Comment on the accuracies.
5. Obtain five sets of readings of the time taken for 20 oscillations of a simple pendulum of lengths about 70, 80, 90, 100 and 110 cm; calculate the time periods (T) and their squares (T^2) for each length (l). Plot a graph of l vs. T^2 . Draw the best - fit straight - line graph. Also, obtain its slope. Calculate the value of g in the laboratory. It is $4\pi^2 \times$ slope.
6. Take a beaker of water. Place it on the wire gauze on a tripod stand. Suspend two thermometers - one with Celsius and the other with Fahrenheit scale. Record the thermometer readings at 5 to 7 different temperatures. You may start with ice-cold water, then allow it to warm up and then heat it slowly taking temperature (at regular intervals) as high as possible. Plot a graph of T_F vs. T_C . Obtain the slope. Compare with the theoretical value. Read the intercept on T_F axis for $T_C = 0$.
7. Using a plane mirror strip mounted vertically on a board, obtain the reflected rays for three rays incident at different angles. Measure the angles of incidence and angles of reflection. See if these angles are equal.
8. Place three object pins at different distances on a line perpendicular to a plane mirror fixed vertically on a board. Obtain two reflected rays (for each pin) fixing two pins in line with the image. Obtain the positions of the images in each case by extending backwards (using dashed lines), the lines representing reflected rays. Measure the object distances and image distances in the three cases. Tabulate. Are they equal? Generalize the result.
9. Obtain the focal length of a concave mirror (a) by distant object method, focusing its real image on a screen or wall and (b) by one needle method removing parallax or focusing the image of the illuminated wire gauze attached to a ray box. One could also improvise with a candle and a screen. Enter your observations in numbered rows.
10. Connect a suitable dc source (two dry cells or an acid cell), a key and a bulb (may be a small one

used in torches) in series. Close the circuit by inserting the plug in the key. Observe the bulb as it lights up. Now open the circuit, connect another identical bulb in between the first bulb and the cell so that the two bulbs are in series. Close the key. Observe the lighted bulbs. How does the light from any one bulb compare with that in the first case when you had only one bulb? Disconnect the second bulb. Reconnect the circuit as in the first experiment. Now connect the second bulb across the first bulb. The two bulbs are connected in parallel. Observe the brightness of any one bulb. Compare with previous results. Draw your own conclusions regarding the current and resistance in the three cases.

11. Plot the magnetic field lines of earth (without any magnet nearby) using a small compass

needle. On another sheet of paper, place a bar magnet with its axis parallel to the magnetic lines of the earth, i.e. along the magnetic meridian or magnetic north south. Plot the magnetic field in the region around the magnet. Identify the regions where the combined magnetic field of the magnet and the earth is (a) strongest, (b) very weak but not zero, and (c) zero. Why is neutral point, so called?

12. Using a spring balance obtain the weight (in N) of a metal ball in air and then completely immersed in water in a measuring cylinder. Note the volume of the ball from the volume of the water displaced. Calculate the upthrust from the first two weights. Also calculate the mass and then weight of the water displaced by the bob $M=V.\rho$, $W=mg$). Use the above result to verify Archimedes principle.

CLASS X

There will be one paper of **two hours** duration carrying 80 marks and Internal Assessment of practical work carrying 20 marks.

The paper will be divided into **two** sections, Section I (40 marks) and Section II (40 marks).

Section I (compulsory) will contain short answer questions on the entire syllabus.

Section II will contain six questions. Candidates will be required to answer any **four** of these **six** questions.

Note: Unless otherwise specified, only SI Units are to be used while teaching and learning, as well as for answering questions.

1. Force, Work, Power and Energy

- (i) Turning forces concept; moment of a force; forces in equilibrium; centre of gravity; [discussions using simple examples and simple numerical problems].

Elementary introduction of translational and rotational motions; moment (turning effect) of a force, also called torque and its cgs and SI units; common examples - door, steering wheel, bicycle pedal, etc.; clockwise and anti-clockwise moments; conditions for a body to be in equilibrium (translational and rotational); principle of moment and its verification using a metre rule suspended by two spring balances with slotted weights hanging from it; simple numerical problems; Centre of gravity (qualitative only) with examples of some regular bodies and irregular lamina.

- (ii) Uniform circular motion.

As an example of constant speed, though acceleration (force) is present. Differences between centrifugal and centripetal force.

- (iii) Work, energy, power and their relation with force.

Definition of work. $W = FS \cos \theta$; special cases of $\theta = 0^\circ, 90^\circ$. $W = mgh$. Definition of energy, energy as work done. Various units of work and energy and their relation with SI units. [erg, calorie, kW h and eV]. Definition of Power, $P = W/t$; SI and cgs units; other units, kilowatt (kW), megawatt (MW) and gigawatt (GW); and horse power (1hp=746W) [Simple numerical problems on work, power and energy].

- (iv) Different types of energy (e.g. chemical energy, Mechanical energy, heat energy, electrical energy, nuclear energy, sound energy, light energy).

Mechanical energy: potential energy $U = mgh$ (derivation included) gravitational PE, examples; kinetic energy $K = \frac{1}{2} mv^2$ (derivation included); forms of kinetic energy: translational, rotational and vibrational - only simple examples. [Numerical problems on K and U only in case of translational motion]; qualitative discussions of electrical, chemical, heat, nuclear, light and sound energy, conversion from one form to another; common examples.

- (v) Machines as force multipliers; load, effort, mechanical advantage, velocity ratio and efficiency; simple treatment of levers, pulley systems showing the utility of each type of machine.

Functions and uses of simple machines: Terms- effort E, load L, mechanical advantage $MA = L/E$, velocity ratio $VR = V_E/V_L = d_E/d_L$, input (W_i), output (W_o), efficiency (η), relation between η and MA, VR (derivation included); for all practical machines $\eta < 1$; $MA < VR$.

Lever: principle. First, second and third class of levers; examples: MA and VR in each case. Examples of each of these classes of levers as also found in the human body.

Pulley system: single fixed, single movable, block and tackle; MA, VR and η in each case.

- (vi) Principle of Conservation of energy.

Statement of the principle of conservation of energy; theoretical verification that $U + K = \text{constant}$ for a freely falling body. Application of this law to simple pendulum (qualitative only); [simple numerical problems].

2. Light

- (i) Refraction of light through a glass block and a triangular prism - qualitative treatment of simple applications such as real and apparent depth of objects in water and apparent bending of sticks in water. Applications of refraction of light.

Partial reflection and refraction due to change in medium. Laws of refraction; the effect on speed (V), wavelength (λ) and frequency (f) due to refraction of light; conditions for a light ray to pass undeviated. Values of speed of light (c) in vacuum, air, water and glass; refractive index $\mu = c/V$, $V = f\lambda$. Values of μ for common substances such as water, glass and diamond; experimental verification; refraction through glass block; lateral displacement; multiple images in thick glass plate/mirror; refraction through a glass prism simple applications: real and apparent depth of objects in water; apparent bending of a stick under water. (Simple numerical problems and approximate ray diagrams required).

- (ii) Total internal reflection: Critical angle; examples in triangular glass prisms; comparison with reflection from a plane mirror (qualitative only). Applications of total internal reflection.

Transmission of light from a denser medium (glass/water) to a rarer medium (air) at different angles of incidence; critical angle (C) $\mu = 1/\sin C$. Essential conditions for total internal reflection. Total internal reflection in a triangular glass prism; ray diagram, different cases - angles of prism ($60^\circ, 60^\circ, 60^\circ$), ($60^\circ, 30^\circ, 90^\circ$), ($45^\circ, 45^\circ, 90^\circ$); use of right angle prism to obtain $\delta = 90^\circ$ and 180° (ray diagram); comparison of total internal reflection from a prism and reflection from a plane mirror.

- (iii) Lenses (converging and diverging) including characteristics of the images formed (using ray diagrams only); magnifying glass; location of images using ray diagrams and thereby determining magnification.

Types of lenses (converging and diverging), convex and concave, action of a lens as a set of prisms; technical terms; centre of curvature, radii of curvature, principal axis, foci, focal plane and focal length; detailed study of refraction of light in spherical lenses through ray diagrams; formation of images - principal rays or construction rays; location of images from ray diagram for various positions of a small linear object on the principal axis; characteristics of images. Sign convention and direct numerical problems using the lens formula

are included (derivation of formula not required).

Scale drawing or graphical representation of ray diagrams not required.

*Power of a lens (concave and convex) – [simple direct numerical problems]; magnifying glass or simple microscope: location of image and magnification from ray diagram only [formula and numerical problems **not** included]. Applications of lenses.*

- (iv) Using a triangular prism to produce a visible spectrum from white light; Electromagnetic spectrum. Scattering of light.

Deviation produced by a triangular prism; dependence on colour (wavelength) of light; dispersion and spectrum; electromagnetic spectrum: broad classification (names only arranged in order of increasing wavelength); properties common to all electromagnetic radiations; properties and uses of infrared and ultraviolet radiation. Simple application of scattering of light e.g. blue colour of the sky.

3. Sound

- (i) Reflection of Sound Waves; echoes: their use; simple numerical problems on echoes.

Production of echoes, condition for formation of echoes; simple numerical problems; use of echoes by bats, dolphins, fishermen, medical field. SONAR.

- (ii) Natural vibrations, Damped vibrations, Forced vibrations and Resonance - a special case of forced vibrations. *Meaning and simple applications of natural, damped, forced vibrations and resonance.*

- (iii) Loudness, pitch and quality of sound:

Characteristics of sound: loudness and intensity; subjective and objective nature of these properties; sound level in db (as unit only); noise pollution; interdependence of: pitch and frequency; quality and waveforms (with examples).

4. Electricity and Magnetism

- (i) Ohm's Law; concepts of emf, potential difference, resistance; resistances in series and parallel, internal resistance.

Concepts of pd (V), current (I), resistance (R) and charge (Q). Ohm's law: statement,

$V=IR$; SI units; experimental verification; graph of V vs I and resistance from slope; ohmic and non-ohmic resistors, factors affecting resistance (including specific resistance) and internal resistance; superconductors, electromotive force (emf); combination of resistances in series and parallel and derivation of expressions for equivalent resistance. Simple numerical problems using the above relations. [Simple network of resistors].

(ii) Electrical power and energy.

Electrical energy; examples of heater, motor, lamp, loudspeaker, etc. Electrical power; measurement of electrical energy, $W = QV = VIt$ from the definition of pd. Combining with ohm's law $W = VIt = I^2 Rt = (V^2/R)t$ and electrical power $P = (W/t) = VI = I^2 R = V^2/R$. Units: SI and commercial; Power rating of common appliances, household consumption of electric energy; calculation of total energy consumed by electrical appliances; $W = Pt$ (kilowatt \times hour = kWh), [simple numerical problems].

(iii) Household circuits – main circuit; switches; fuses; earthing; safety precautions; three-pin plugs; colour coding of wires.

House wiring (ring system), power distribution; main circuit (3 wires-live, neutral, earth) with fuse / MCB, main switch and its advantages - circuit diagram; two-way switch, staircase wiring, need for earthing, fuse, 3-pin plug and socket; Conventional location of live, neutral and earth points in 3 pin plugs and sockets. Safety precautions, colour coding of wires.

(iv) Magnetic effect of a current (principles only, laws not required); electromagnetic induction (elementary); transformer.

Oersted's experiment on the magnetic effect of electric current; magnetic field (B) and field lines due to current in a straight wire (qualitative only), right hand thumb rule – magnetic field due to a current in a loop; Electromagnets: their uses; comparisons with a permanent magnet; Fleming's Left Hand Rule, the DC electric motor- simple sketch of main parts (coil, magnet, split ring commutators and brushes); brief description and type of energy transfer(working not required): Simple introduction to electromagnetic induction;

frequency of AC in house hold supplies , Fleming's Right Hand Rule, AC Generator - Simple sketch of main parts, brief description and type of energy transfer(working not required). Advantage of AC over DC. Transformer- its types, characteristics of primary and secondary coils in each type (simple labelled diagram and its uses).

5. Heat

(i) Calorimetry: meaning, specific heat capacity; principle of method of mixtures; Numerical Problems on specific heat capacity using heat loss and gain and the method of mixtures.

Heat and its units (calorie, joule), temperature and its units ($^{\circ}C$, K); thermal (heat) capacity $C' = Q/\Delta T...$ (SI unit of C'): Specific heat Capacity $C = Q/m\Delta T$ (SI unit of C) Mutual relation between Heat Capacity and Specific Heat capacity, values of C for some common substances (ice, water and copper). Principle of method of mixtures including mathematical statement. Natural phenomenon involving specific heat. Consequences of high specific heat of water. [Simple numerical problems].

(ii) Latent heat; loss and gain of heat involving change of state for fusion only.

Change of phase (state); heating curve for water; latent heat; specific latent heat of fusion (SI unit). Simple numerical problems. Common physical phenomena involving latent heat of fusion.

6. Modern Physics

(i) Radioactivity and changes in the nucleus; background radiation and safety precautions.

Brief introduction (qualitative only) of the nucleus, nuclear structure, atomic number (Z), mass number (A). Radioactivity as spontaneous disintegration. α , β and γ - their nature and properties; changes within the nucleus. One example each of α and β decay with equations showing changes in Z and A . Uses of radioactivity - radio isotopes. Harmful effects. Safety precautions. Background radiation.

Radiation: X-rays; radioactive fallout from nuclear plants and other sources.

Nuclear Energy: working on safe disposal of waste. Safety measures to be strictly reinforced.

(ii) Nuclear fission and fusion; basic introduction and equations.

A NOTE ON SI UNITS

SI units (*Système International d'Unités*) were adopted internationally in 1968.

Fundamental units

The system has seven fundamental (or basic) units, one for each of the fundamental quantities.

Fundamental quantity	Unit	
	Name	Symbol
Mass	kilogram	kg
Length	metre	m
Time	second	s
Electric current	ampere	A
Temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Derived units

These are obtained from the fundamental units by multiplication or division; no numerical factors are involved. Some derived units with complex names are:

Derived quantity	Unit	
	Name	Symbol
Volume*	cubic metre	m ³
Density	kilogram per cubic metre	kg m ⁻³
Velocity	metre per second	m s ⁻¹
Acceleration	metre per second squared	m s ⁻²
Momentum	kilogram metre per second	kg m s ⁻¹

Some derived units are given special names due to their complexity when expressed in terms of the fundamental units, as below:

Derived quantity	Unit	
	Name	Symbol
Force	newton	N
Pressure	pascal	Pa
Energy, Work	joule	J
Power	watt	W
Frequency	hertz	Hz
Electric charge	coulomb	C
Electric resistance	ohm	Ω
Electromotive force	volt	V

When the unit is named after a person, the *symbol* has a capital letter.

Standard prefixes

Decimal multiples and submultiples are attached to units when appropriate, as below:

Multiple	Prefix	Symbol
10 ⁹	giga	G
10 ⁶	mega	M
10 ³	kilo	k
10 ⁻¹	deci	d
10 ⁻²	centi	c
10 ⁻³	milli	m
10 ⁻⁶	micro	μ
10 ⁻⁹	nano	n
10 ⁻¹²	pico	p
10 ⁻¹⁵	femto	f

INTERNAL ASSESSMENT OF PRACTICAL WORK

Candidates will be asked to carry out experiments for which instructions will be given. The experiments may be based on topics that are not included in the syllabus but theoretical knowledge will not be required. A candidate will be expected to be able to follow simple instructions, to take suitable readings and to present these readings in a systematic form. He/she may be required to exhibit his/her data graphically. Candidates will be expected to appreciate and use the concepts of least count, significant figures and elementary error handling.

Note: Teachers may design their own set of experiments, preferably related to the theory syllabus. A comprehensive list is suggested below.

1. Lever - There are many possibilities with a meter rule as a lever with a load (known or unknown) suspended from a point near one end (say left), the lever itself pivoted on a knife edge, use slotted weights suspended from the other (right) side for effort.

Determine the mass of a metre rule using a spring balance or by balancing it on a knife edge at some point away from the middle and a 50g weight on the other side. Next pivot (F) the metre rule at the 40cm, 50cm and 60cm mark,

each time suspending a load L or the left end and effort E near the right end. Adjust E and or its position so that the rule is balanced. Tabulate the position of L , F and E and the magnitudes of L and E and the distances of load arm and effort arm. Calculate $MA=L/E$ and $VR = \text{effort arm/load arm}$. It will be found that $MA < VR$ in one case, $MA=VR$ in another and $MA>VR$ in the third case. Try to explain why this is so. Also try to calculate the real load and real effort in these cases.

2. Determine the VR and MA of a given pulley system.
3. Trace the course of different rays of light refracting through a rectangular glass slab at different angles of incidence, measure the angles of incidence, refraction and emergence. Also measure the lateral displacement.
4. Determine the focal length of a convex lens by (a) the distant object method and (b) using a needle and a plane mirror.
5. Determine the focal length of a convex lens by using two pins and formula $f = uv/(u+v)$.
6. For a triangular prism, trace the course of rays passing through it, measure angles i_1 , i_2 , A and δ . Repeat for four different angles of incidence (say $i_1=40^\circ$, 50° , 60° and 70°). Verify $i_1+i_2=A+\delta$ and $A = r_1 + r_2$.
7. For a ray of light incident normally ($i_1=0$) on one face of a prism, trace course of the ray. Measure the angle δ . Explain briefly. Do this for prisms with $A=60^\circ$, 45° and 90° .
8. Calculate the sp. heat of the material of the given calorimeter, from the temperature readings and masses of cold water, warm water and its mixture taken in the calorimeter.

9. Determination of sp. heat of a metal by method of mixtures.
10. Determination of specific latent heat of ice.
11. Using a simple electric circuit, verify Ohm's law. Draw a graph, and obtain the slope.
12. Set up model of household wiring including ring main circuit. Study the function of switches and fuses.

Teachers may feel free to alter or add to the above list. The students may perform about 10 experiments. Some experiments may be demonstrated.

EVALUATION

The practical work/project work are to be evaluated by the subject teacher and by an External Examiner. (The External Examiner may be a teacher nominated by the Head of the school, who could be from the faculty, **but not teaching the subject in the relevant section/class**. For example, a teacher of Physics of Class VIII may be deputed to be an External Examiner for Class X, Physics projects.)

The Internal Examiner and the External Examiner will assess the practical work/project work independently.

Award of marks (20 Marks)

Subject Teacher (Internal Examiner)	10 marks
External Examiner	10 marks

The total marks obtained out of 20 are to be sent to the Council by the Head of the school.

The Head of the school will be responsible for the online entry of marks on the Council's CAREERS portal by the due date.

SCIENCE (52)

BIOLOGY

SCIENCE Paper - 3

Aims:

1. To acquire the knowledge of the economic importance of plants and animals.
2. To develop an understanding of the inter-relationship between sustainability and environmental adaptations.
3. To develop an understanding of the interdependence of plants and animals so as to enable pupils to acquire a clearer comprehension
4. of the significance of life and its importance in human welfare.
5. To understand the capacities and limitations of all the biological and economic activities so as to be able to use them for a better quality of life.
6. To acquire the ability to observe, experiment, hypothesize, infer, handle equipment accurately and make correct recordings.

CLASS IX

There will be one paper of **two hours** duration of 80 marks and Internal Assessment of Practical Work carrying 20 marks.

The paper will be divided into **two** sections, Section I (40 marks) and Section II (40 marks).

Section I (compulsory) will contain short answer questions on the entire syllabus.

Section II will contain **six** questions. Candidates will be required to answer any **four** of these **six** questions.

1. Basic Biology

- (i) The cell, a unit of life, protoplasm, basic difference between prokaryotic and eukaryotic cell; differences between an animal and a plant cell.
 - A basic understanding of the cell theory, structure of plant and animal cell with functions of various cell organelles. (Protoplasm, Cytoplasm, Cell Wall, Cell Membrane, Nucleus, Nucleolus, Mitochondria, Endoplasmic Reticulum, Ribosome, Golgi bodies, Plastids, Lysosomes, Centrosome and Vacuole).
 - Major differences between a prokaryotic and eukaryotic cell.
 - Differences between a plant cell and an animal cell should be mainly discussed with respect to cell wall, centrosome, vacuoles and plastids.
- (ii) Tissues: Types of plant and animal tissues.

- A brief understanding of their location, basic structure and functions with examples.
- A brief understanding of their role in different physiological processes in plants and animals.

2. Flowering Plants

- (i) Flower: Structure of a bisexual flower, functions of various parts.
 - A brief introduction to complete and incomplete flowers.
 - Essential and non-essential whorls of a bisexual flower; their various parts and functions.
 - Inflorescence and placentation (meaning only)

(Charts or actual specimens may be used to help enhance clarity of concepts.)
- (ii) Pollination: self and cross-pollination.
 - Explanation, advantages and disadvantages of self and cross-pollination.
 - Agents of pollination and the characteristic features of flowers pollinated by various agents such as insects, wind, and water.
 - A brief idea as to how nature favours cross pollination.

(iii) Fertilisation.

- *Events taking place between pollination and fertilisation leading to the formation of zygote in the embryo sac.*
- *A brief explanation of the terms double fertilization and triple fusion.*
- *Fruit and Seed - definition and significance.*

3. Plant Physiology

(i) Structure of dicot and monocot seeds, Germination of seeds, types, and conditions for seed germination.

- *Structure and germination of Bean seed and Maize grain.*
- *Differences between monocot and dicot seeds.*
- *Differences between hypogeal and epigeal germination.*
- *Conditions for seed germination - To be explained and supported by experiments.*

(ii) Respiration in plants: outline of the process, gaseous exchange.

- *A brief outline of the process mentioning the terms Glycolysis, Krebs cycle and their significance.*
- *A reference to be made to aerobic and anaerobic respiration with chemical equations in each case.*
- *Experiments on gaseous exchange and on heat production.*

4. Diversity in living organisms

(i) A brief outline of the five Kingdom classification.

- *Main characteristics of each kingdom with suitable examples:*
 - *Monera, Protista, Fungi.*
 - *Plantae - Thallophyta, Bryophyta, Pteridophyta and Spermatophyta.*
- *Animalia - non-chordates from Porifera to Echinodermata and Chordates - all five Classes.*

(ii) Economic importance of Bacteria.

(a) *Useful role of bacteria:*

- *Medicine: antibiotics, serums and vaccines*
- *Agriculture: nitrogen cycle (role of nitrogen fixing, nitrifying and denitrifying bacteria)*
- *Industry -curing of tea, tanning of leather.*

(b) *Harmful role of bacteria - spoilage of food, diseases in plants and animals, bio-weapons.*

(iii) Economic importance of Fungi.

A brief idea of the useful role of Fungi in breweries, bakeries, cheese processing, and mushroom cultivation. (Processes of manufacture are not required).

5. Human Anatomy and Physiology

(a) Nutrition:

(i) Classes of food; balanced diet. Malnutrition and deficiency diseases.

- *Functions of carbohydrates, fats, proteins, mineral salts (calcium, iodine, iron and sodium), vitamins and water in proper functioning of the body.*
- *Sources of vitamins, their functions and deficiency diseases.*
- *Meaning and importance of a 'Balanced Diet'.*
- *Role of cellulose in our diet.*
- *Causes, symptoms and prevention of Kwashiorkor and Marasmus.*

(ii) The structure of a tooth, different types of teeth.

- *Structure of a tooth to be discussed with the help of a diagram.*
- *Functions of different types of teeth.*
- *Dental formula of an adult.*

(iii) Digestive System: Organs, digestive glands and their functions (including enzymes and their functions in digestion,

absorption and assimilation of digested food).

- *Organs and glands of the digestive system and their functions with reference to digestion, absorption and assimilation.*
- *brief idea of peristalsis.*

(b) Skeleton - Movement and Locomotion.

- Functions of human skeleton
- Axial and Appendicular Skeleton
- Types of joints with reference to their location:
 - *immovable joints*
 - *slightly movable joints*
 - *freely movable (hinge joint, ball and socket joint, gliding joint, pivot joint.)*

(c) Structure and functions of skin.

- *Various parts of the skin and their functions.*
- *Special derivatives of the skin with reference to sweat glands, sebaceous glands, hair, nails and mammary glands.*
- *Heat regulation - vasodilation and vasoconstriction.*

(d) Respiratory System: Organs; mechanism of breathing; tissue respiration, heat production.

- *Structures of the respiratory system.*
- *Differences between anaerobic respiration in plants and in man.*
- *Role of diaphragm and intercostal muscles in breathing to provide a clear idea of the breathing process.*
- *Brief idea of gaseous transport and tissue respiration.*
- *Brief understanding of respiratory volumes.*
- *Effect of altitude on breathing; asphyxiation and hypoxia.*

6. Health and Hygiene

(i) A brief introduction to maintaining good health.

General idea of personal hygiene, public hygiene and sanitation.

(ii) A brief introduction to communicable, non-communicable, endemic, epidemic, pandemic and sporadic diseases; modes of transmission.

- *Meaning of each of the above with examples.*

- *Modes of transmission: air borne, water borne; vectors (housefly, mosquito, cockroach).*

(iii) Bacterial, Viral, Protozoan, Helminthic diseases:

- *Bacterial: Cholera, typhoid, tuberculosis.*

- *Viral: AIDS, Chicken pox, Hepatitis.*

- *Protozoan: Malaria, Amoebic Dysentery, Sleeping sickness.*

- *Helminthic: Ascariasis, Taeniasis, Filiariasis.*

(symptoms and measures to control the above diseases.)

(Scientific names of causative agents not required).

(iv) Aids to Health: Active and passive immunity.

- *Meaning of Active and passive immunity.*

- *An understanding of the use and action of the following – vaccination, immunization, antitoxin, serum, antiseptics, disinfectants, antibiotics.*

- *An idea of the local defense system and its merits, difference between antiseptics and disinfectants.*

(v) Health Organisations: Red Cross, WHO.

Major activities of the Red Cross and WHO.

7. Waste generation and management

(a) Sources of waste - domestic, industrial, agricultural, commercial and other establishments.

- *Domestic waste: paper, glass, plastic, rags, kitchen waste, etc.*
- *Industrial: mining operations, cement factories, oil refineries, construction units.*
- *Agricultural: plant remains, animal waste, processing waste.*
- *Municipal sewage: Sewage, degradable and non-degradable waste from offices, etc.*
- *e-waste: brief idea about e-waste.*

(b) Methods of safe disposal of waste.

- *Segregation, dumping, composting, drainage, treatment of effluents before discharge, incineration, use of scrubbers and electrostatic precipitators.*
- *Segregation of domestic waste into biodegradable and non-biodegradable by households: garden waste to be converted to compost; sewage treatment plants.*

INTERNAL ASSESSMENT OF PRACTICAL WORK

The practical work is designed to test the ability of the candidates to make accurate observations from specimens of plants and animals-

PLANT LIFE

- (i) The examination of an onion peel under the microscope to study various parts of the cell.
- (ii) A cross-pollinated flower to be examined and identified and the parts to be studied and labelled e.g. Hibiscus.

(iii) Specimens of germinating seeds with plumule and radicle (the bean seed and maize grain) for examination, identification, drawing and labelling the parts.

ANIMAL LIFE

- (i) The examination of a human cheek cell under the microscope to study various parts of the cell.
- (ii) Identification of sugar, starch, protein and fat through conduct of relevant tests.
- (iii) Examination and identification of specimens belonging to the following groups of animals:
Non-Chordata - Porifera, Coelenterata, Platyhelminthes, Nematelminthes Annelida, Arthropoda. Mollusca and Echinodermata.
Chordata- Pisces, Amphibia, Reptilia, Aves, Mammalia.
Identification of the structure of the following organs through specimens/models and charts:
Lung and skin.
- (iv) Experiments to show the mechanism of breathing. *Bell jar experiment should be discussed. Comparison should be made with the human lungs and respiratory tract to show the mechanism of breathing.*
- (v) Visit a few establishments in the locality such as motor repair workshops, kilns, pottery making units, fish and vegetable markets, restaurants, dyeing units. Find out the types of wastes and methods prevalent for their disposal. On the basis of the information collected prepare a report, suggest measures to improve the environmental conditions.
- (vi) Visit a water treatment plant, sewage treatment plant or garbage dumping or vermicomposting sites in the locality and study their working.

CLASS X

There will be one paper of **two hours** duration of 80 marks and Internal Assessment of practical work carrying 20 marks.

The paper will be divided into **two** sections, Section I (40 marks) and Section II (40 marks).

Section I (compulsory) will contain short answer questions on the entire syllabus.

Section II will contain **six** questions. Candidates will be required to answer any **four** of these **six** questions.

1. Basic Biology

(i) Cell Cycle and Cell Division.

Cell cycle – Interphase (G_1 , S , G_2) and Mitotic phase.

Cell Division:

- *Mitosis and its stages.*
- *A basic understanding of Meiosis as a reduction division (stages not required).*
- *A brief idea of homologous chromosomes and crossing over leading to variations.*
- *Significance and major differences between mitotic and meiotic division.*

(ii) Structure of chromosome.

Basic structure of chromosome with elementary understanding of terms such as chromatin, chromatid, gene structure of DNA and centromere.

(iii) Genetics: Mendel's laws of inheritance and sex-linked inheritance of diseases.

- *The three laws of Mendel.*
- *Monohybrid cross – phenotype and genotype.*
- *Dihybrid cross – Only phenotype.*
- *The following terms to be covered: gene, allele, heterozygous, homozygous, dominant, recessive, mutation, variation, phenotype, genotype.*
- *Sex determination in human beings.*

Sex linked inheritance of diseases to include only X-linked like haemophilia and colour blindness.

2. Plant Physiology

(i) Absorption by roots, imbibition, diffusion and osmosis; osmotic pressure, root pressure; turgidity and flaccidity; plasmolysis and deplasmolysis; the absorption of water and minerals; active and passive transport (in brief); The rise of water up to the xylem; Forces responsible for ascent of sap.

- *Understanding of the processes related to absorption of water by the roots.*
- *Characteristics of roots, which make them suitable for absorbing water.*
- *Structure of a single full-grown root hair.*
- *A general idea of Cohesive, Adhesive forces and transpirational pull.*
- *Experiments to show the conduction of water through the xylem.*

(ii) Transpiration - process and significance. Ganong's potometer and its limitations. The factors affecting rate of transpiration. Experiments on transpiration. A brief idea of guttation and bleeding.

- *Concept of transpiration and its importance to plants*
- *Experiments related to transpiration:*
 - (a) *Loss in weight of a potted plant or a leafy shoot in a test tube as a result of transpiration.*
 - (b) *Use of cobalt chloride paper to demonstrate unequal rate of transpiration in a dorsiventral leaf.*
- *Mechanism of stomatal transpiration on the basis of potassium ion exchange theory.*
- *Adaptations in plants to reduce transpiration.*
- *A brief idea of guttation and bleeding.*

(iii) Photosynthesis: the process and its importance to life in general; experiments to show the necessity of light, carbon dioxide, chlorophyll, formation of starch and release of oxygen; carbon cycle.

- *The process and significance of Photosynthesis.*
- *The internal structure of chloroplast to be explained to give an idea of the site of light and dark reactions.*
- *Opening and closing of stomata based on potassium ion exchange theory.*
- *Overall balanced chemical equation to represent photosynthesis.*
- *Introduction of the terms "photochemical" for light phase and "biosynthetic" for dark phases.*
- *Light reaction - activation of chlorophyll followed by photolysis of water, release of O₂, formation of ATP (photophosphorylation) and NADPH.*
- *Dark reaction - only combination of hydrogen released by NADP with CO₂ to form glucose. (detailed equations are not required).*
- *Adaptations in plants for photosynthesis.*
- *Experiments with regard to the factors essential for photosynthesis; emphasis on destarching and the steps involved in starch test.*
- *A diagrammatic representation of "carbon cycle".*

(iv) Chemical coordination in Plants: A general study of plant growth regulators; Tropic movements in plants.

- *A brief idea of the physiological effects of Auxins, Gibberellins, Cytokinins, Abscisic acid and Ethylene in regulating the growth of plants.*
- *A basic understanding of the tropic movements in plants with reference to – Phototropism, Geotropism, Hydrotropism, Thigmotropism and Chemotropism (supported with suitable examples).*

3. Human Anatomy and Physiology

(i) Circulatory System: Blood and lymph, the structure and working of the heart, blood vessels, circulation of blood (only names of the main blood vessels entering and leaving the heart, liver and kidney will be required). Lymphatic system.

- *Composition of blood (structure and functions of RBC, WBC and platelets).*
- *Brief idea of tissue fluid and lymph.*
- *Increase in efficiency of mammalian red blood cells due to absence of certain organelles; reasons for the same.*
- *A brief idea of blood coagulation.*
- *Structure and working of the heart along with names of the main blood vessels entering and leaving the heart, the liver and the kidney.*
- *Concept of systole and diastole; concept of double circulation.*
- *Brief idea of pulse and blood pressure.*
- *Blood vessels: artery, vein and capillary to be explained with the help of diagrams to bring out the relationship between their structure and function.*
- *Brief idea of the lymphatic organs: spleen and tonsils.*
- *ABO blood group system, Rh factor.*
- *Significance of the hepatic portal system.*

(ii) Excretory System: A brief introduction to the excretory organs; parts of the urinary system; structure and function of the kidneys; blood vessels associated with kidneys; structure and function of nephron

- *A brief idea of different excretory organs in the human body.*
- *External and internal structure of the kidney;*
- *Parts of the urinary system along with the blood vessels entering and leaving the kidney; functions of various parts of the urinary system (emphasis on diagram with correct labelling). A general idea of the structure of a kidney tubule/ nephron.*

- *A brief idea of ultra-filtration (emphasis on the diagram of malpighian capsule); selective reabsorption and tubular secretion in relation to the composition of blood plasma and urine formed.*
- (iii) Nervous system: Structure of Neuron; central, autonomous and peripheral nervous system (in brief); brain and spinal cord; reflex action and how it differs from voluntary action.
- Sense organs – Eye: Structure, functions, defects and corrective measures: Ear: Parts and functions of the ear.
- *Parts of a neuron.*
 - *Various parts of the external structure of the brain and its primary parts: Medulla Oblongata, Cerebrum, Cerebellum, Thalamus, Hypothalamus and Pons; their functions.*
 - *Reference to the distribution of white and gray matter in Brain and Spinal cord.*
 - *Voluntary and involuntary actions – meaning with examples.*
 - *Diagrammatic explanation of the reflex arc, showing the pathway from receptor to effector.*
 - *A brief idea of the peripheral and autonomic nervous system in regulating body activities.*
 - *Differences between natural and acquired reflex.*
 - *External and Internal structure and functions of the Eye and Ear and their various parts.*
 - *A brief idea of stereoscopic vision, adaptation and accommodation of eye.*
 - *Defects of the eye (myopia, hyperopia hypermetropia, presbyopia, astigmatism and cataract) and corrective measures (diagrams included for myopia and hyperopia only)*
 - *The course of perception of sound in human ear.*
 - *Role of ear in maintaining balance of the body.*
- (iv) Endocrine System: General study of the following glands: Adrenal, Pancreas, Thyroid and Pituitary. Endocrine and Exocrine glands.
- *Differences between Endocrine and Exocrine glands.*
 - *Exact location and shape of the endocrine glands in the human body.*
 - *Hormones secreted by the following glands: Pancreas: insulin and glucagon; Thyroid: only thyroxin; Adrenal gland: Cortical hormones and adrenaline; Pituitary: growth hormone, tropic hormones, ADH and oxytocin.*
 - *Effects of hypo secretion and hyper secretion of hormones.*
 - *A brief idea of Feedback mechanism with reference to TSH.*
- (v) The Reproductive System: Organs, fertilisation functions of placenta in the growth of the embryo Menstrual cycle.
- *Functions of Male and Female reproductive organs and male accessory glands. An idea of secondary sexual characters.*
 - *Structure and functions of the various parts of the sperm and egg.*
 - *Explanation of the terms: Fertilization, implantation, placenta, gestation and parturition.*
 - *A brief idea of the role of placenta in nutrition, respiration and excretion of the embryo; its endocrinal function.*
 - *Functions of Foetal membranes and amniotic fluid.*
 - *Menstrual cycle, outline of menstrual cycle.*
 - *Role of Sex hormones: Testosterone, Oestrogen and Progesterone in reproduction.*
 - *Identical and fraternal twins: meaning and differences only.*

5. Population

Population explosion in India; need for adopting control measures - population control.

- *Main reasons for the sharp rise in human population in India and in the world.*
- *A brief explanation of the terms: demography, population density, birth rate, death rate and growth rate of population.*
- *Problems faced due to population explosion: unemployment, over exploitation of natural resources, low per capita income, price rise, pollution, unequal distribution of wealth.*
- *Methods of population control: Surgical methods – Tubectomy and vasectomy.*

6. Human Evolution

Basic introduction to Human evolution and Theories of evolution: Lamarck's theory of inheritance; Darwin's theory of evolution by natural selection.

- *A brief idea of human ancestors – Australopithecus, Homo habilis, Homo erectus, Neanderthals, Cro-Magnon and Homo sapiens sapiens (Modern Man) with reference to the following characteristics:*
 - *Bipedalism*
 - *Increasing Cranial capacity*
 - *Reduction of size of canine teeth*
 - *Forehead and brow ridges*
 - *Development of chin*
 - *Reduction in body hair*
 - *Height and Posture*
- *Lamarck's theory of inheritance of acquired characteristics – with reference to use of organs (e.g.: neck and forelimbs of giraffe) and disuse of organs (e.g.: vestigial organs in humans like wisdom teeth, vermiform appendix, pinnae).*
- *Darwin's theory of Natural selection: Survival of the fittest - e.g. adaptation of peppered moth.*

7. Pollution

(i) Types and sources of pollution; major pollutants.

- *Air: Vehicular, industrial, burning garbage, brick kilns.*
- *Water: Household detergents, sewage, industrial waste, oil spills.*
- *Thermal pollution.*
- *Soil: Industrial waste, urban commercial and domestic waste, chemical fertilizers.*
- *Biomedical waste – used and discarded needles, syringes, soiled dressings etc.*
- *Radiation: X-rays; radioactive fallout from nuclear plants.*
- *Noise: Motor Vehicles, Industrial establishments, Construction Sites, Loudspeakers etc.*

(ii) Biodegradable and Non-biodegradable wastes

Biodegradable wastes: meaning and example; paper, vegetable peels, etc.

Non-biodegradable wastes: meaning and example; plastics, glass, Styrofoam etc. Pesticides like DDT etc.

(iii) Effects of pollution on climate, environment, human health and other organisms; control measures.

- *Brief explanation of: Greenhouse effect and Global warming, Acid rain, Ozone layer depletion.*
 - *Measures to control pollution:*
 - *Use of unleaded petrol / CNG in automobiles*
 - *Switching of engines at traffic signal lights*
 - *Social forestry*
 - *Setting of sewage treatment plants*
 - *Ban on polythene and plastics*
 - *Organic farming*
 - *Euro Bharat vehicular standard.*
- (A brief idea of the above measures)*
- *A brief mention of “Swachh Bharat Abhiyan”- A national campaign for Clean India.*

INTERNAL ASSESSMENT OF PRACTICAL WORK

The practical work is designed to test the ability of the candidates to make an accurate observation from specimens of plants and animals.

PLANT LIFE

- (i) Observation of permanent slides of stages of mitosis.
- (ii) Experiments demonstrating:
 - Diffusion: using potassium permanganate in water.
 - Osmosis: Thistle Funnel experiment and potato osmoscope,
 - Absorption: using a small herbaceous plant.
- (iii) Experiments on Transpiration:
 - demonstration of the process using a Bell Jar.
 - demonstration of unequal transpiration in a dorsiventral leaf using cobalt chloride paper.
 - demonstration of uptake of water and the rate of transpiration using Ganong's potometer.
- (iv) Experiments on Photosynthesis:
 - to show the necessity of light, carbon dioxide and chlorophyll-for photosynthesis.
 - to show the release of O₂ during photosynthesis using hydrilla / elodea.

ANIMAL LIFE

- (i) Identification of the structures of the urinary system, heart and kidney (internal structure) and brain (external view) through models and charts

- (ii) The identification of different types of blood cells under a microscope.
- (iii) Identification of the internal structure of the Ear and Eye (Through models and charts).
- (iv) Identification and location of selected endocrine glands: Adrenal, Pancreas, Thyroid and Pituitary glands with the help of a model or chart.

EVALUATION

The practical work/project work are to be evaluated by the subject teacher and by an External Examiner. (The External Examiner may be a teacher nominated by the Head of the school, who could be from the faculty, **but not teaching the subject in the relevant section/class**. For example, a teacher of Biology of Class VIII may be deputed to be an External Examiner for Class X, Biology projects.)

The Internal Examiner and the External Examiner will assess the practical work/project work independently.

Award of marks (20 Marks)

Subject Teacher (Internal Examiner)	10 marks
External Examiner	10 marks

The total marks obtained out of 20 are to be sent to the Council by the Head of the school.

The Head of the school will be responsible for the online entry of marks on the Council's CAREERS portal by the due date.

INTERNAL ASSESSMENT IN SCIENCE - GUIDELINES FOR MARKING WITH GRADES

Criteria	Preparation	Procedure/ Testing	Observation	Inference/ Results	Presentation
Grade I (4 marks)	Follows instructions (written, oral, diagrammatic) with understanding; modifies if needed. Familiarity with and safe use of apparatus, materials, techniques.	Analyses problem systematically. Recognises a number of variables and attempts to control them to build a logical plan of investigation.	Records data/observations without being given a format. Comments upon, recognises use of instruments, degree of accuracy. Recording is systematic.	Processes data without format. Recognises and comments upon sources of error. Can deal with unexpected results, suggesting modifications.	Presentation is accurate and good. Appropriate techniques are well used.
Grade II (3 marks)	Follows instructions to perform experiment with step-by-step operations. Awareness of safety. Familiarity with apparatus, materials and techniques.	Specifies sequence of operation; gives reasons for any change in procedure. Can deal with two variables, controlling one.	Makes relevant observations. No assistance is needed for recording format that is appropriate.	Processes data appropriately as per a given format. Draws qualitative conclusions consistent with required results.	Presentation is adequate. Appropriate techniques are used.
Grade III (2 marks)	Follows instructions to perform a single operation at a time. Safety awareness. Familiarity with apparatus & materials.	Develops simple experimental strategy. Trial and error modifications made to proceed with the experiment.	Detailed instructions needed to record observations. Format required to record results.	Processes data approximately with a detailed format provided. Draws observations qualitative conclusions as required.	Presentation is reasonable, but disorganised in some places. Overwriting; rough work is untidy.
Grade IV (1 mark)	Follows some instructions to perform a single practical operation. Casual about safety. Manages to use apparatus & materials.	Struggles through the experiment. Follows very obvious experimental strategy.	Format required to record observations/readings but tends to make mistakes in recording.	Even when detailed format is provided, struggles or makes errors while processing data. Reaches conclusions with help.	Presentation is poor and disorganised but follows an acceptable sequence. Rough work missing or untidy.
Grade V (0 marks)	Not able to follow instructions or proceed with practical work without full assistance. Unaware of safety.	Cannot proceed with the experiment without help from time to time.	Even when format is given, recording is faulty or irrelevant.	Cannot process results, nor draw conclusions, even with considerable help.	Presentation unacceptable; disorganised, untidy/poor. Rough work missing.

ECONOMICS (64)

(Candidates offering Economic Applications are not eligible to offer Economics.)

Aims:

1. To acquire the knowledge of terms, facts, concepts, trends, principles, assumptions, etc. in Economics.
2. To develop familiarity with the basic terminology and elementary ideas of Economics.
3. To acquire knowledge of contemporary economic problems and to appreciate the efforts being made to solve these problems.
4. To develop an understanding of the Nation's physical and human resources and how to avoid their misuse.
5. To understand the various economic processes that help in improving our standard of living.

CLASS IX

There will be **one** paper of **two** hours duration carrying 80 marks and Internal Assessment of 20 marks.

The paper will be divided into **two** sections A and B.

Section A will consist of **compulsory** questions requiring short answers and will cover the entire syllabus.

Section B will consist of questions, which will require detailed answers. There will be a choice and candidates will be required to answer **four** questions from this section.

1. Introduction to Economics

- (i) Definition of Economics according to Adams, Robbins, Keynes and Samuelson.
Self-explanatory.
- (ii) Micro & Macro Economics.
Meaning, difference and examples only.
- (iii) Types of activities.
Economic and non-economic activities: meaning and examples; difference between Economic and non-economic activities.
- (iv) Sectors in an Economy.
Primary, secondary and tertiary sectors: meaning and examples along with; differences.
- (v) Basic Economic terms.
Meaning of the following economic terms: Wants, Goods, services, wealth, utility, production, consumption, sustainable consumption, factors of production, market, price, value, income, saving, wealth, welfare, economy.
- (vi) Entities.
Government sectors, firms, households, foreign sector: meaning only.

2. Types of Economies

- (i) On the basis of Nature.
Capitalist Economy, Socialist Economy, Mixed Economy – with reference to India (meaning and differences).
- (ii) On the basis of Development.
Developed Economy and Developing Economy: meaning and differences.
- (iii) Economic growth and development.
Meaning and differences.

3. Problems of an Economy

- (i) Limited availability of Resources.
Meaning and types of resources with examples; meaning and examples of limited resources; an understanding of the basic economic problem - Human wants are unlimited in relation to limited resources that have alternative uses; need for efficient use of resources (brief understanding with an example.)
- (ii) Central problems of an economy.
What to produce? How to produce? For whom to produce? - A brief understanding with examples.

4. The Indian Economy: A Study

- (i) Primary Sector: Agriculture - contribution of agriculture; problems of Indian agriculture; government measures to increase agricultural production; Green revolution and its impact; food security.
(a) Agriculture and allied activities: meaning; contribution of agriculture to employment, industry, trade and self-sufficiency in food

production: a brief understanding of the above.

- (b) *Problems of Indian Agriculture: a brief understanding of: limited use of technology, fragmentation of land holdings, dependence on monsoon, lack of rural credit facilities, inadequate storage & marketing facilities.*
- (c) *Government measures to improve agricultural production: Use of High Yielding variety seeds, use of fertiliser and insecticides, Better irrigation facilities, Adoption of technology, Setting up of agricultural research centres and institutes, Provision & expansion of rural credit facilities. Provision of better storage and marketing facilities: a brief understanding of the above.*
- (d) *Green Revolution: meaning and its positive impacts.*
- (e) *Meaning of Food Security; role of Food Corporation of India(FCI).*
- (ii) **Secondary: Industry: meaning and types; adverse impacts of industrialisation and measures to overcome adverse impacts.**
- (a) *Meaning of Industry; a brief understanding of the interdependence of Agriculture and Industry.*
- (b) *Types of Industries; large scale and medium scale Industries. Meaning, features and examples only. Cottage & Small-Scale Industries. Meaning, features and examples; significance with reference to India.*
- (c) *Adverse impacts of industrialisation: a brief understanding of the adverse impacts with reference to industrial pollution and deforestation; measures to overcome the adverse impacts: Afforestation, Waste management.*
- (iii) **Tertiary Sector: Education and Healthcare, Transportation, Banking, Insurance, Communication, Storage and Warehousing.**
- Role of each of the above in the economic development of the country in brief with the help of examples.*

5. Major Problems of the Indian Economy

- (i) **Poverty**
Meaning of poverty line - concept based on calorie intake; Relative and absolute poverty: meaning with examples; causes of poverty: any five causes of poverty to be discussed.
- (ii) **Unemployment**
Meaning; Types: Seasonal, Structural, Technological: meaning and example of each. Causes of unemployment- any five to be discussed.
- (iii) **Schemes and Programmes introduced by the government to remove poverty & unemployment.**
Any two programmes to be studied with the objectives. For example, IRDP, JRY, PKVY, HRIDAY, MNREGA, etc.
- ## **6. Major Reforms and Emerging trends in the Indian Economy**
- (i) **LPG Model**
Liberalisation, Privatisation and Globalisation: meaning of each term and its positive impact on the Indian economy.
- (ii) **Smart city**
Concept of Smart city; Case Study: take one suitable example of a smart city and discuss the development taken place in the form of infrastructure development, reduction of unemployment, poverty alleviation, HR development and industrial development.
- (iii) **'Digital India' and 'Skill India'.**
Case study of each of the above (not to be tested).

INTERNAL ASSESSMENT

The minimum number of assignments:

One project/assignment as prescribed by the teacher from the syllabus.

Suggested Assignments:

1. A case study on the effects of industrial pollution.
2. Conduct a research on the local economy using any one parameter, for example, education, health, employment and so on.
3. Conduct a research on any industry and study how the output has been impacted post liberalisation and globalisation.
4. Analyse any recent government scheme in context to the infrastructural development in the country.
5. Visit a small scale or cottage industry and write a report on the basis of the techniques of production being used.

CLASS X

There will be one paper of **two** hours duration carrying 80 marks and Internal Assessment of 20 marks.

The paper will be divided into **two** sections A and B.

Section A will consist of questions requiring short answers and will cover the entire syllabus. There will be no choice of questions.

Section B will consist of questions which will require detailed answers. There will be a choice and candidates will be required to answer **four** questions from this section.

1. The Productive Mechanism

Factors of production: Land, labour, capital and entrepreneur: their impact on the production structure in an economy.

- (i) *Land: meaning and characteristics, productivity of land – meaning only; factors affecting productivity of land.*
- (ii) *Labour: meaning and characteristics; division of labour: meaning, type and advantages; efficiency of labour; meaning, reasons for low efficiency of Indian labour.*
- (iii) *Capital: meaning and characteristics and types: physical and financial capital- meaning with examples; Capital Formation; meaning, Process of capital formation; Need for capital formation;*
- (iv) *Entrepreneur: meaning, functions and role of entrepreneur in economic development.*

2. Theory of Demand and Supply

- (i) Meaning and concept of Demand and Supply.

Law of demand and supply: demand and supply schedule and curve (both individual and market); movement and shift of the demand and supply curve; determinants of demand and supply; exceptions to the law of demand.

Meaning of demand and supply; the concept of Demand, types of demand and concept of supply to be explained (with examples).

A basic understanding of the law of demand and supply in which demand and supply

schedules to be used to explain the demand and supply curves. The individual demand and supply curves must be distinguished from market demand and supply curves. Concept of movement and shift of Demand and Supply curves are to be explained. Determinants of demand and supply are to be specified. Exceptions to the law of demand are to be discussed.

- (ii) Elasticity of demand and elasticity of supply: meaning, types, percentage method of measuring elasticity of demand and elasticity of supply, factors affecting elasticity of demand and supply.

The concept of price elasticity of demand and elasticity of supply are to be explained with percentage method. Factors affecting the elasticity of demand and supply are to be specified. (Numerical problems are not for testing).

3. Market

Meaning and types.

Meaning of Market; Types of Markets: Perfect competition, Monopoly, Monopolistic Competition, Oligopoly - meaning with examples; a brief understanding of the features of the different types of markets along with differences.

4. Banking in India

- (i) Money

A basic understanding of the inconvenience of the barter system and the evolution of money; legal definition of money; functions of money: medium of exchange, measure of value; standard of deferred payment, store of value.

- (ii) Commercial banks: Meaning and functions.

Meaning. Functions of Commercial banks: Accepting deposits (a brief understanding of the types of deposits); Advancing loans (a brief understanding of the types of loans, methods of advancing loans); Credit creation (a brief understanding of credit creation on the basis of Primary and derivative deposits).

(iii) Central Bank
Meaning. Functions of Central Bank: monopoly of Note issue; Bankers Bank; Banker, Agent and Advisor to the Government; Custodian of Foreign Exchange; Lender of the Last Resort: A brief understanding of the functions.

(iv) Monetary Policy of the Central Bank
(a) *Qualitative Credit control measures: margin requirements; credit rationing; moral suasion.*
(b) *Quantitative Credit control measures: Bank Rate, Open Market Operations, Cash Reserve Ratio (CRR), Statutory Liquidity Ratio.*
A brief understanding of the above.

(v) Demonetisation
A brief understanding.

(vi) Public Finance
(a) Meaning of Public Finance.
(b) Sources of Public Revenue:

- Tax Revenue.
Direct Tax (meaning, merits and demerits); Indirect Tax (meaning, merits and demerits); difference between direct and indirect taxes. Goods and Services Tax (GST) - Meaning and objectives; Progressive, proportional, regressive and degressive taxes - meaning only.
- Non-tax revenue.
Meaning with examples.

(c) Public Expenditure.
Meaning of public expenditure, Revenue and Capital expenditure with examples; reason for growth of public expenditure in India.

(d) Public Debt.
Meaning and types of Public debts.

5. Inflation

(i) Inflation, Wholesale Price Index (WPI), Consumer Price Index (CPI), Food Basket.
Meaning of the above.

(ii) Stages of Inflation
Creeping, Walking, Running and Hyper – meaning only.

(iii) Types of Inflation: Cost push inflation and demand- pull inflation
Meaning, causes and differences only (diagram not required). Positive and negative effects of inflation on production. Positive and negative effects of inflation on distribution with reference to fixed income group and business income group only.

6. Consumer Awareness

(i) Consumer Exploitation and Consumer awareness.
Meaning of consumer exploitation; a brief understanding of the forms of consumer exploitation; reasons for exploitation of consumers in India - a brief understanding. Meaning of Consumer Awareness.

(ii) Consumer Rights & Duties.
A brief understanding of the above. COPRA - meaning and features; RTI - meaning and significance.

(iii) Food adulteration.
Meaning and harmful effects.

(iv) Technical and Administrative measures for Consumer Protection:
A brief understanding of: Public Distribution System (PDS); Bureau of Indian Standards (BIS); AGMARK, ECOMARK.

INTERNAL ASSESSMENT

The minimum number of assignments:

One project/assignment as prescribed by the teacher from the syllabus.

Suggested Assignments:

- A visit to a local industrial unit and analyse the combination of the factors of production being used in the production process.
- Survey 15 people from your neighbourhood about the type of taxes they pay. From your survey conclude which type of tax is easier to pay and why.

- Visit a nearby store. Select five items of regular consumption. Study the following: the impact of GST on these five products; how this has impacted the demand for these products; how it has benefitted the producer, consumer and the government.

EVALUATION

The assignments/project works are to be evaluated by the subject teacher and by an External Examiner.

(The External Examiner may be a teacher nominated by the Head of the school, who could be from the faculty, **but not teaching the subject in the section/class**. For example, a teacher of Economics of Class XI may be

deputed to be an External Examiner for Class X, Economics projects.)

The Internal Examiner and the External Examiner will assess the assignments independently.

Award of marks: (20 Marks)

Subject Teacher (Internal Examiner) 10 marks

External Examiner 10 marks

The total marks obtained out of 20 are to be sent to the Council by the Head of the school.

The Head of the school will be responsible for the online entry of marks on the Council's CAREERS portal by the due date.

INTERNAL ASSESSMENT IN ECONOMICS - GUIDELINES FOR MARKING WITH GRADES

Grade	Preparation/ Research	Information	Observation	Inference	Presentation	<i>Marks</i>
I	Follows instructions with understanding. Masters research techniques easily. Reference work is orderly.	A good deal of relevant matter. Uses wide range of sources.	Systematic record of data; good arrangement of data; creative representation.	Work indicates understanding, good comprehension of subject.	Methodical, precise and clear expression; neat and tidy presentation; optimum utilisation of skills.	4
II	Follows instructions but needs a little help in research techniques. Reference notes quite orderly.	Selects matter relevant to context. Limited use of references/ sources.	Able to record data correctly.	Can judge and grasp information correctly; conclusion quantitatively evaluated.	Work neat and tidy and clearly presented; methodical and appropriate techniques used.	3
III	Follows instructions but needs constant guidance. Reference notes at times disorderly.	Relevant matter but limited reference work. Matter is sketchy.	Assistance required in presenting, recording and arranging data.	Requires some assistance to grasp the relevance and validity of information; able to relate to economic scenario.	Reasonably clear but work disorganised in places; writing untidy in places.	2
IV	Struggles with research methods and needs constant guidance. Reference notes copied without reference to keywords.	Hardly any reference material. Use of irrelevant matter. Matter is quite sketchy.	Tends to make mistakes in organising data.	Assistance required in order to grasp the relevance and validity of information; tends to make errors.	Sequence of work acceptable but not very neat; poor presentation.	1
V	Cannot follow instructions. Works 'blindly' without reference to keywords.	No reference work/copied from other textbooks/ sketchy matter.	Makes mistakes in organizing data; not able to proceed even with assistance.	Cannot process results; faulty conclusions in spite of assistance provided.	Data presentation untidy and disorganised; effort and initiative lacking.	0

PHYSICAL EDUCATION (72)

Aims:

1. To create an awareness of the necessity for vigour and efficiency through physical fitness.
2. To develop knowledge and understanding of the requirements for healthy living, nutrition, exercise and relaxation.
3. To create awareness of the necessity to develop good posture and physical poise.
4. To develop knowledge and understanding of skills relating to leisure time activities and of a recreational nature.
5. To create opportunities to develop 'esprit de corps', courtesy, sportsmanship, social skills, democratic conduct and ideals.
6. To develop appreciation of the aesthetic and cultural aspects of movement.

CLASS IX

There will be one written paper of two hours duration carrying 100 marks and Internal Assessment of 100 marks.

The written paper will be divided into two Sections, A and B.

Section A: *will consist of compulsory short answer questions on Section A of the syllabus.*

Section B: *Candidates will be required to answer questions on the rules, skills required and the methods of training of any two of the given team games.*

PART 1: THEORY – 100 Marks

Section A

1. The Human Anatomy and Physiology

- (i) Skeletal System: Bones

Identification of the following bones within the body:

Neck – Cranium and Vertebrae, Shoulder – Scapula and Clavicle, Thorax – Ribs and Sternum, Fore limb – Humerus, radius, Ulna, Carpals, Metacarpals and Phalanges, Spine – Vertebrae, Hip – Pelvis, Hind limb – Femur, Patella, Fibula, Tibia, Tarsals, Metatarsals and Phalanges.

- (ii) Functions of the skeletal system.

Framework and Support, Movement, Protection of vital organs, Mineral storage, Blood cell production.

- (iii) Classification of different types of joints:

Fixed joints / fibrous joints (skull), Slightly movable joints / cartilaginous joints (knee, elbow), Freely movable joints / Synovial joints (wrist, ankle, shoulder, neck).

A brief explanation of the above types of joints with examples.

- (iv) Types of joint movements in physical activities

Hinge joint - Flexion and Extension, Pivot joint Rotation, Ball and Socket joint - Flexion, Extension, Adduction, Abduction, Internal and External rotation, Saddle joint - Flexion, Extension, Adduction, Abduction and Circumduction.

Meaning and examples of each of the above.

- (v) Benefits of exercise on the Skeletal System

Increases flexibility, makes bones stronger, strengthens joints, Good posture, Brings about a healthy lifestyle

2. Muscular System

- (i) Types of muscles

Voluntary/ skeletal, Involuntary/ Smooth/ Cardiac Muscles, Isometric and isotonic

Meaning of the above along with and difference.

(ii) Identification of Muscles

Identification of the following muscles within the body: Latissimus dorsi, Deltoid, Rotator cuffs, Pectorals, Biceps, Triceps, Abdominals, Hip flexors, Gluteals, Hamstring group, Quadriceps group, Gastrocnemius, Tibialis anterior.

(iii) Benefits of exercise on the muscular system.

Increases strength, endurance and power, better neuromuscular coordination, improves posture, enhances flexibility, decreases chances of injury.

3. Respiratory System

(i) Pathway of Air into the body.

The mouth/nose, Pharynx, Larynx, Trachea, Bronchi, Bronchioles, Diaphragm, Lungs, Alveoli.

A brief understanding of the above with the help of diagrams.

(ii) Mechanics of Breathing

External respiration - breathing in oxygen and breathing out carbon dioxide, Diffusion of respiratory gasses in the alveoli, Internal respiration - cellular respiration

(iii) Oxygen Debt and lactic acid accumulation.
Meaning only.

(iv) Second Wind.

Meaning only.

(v) Vital capacity and Tidal volume.

Meaning and difference.

(vi) Benefits of exercise on the respiratory system.

Increase in tidal volume, Respiratory muscles become stronger, increase in aerobic endurance, Faster rate of recovery to perform a physical activity.

4. Circulatory System

(i) Structure of the Heart.

Meaning and functions of: Atria (left and right atria), Ventricles (left and right ventricles), Arteries, Veins, Capillaries.

(ii) Heart rate, Stroke Volume, Cardiac output.
Meaning and difference.

(iii) Mechanism of blood circulation.

A brief understanding of the process of blood circulation.

(iv) Blood

(a) Composition of Blood (Plasma, Red blood cells, White blood cells, Platelets).

Meaning and functions.

(b) Blood groups - A, B, AB, O and Rh factor; Hemoglobin; Blood pressure

Brief understanding of the Blood groups; donors and recipients. Hemoglobin: function only; Systolic and diastolic blood pressure (meaning and difference).

(v) Benefits of exercise on the Circulatory system

Increase in the size of heart, resting pulse increases, Reduction in heart related problems, Improvement of the cardio – vascular system, Increase in hemoglobin, Faster recovery to normal pulse after physical activity.

5. Games and Sports

Games and sports and their psychological and social benefits.

Meaning and difference between Games and sports;

Psychological and social benefits: build confidence, bring about emotional control, lead to spirit of competitiveness, development of positive attitude, right attitude towards winning and losing, camaraderie, respecting authority, self-esteem, patience, resilience, cooperation, team work, sportsmanship, fair play, leadership, time management.

Section B

Any two of the following games are to be studied:

Cricket, Football, Hockey, Basketball, Volleyball, Badminton.

The following aspects should be studied for **each** of the **two games** selected by the candidate.

The details for each game are given below:

CRICKET

1. Knowledge of the game

2. Rules of the game

The Field of play: Diagram of the cricket field and pitch with measurements and specifications; The Ball (Shape, Material, Circumference, Weight); The Bat (Length, Width, Material); Stumps and bails (Height, Width); The Players (Number of players (playing eleven and substitutes); Substitutions; The Players' Equipment; Compulsory equipment; Types of matches (One day, Five days, Four days and T20); Officials and their duties (2 field umpires, 1 third umpire, 1 match referee and 2 scorers); The Ball in and out of Play; Ways of a batsman getting out

3. Fundamental skills and technique

Batting (On drive, off drive, Square cut and Leg glance); Fielding (Close catching, catching 'In the outfield', Long barrier and Throwing); Bowling (In swing, Out swing, Yorker and Full toss); wicket-keeping (Footwork, Catching the ball, and Diving)

4. Associated terminology:

Maiden over,	Hat trick,	Extra,
Dead rubber,	Seam bowling,	Over,
No ball,	Bouncer,	Sight screen,
Bump ball,	Danger area,	Power play,
Overthrow,	Declaration,	Appeal,
Bodyline Bowling,	Dot ball,	Substitute,
Dead ball,	Ball-tampering,	Century,
Follow-on,	Golden duck,	Nick,
Nightwatchman,	Tailender,	pull shot,
Innings defeat,	Cover drive,	Innings,
Straight drive,	sweep shot,	Hook shot,
Reverse sweep,	Upper cut,	Late cut,
Leg glance,	pull shot,	Flick shot,
Beamer,	Off cutter,	Leg cutter,
Short pitch,	Full length delivery,	
Reverse swing,		

5. National and International governing bodies of Cricket

BCCI - Board of Control for Cricket in India
ICC - International Cricket Council

6. National and International tournaments

National Tournament: Ranji Trophy, Duleep Trophy, Vijay Hazare Trophy, Deodhar Trophy, Irani Trophy, Indian Premier League
International Tournaments: ICC Cricket World Cup, ICC champions Trophy, ICC World T20, World cricket League

FOOTBALL

1. Knowledge of the game

2. Laws of the game

The Field of play: Diagram of the Field with Measurements and Specifications, Height and Width of Goalpost, Height of Corner flags

The Ball: Shape, Material, Circumference, weight, Air pressure

The Players: Number of players (playing eleven and substitutes), Number of substitutions allowed in a match, Substitution procedure

The Players' Equipment, Compulsory Equipment

The Referee: Powers and Duties, Compulsory Equipment, Referee signals

Other match officials: Assistant Referees: Duties and Signals; Fourth official: Duties; Additional assistant referee: Duties; Reserve assistant referee: Duties

The Duration of the Match: Periods of play, Half-time interval, Allowance for time lost, Penalty kick, Abandoned match

The Start and Restart of Play: Kick-off and its Procedure (start, both halves, both halves of extra time and restarts play after a goal), Free kicks and its Procedure (Direct and Indirect), Penalty Kicks and its Procedure, Throw-in and its Procedure, Goal kicks and its Procedure, Corner Kicks and its Procedure

The Ball in and out of Play

Determining the outcome of a match: Goal scored, Winning team, Kicks from the penalty mark

Offside: Offside position, Offside offence, No offence

Fouls and Misconduct: Direct free kick, Indirect free kick, Disciplinary action (Yellow card and Red card), Restart of play after fouls and misconduct

3. Fundamental Skills and Technique

Passing (Short pass and Long pass); Trapping (Step trap, inside trap, Thigh trap, Chest trap and Head trap); Shooting (Instep, Swerve shot, Chip and toe punt); Dribbling; Receiving; Heading; Tackle; Goalkeeping.

4. Terminology

Advantage,	Zonal marking,	Sliding Tackle,
Through pass,	Quarter Circle,	Man to Man
Marking,	Additional time,	Extra time,
Nutmeg,	One-on-one,	Step over,
Technical area,	Volley,	Half Volley,
Attacker,	Defender,	Chip,
Cross,	Overlap,	Lob,
Banana Kick,	Bicycle Kick,	Wall Pass,
Goal line technology (GLT)		

5. National and International Governing Bodies

AIFF - All India Football Federation
FIFA - Federation Internationale de Football Association
IFAB - International Football Association Board

6. National and International Tournaments

National Tournament: Santosh Trophy, Subroto Cup, Federation Cup, Durand Cup, I – League
International Tournament: FIFA World Cup, UEFA European Championship, AFC Cup

HOCKEY

1. Knowledge of the game

2. Rules of the game

Field of play: Diagram of the Field with Measurements and Specifications
Composition of teams: Number of Players, Substitution rule for Field players and Goalkeepers
Captains: Identity and Responsibility
Players' clothing and equipment: Uniform and equipment of field players, Goalkeepers
Match and result: Duration of the match and half time, Result of match
Start and re-start of the match: Procedure of Start (centre pass) and Re-start (Bully, Free hit, Second half)
Ball outside the field: Procedure to re-start from different areas, side line, back line, after every goal
Method of scoring

Conduct of play: Players, Goalkeepers and Players with Goalkeeping Privileges; Umpires (Responsibilities of Umpires).

Penalties and procedures for taking penalties: Awarding: Free Hit, Penalty Corner and Penalty Stroke; Procedures: Free hit, Penalty corner, Penalty stroke

Personal Penalties: Cautions (Verbal warning); Temporary suspension: Green Card - 2 minutes suspension, Yellow Card- 5 minutes suspension; Permanent suspension (Red Card)

3. Equipment Specifications

Field Equipment: Goal-post: (side board, back board and net); Flag post

Hockey Stick (Specification and Properties)

Ball: Shape, Material, Circumference, Weight, Colour

4. Fundamental Skills and Technique

Passing (Push, Drive and Sweep)

Trap (Upright stop & Flat stop)

Dribbling (Straight dribble, Loose dribble, Indian dribble, Dribbling pull back, One hand dribble: right hand and reverse side)

Shooting, Goalkeeping

5. Terminology

Forehand,	Playing Distance,	Tackle,
Back Stick,	Dangerous Play,	Field Goal,
Obstruction,	Raised Ball,	High Stick,
Hooking,	Reverse stick,	Push, Scoop,
Advantage	Flick,	High ball,
Shooting circle,	Under cutting,	Jab,
Foot,	Give-and-go,	Carry the
ball,	Centre pass,	Back pass,
Reverse hit,	Rebound,	Rusher, Long
corner,	Through pass,	Stroke,
Cross,	16-yard hit,	

6. National and International Governing Bodies

FIH - Fédération Internationale de Hockey (French)

IHF - Indian Hockey Federation

7. National and International tournaments

National Tournaments: All India Gurmeet Memorial Hockey Tournament. Chandigarh, All India Chhatrapati Shivaji Hockey Tournament.

Delhi, All India Indira Gold Cup Hockey Tournament, Jammu.

International Tournaments: Sultan Azlan Shah Hockey Tournament, World Hockey Cup, Champions Trophy.

BASKETBALL

1. Knowledge of the game

2. Rules and Regulations of the Game

Court: Diagram of the court with Dimensions and Specifications, Meaning of Court areas, lines, circle, semi-circle, position of the scorer's table and substitution chairs.

Equipment needed to conduct the game

Teams: Definition, Rules, Players uniform

Injured players

Captain and Coaches: Duties and powers

Duration of Play

Playing time, Tied score and Extra periods

Status of the ball: Ball Live, Ball Dead

Jump ball and Alternating possession: Jump ball: Definition, Procedure and Situations; Alternating possession: Definition and Procedure

How the ball is played: Definition and Rule

Control of Ball: Definition, Team Control: Continues and Ends

Goal: When made and its value, Definition, Rule of scoring

Throw-in, time-out, substitution: Definition, Rules and procedures.

Game Lost by Forfeit, default, violation: Rules and Penalty

Player out of bounce and Ball Out of Bounds: Definition and Rule

Dribbling: Definition, a dribble starts, a dribble ends, rule for dribbling

Travelling: Definition, Pivot

Closely Guarded Player: Definition and Rule

3 Seconds rule, 8 Seconds rule, 24 Seconds rule and procedure

Ball returned to backcourt: Definition, Rule and Penalty

Goaltending and Interference: Definition and rule; Meaning and penalty of Interference; Penalty for The Respective Violations.

Fouls – Definition; Personal Foul, Double Foul - Definition and Penalty; Technical Foul: Rules of conduct, Violence, Definition and Penalty; Unsportsmanlike Foul, Disqualifying foul - Definition and Penalty

Fighting - Definition, Rule and Penalty; Penalty for the respective Fouls; Five fouls by a player; Team fouls: Definition and Rule.

Contact: General principles: Cylinder principle, Principle of verticality, Legal guarding position, guarding a player who controls the ball, Guarding a player who **does not** control the ball, A player who is in the air, Screening (Legal and Illegal), Charging, Blocking, No charge semi-circle areas, Contacting an opponent with the hand(s) or arm(s), Holding, Pushing

Free Throws - Definition, Rule and Penalty

Duties and Powers of: Officials, Table officials and Commissioner; Referee; Scorer and Assistant Scorer; Timer; Short clock operator

3. Fundamental Skills and Technique

Dribbling (high dribble, change of pace, crossover, between the legs and behind the back)

Passing (chest pass, bounce pass, baseball pass, outlet pass and no-look pass)

Shooting (layup, jump shot, hook shot, free throw, bank shot and slam dunk)

Defence (man to man defence, zone defence and combination defence)

Offence (early offence, set offence, motion offence, zone offence and spread offence)

Rebounding (Offensive and Defensive)

Pivot

4. Terminology

Drive,	Fake,	Fast Break,
Blocking,	Charge,	Carry,
Screen,	Double Dribble,	Travel,
Triple Threat,	Ball Handler,	Dead Ball,
Front Court,	Loose Ball,	Held Ball,
Dunk,	Field Goal,	Alley-Oop,
Back Court,	Press,	Box out,
Double foul,	Jump stop,	Timeout
Air ball,	Jump ball,	Game clock,
Block,	Possession arrow	

5. National and International Governing Bodies of Basketball

BFI - Basketball Federation of India
FIBA - Federation Internationale De Basketball

6. National and International tournaments

National Tournaments: Youth National Basketball Championships, Federation Cup Basketball Championship, UBA Pro Basketball League

International Tournaments: FIBA World Championship, European Basketball Championship, FIBA Asia Championship

VOLLEYBALL

1. Knowledge of the game

2. Rules of the game

Playing Area: Diagram of the Play Area with Measurements and Specifications; Diagram of Net, Antenna and Posts with measurements and specifications

Ball: Shape, Material, Weight, Circumference, Air Pressure

Composition of teams

Players equipment and forbidden objects

Team Leaders: Responsibility of Captain, Coach and Assistant coach

Playing Format: To score a point, To win a set, To win the match

Structure of Play: The Toss, Official warm-up session, Team starting line-up, Positions and Positional fault, Rotation and Rotation fault

States of Play: Ball in play, Ball out of play, Ball "IN", Ball "OUT"

Playing the ball: Team Hits, Characteristics of the hit, Faults in playing the ball, Ball at the net, Ball crossing the net, Ball touching the net, Ball in the net

Player at the net: Reaching beyond the net, Penetration under the net, Contact with the net, Player's faults at the net

Service: First service in a set, Service order, Authorization of the service, Execution of the service, Screening, Faults made during service, Serving faults and Positional faults

Attack hit: Characteristics, Restrictions, Faults

Block: Blocking, Block contact, Blocking within the opponent's space, Block and team hits, Blocking the service, Blocking faults

Interruptions, Delays and Intervals: Interruptions (meaning); Number of regular game interruptions; Sequence of regular game interruptions; Request for regular game interruptions;

Time-outs and Technical time-outs

Exceptional game interruptions: Injury/illness, External interference, Prolonged interruptions

Substitution: Limitation, Exceptional, Expulsion/disqualification, Illegal, Procedure, Improper request

Game delays: Types of delays, Delay sanctions

Intervals and change of court

Libero player: Designation of the Libero, Equipment, Actions involving the libero, Re-designation of a new libero

Participants' conduct: Sportsmanlike conduct, Fair play

Misconduct and its sanctions: Minor misconduct, Misconduct leading to sanction, Sanction scale,

Cards used: Warning (Verbal and Yellow card); Penalty (Red card); Expulsion (Red plus Yellow card jointly); Disqualification (Red plus Yellow card separately)

Referees: Composition, Procedures, Location, Authority and Responsibilities of: First referee, Second referee, Scorer, Assistant scorer, Line judges.

3. Fundamental Skills and Techniques

Service (Underhand, Topspin, Float, Jump serve and Jump float)

Pass (Underarm pass and Overhand pass)

Set (Overhead and Bump)

Attack/spike (Backcourt, Line and cross-court shot, Dip, Block-abuse, Off-speed hit, Quick hit, Slide and Double quick hit)

Block (Single block, Double block and Triple block)

Dig

4. Terminology

Back row attack,	Block assist,	Side out,
Blocking error,	Floater,	Two set,
Extension roll,	Free ball,	Joust,
Overlapping,	Back set,	Carry,
Closing the block,	Ball down,	Quick set,
Serving zone,	Defence zone,	Attack zone,
Foot fault,	Net violation,	Trap set,
Reading an opponent,		
Cross-court attack		

5. National and International Governing Bodies of Volleyball

VFI - Volleyball Federation of India

FIVB - Federation International De Volleyball

6. National and International tournaments

National Tournaments: Indian Volleyball League, Federation Cup, Poornima Trophy

International Tournaments: World Championship, World Cup Volleyball, Super Challenge Cup

BADMINTON

1. Knowledge of the game

2. Rules of the game

Court: Diagram of the court with Measurements and Specifications, Court equipment (Posts and Net)

Shuttle: Dimensions and Specifications, Testing a shuttle for speed

Racket: Diagram of the racket with Measurements and Specifications

Toss: Procedure

Scoring system

Change of ends

Service: Singles (serving and receiving courts);

Doubles: Serving and receiving courts, Order of play and position on court, Scoring and serving,

Sequence of serving

Service court errors

Lets

Shuttle not in play

Continuous play, Misconduct and Penalties

Officials duties and appeals: Referee, Umpire,

Service judge, Line judges

3. Fundamental Skills

Grip (Forehand grip and Backhand grip)

Footwork

Serve (High serve, Low serve, Flick serve)

Strokes (Overhead forehand stroke, Overhead backhand stroke, Underarm forehand stroke and Underarm backhand stroke)

Shots (Clearing/lobbing, Drop shots and Smash)

4. Terminology

Short serve	Long serve	Wide serve
Service order,	Love,	All,
Deuce,	Forecourt,	Mid-court,
Rear court,	Rally,	Set,
Rubber,	Lunge,	Clear lob,
Half smash,	Full smash,	Carry,
Baseline smash,	Drive,	Push shot,
Tumbling net shot,	Net kill,	Net lift
Hairpin net shot,	Alley,	Back alley,
Follow through,	Court,	Wood shot
Flick,	Bird,	
Singles footwork base		

5. National and International Governing Bodies of Badminton

BAI - Badminton Association of India

BWF - Badminton World Federation

6. National and International tournaments

National Tournaments: Indian Open Badminton Championship, Senior National Badminton championship

International Tournaments: World Championship, Thomas Cup

PART 2: INTERNAL ASSESSMENT - 100 marks

Please note the guidelines for internal assessment as given for Class X.

Class X

There will be one written paper of **two** hours duration carrying 100 marks and Internal Assessment of 100 marks.

The written paper will be divided into **two** Sections, A and B.

Section A: will consist of compulsory short answer questions on Section A of the syllabus.

Section B: Candidates will be required to answer questions on the rules, skills required and the methods of training of any **two** of the given team games.

PART 1: THEORY - 100 marks

SECTION A

1. Human Growth and Development

- (i) Growth and Development

Meaning of growth and development and difference between the two.

A brief understanding of the Stages: Infancy (0 to 5 years), Childhood (5 to 12 years), Adolescence (12 to 19 years), Adulthood (19 to 65 years and above)

- (ii) Factors that influence Human Growth and Development

Hereditary, Environmental, Gender, Nationality, Nutrition.

2. Physical Education

- (i) Meaning of Physical Education

- (ii) Objectives of Physical Education

Physical development, Psychological development, Social development, Emotional development.

3. Body types

Endomorph, Mesomorph, Ectomorph.

4. Physical Fitness

- (i) Meaning of Physical fitness and its importance.

- (ii) Components of Physical Fitness.

Cardiovascular/respiratory endurance, Stamina, Strength, Flexibility,

Power, Speed, Coordination, Agility, Balance, Accuracy.

- (iii) Factors affecting Physical Fitness.

Hereditary, Nutrition, Environment, Training (facilities and methods), Illness, Self-motivation, Emotional stability, Lifestyle, Posture.

5. Sports Training

- (i) Meaning of Sports training.

- (ii) Importance of sports training and its objectives.

Builds up strength and endurance, Improves skill levels, Builds motivation, ambition and confidence, Improves knowledge of the their sport, Increases muscle tone, Facilitates good circulation, Improves agility and flexibility, Improves the rate of waste product disposal, Speeds up recovery time, More resistant to injury and illness, Improves concentration, Increases self-esteem.

(A brief understanding)

- (iii) Principles of Sports Training.

Individuality, Specificity, Progression, Overload, Adaptation, Recovery, Reversibility, Variance, Frequency, Continuity, Active participation, Periodization, Intensity.

A brief understanding of the above.

6. Safety in Sports

- (i) Sports related injuries.

Muscle strain/Pulled muscle, Torn ACL (anterior cruciate ligament), Torn MCL (medial collateral ligament), Shin splints, Stress fracture, Fracture, Plantar fasciitis, sprained ankle, Tennis elbow, Low back pain, Hip Bursitis, Concussion, Achilles tendonitis, Runner's knee.

*A brief understanding of the sports injuries and **first aid** for these injuries.*

- (ii) Prevention of injuries.

Warming up and cooling down to be done; fitness of the participant; use of correct equipment and maintaining equipment; Proper knowledge of rules of the game/sport; Wearing the recommended protective gear; importance of resting between workouts; supervision of coach / teacher; proper training of skills and techniques; safe facilities.

7. Health Education

- (i) Meaning and Importance of Health Education

- (ii) Nutrition

Meaning of Nutrition and balanced diet. Balanced Diet - basic constituents, functions and sources: Carbohydrates, Proteins, Fats, Vitamins, Minerals, Water, Fiber;

A brief understanding of malnutrition - undernutrition and overnutrition.

- (iii) Dietary modification for Sports person

Calories (carbohydrates; Proteins; Vitamins; Fluid; Salts (sodium etc.)

- (iv) Meal planning guidelines for various physical activities with sample menus.

8. Careers in Physical Education

Various career options in Physical Education.

Coach, Physical Education Teachers, professional sportsperson, Sports management, Commentators, Officials.

A brief understanding of the above.

SECTION B

Candidates will be required to answer questions on any **two** of the following team games.

Cricket, Football, Hockey, Basketball, Volleyball, Badminton.

CRICKET

1. Knowledge of the game

2. Rules of the game

The Field of play: Diagram of the cricket field and pitch with measurements and specifications; The Ball (Shape, Material, Circumference, Weight);

The Bat (Length, Width, Material); Stumps and bails (Height, Width); The Players (Number of players (playing eleven and substitutes); Substitutions; The Players' Equipment; Compulsory equipment; Types of matches (One day, Five days, Four days and T20); Officials and their duties (2 field umpires, 1 third umpire, 1 match referee and 2 scorers); The Ball in and out of Play; Ways of a batsman getting out

3. Fundamental skills and technique

Batting (On drive, Off drive, Square cut and Leg glance); Fielding (Close catching, Catching 'In the outfield', Long barrier and Throwing); Bowling (In swing, Out swing, Yorker and Full toss); wicket-keeping (Footwork, Catching the ball, and Diving)

4. Associated terminology

Maiden over,	Hat trick,	Extra,
Dead rubber,	Seam bowling,	Over,
No ball,	Bouncer,	Sight screen,
Bump ball,	Danger area,	Power play,
Overthrow,	Declaration,	Appeal,
Bodyline Bowling,	Dot ball,	Substitute,
Dead ball,	Ball-tampering,	Century,
Follow-on,	Golden duck,	Nick,
Nightwatchman,	Tailender,	Pull shot,
Innings defeat,	Cover drive,	Innings,
Straight drive,	Sweep shot,	Hook shot,
Reverse sweep,	Upper cut,	Late cut,
Leg glance,	Pull shot,	Flick shot,
Beamer,	Off cutter,	Leg cutter,
Short pitch,	Full length delivery,	
Reverse swing,		

5. National and International governing bodies of Cricket

BCCI - Board of Control for Cricket in India

ICC - International Cricket Council

6. National and International tournaments

National Tournament: Ranji Trophy, Duleep Trophy, Vijay Hazare Trophy, Deodhar Trophy, Irani Trophy, Indian Premier League.

International Tournaments: ICC Cricket World Cup, ICC champions Trophy, ICC World T20, World Cricket League.

FOOTBALL

1. Knowledge of the game

2. Laws of the game

The Field of play: Diagram of the Field with Measurements and Specifications, Height and Width of Goalpost, Height of Corner flags

The Ball: Shape, Material, Circumference, weight, Air pressure

The Players: Number of players (playing eleven and substitutes), Number of substitutions allowed in a match, Substitution procedure

The Players' Equipment, Compulsory Equipment

The Referee: Powers and Duties, Compulsory Equipment, Referee signals

Other match officials: Assistant Referees: Duties and Signals; Fourth official: Duties; Additional assistant referee: Duties; Reserve assistant referee: Duties

The Duration of the Match: Periods of play, Half-time interval, Allowance for time lost, Penalty kick, Abandoned match

The Start and Restart of Play: Kick-off and its Procedure (start, both halves, both halves of extra time and restarts play after a goal), Free kicks and its Procedure (Direct and Indirect), Penalty Kicks and its Procedure, Throw-in and its Procedure, Goal kicks and its Procedure, Corner Kicks and its Procedure

The Ball in and out of Play

Determining the outcome of a match: Goal scored, Winning team, Kicks from the penalty mark

Offside: Offside position, Offside offence, No offence

Fouls and Misconduct: Direct free kick, Indirect free kick, Disciplinary action (Yellow card and Red card), Restart of play after fouls and misconduct

3. Fundamental Skills and Technique

Passing (Short pass and Long pass); Trapping (Step trap, Inside trap, Thigh trap, Chest trap and Head trap); Shooting (Instep, Swerve shot, Chip and toe punt); Dribbling; Receiving; Heading; Tackle; Goalkeeping.

4. Terminology

Advantage, Zonal marking, Sliding Tackle,
Through pass, Quarter Circle, Man to Man
Marking, Additional time, Extra time,

Nutmeg, One-on-one, Step over,
Technical area, Volley, Half Volley,
Attacker, Defender, Chip,
Cross, Overlap, Lob,
Banana Kick, Bicycle Kick, Wall Pass,
Goal line technology (GLT)

5. National and International Governing Bodies

AIFF - All India Football Federation

FIFA - Federation Internationale de Football Association

IFAB - International Football Association Board

6. National and International Tournaments

National Tournaments: Santosh Trophy, Subroto Cup, Federation Cup, Durand Cup, I – League

International Tournaments: FIFA World Cup, UEFA European Championship, AFC Cup

HOCKEY

1. Knowledge of the game

2. Rules of the game

Field of play: Diagram of the Field with Measurements and Specifications

Composition of teams: Number of Players, Substitution rule for Field players and Goalkeepers

Captains: Identity and Responsibility

Players' clothing and equipment: Uniform and equipment of Field Players, Goalkeepers

Match and result: Duration of the match and half time, Result of match

Start and re-start of the match: Procedure of Start (centre pass) and Re-start (Bully, Free hit, Second half)

Ball outside the field: Procedure to re-start from different areas, side line, back line, after every goal
Method of scoring

Conduct of play: Players, Goalkeepers and Players with Goalkeeping Privileges; Umpires (Responsibilities of Umpires).

Penalties and procedures for taking penalties: Awarding: Free Hit, Penalty Corner and Penalty Stroke; Procedures: Free hit, Penalty corner, Penalty stroke.

Personal Penalties: Cautions (Verbal warning);
Temporary suspension: Green Card - 2 minutes suspension, Yellow Card- 5 minutes suspension;
Permanent suspension (Red Card).

3. Equipment Specifications

Field Equipment: Goal-post: (side board, back board and net); Flag post

Hockey Stick (Specification and Properties)

Ball: Shape, Material, Circumference, Weight, Colour

4. Fundamental Skills and Technique:

Passing (Push, Drive and Sweep)

Trap (Upright stop & Flat stop)

Dribbling (Straight dribble, Loose dribble, Indian dribble, Dribbling pull back, One hand dribble: right hand and reverse side)

Shooting, Goalkeeping.

5. Terminology

Forehand,	Playing Distance,	Tackle,
Back Stick,	Dangerous Play,	Field Goal,
Obstruction,	Raised Ball,	High Stick,
Hooking,	Reverse stick,	Push,
Scoop, Advantage	Flick,	High ball,
Shooting circle,	Under cutting,	Jab,
Foot,	Give-and-go,	Carry the
ball,	Centre pass,	Back pass,
Reverse hit,	Rebound,	Rusher,
Long corner,	Through pass,	Stroke,
Cross,	16-yard hit,	

6. National and International Governing Bodies

FIH - Fédération Internationale de Hockey (French)

IHF - Indian Hockey Federation

7. National and International tournaments

National Tournaments: All India Gurmeet Memorial Hockey Tournament. Chandigarh, All India Chhatrapati Shivaji Hockey Tournament. Delhi, All India Indira Gold Cup Hockey Tournament, Jammu.

International Tournaments: Sultan Azlan Shah Hockey Tournament, World Hockey Cup, Champions Trophy.

BASKETBALL

1. Knowledge of the game

2. Rules and Regulations of the Game

Court: Diagram of the court with Dimensions and Specifications, Meaning of Court areas, lines, circle, semi-circle, position of the scorer's table and substitution chairs.

Equipment needed to conduct the game

Teams: Definition, Rules, Players uniform
Injured players

Captain and Coaches: Duties and powers

Duration of Play

Playing time, Tied score and Extra periods

Status of the ball: Ball Live, Ball Dead

Jump ball and Alternating possession: Jump ball: Definition, Procedure and Situations; Alternating possession: Definition and Procedure

How the ball is played: Definition and Rule

Control of Ball: Definition, Team Control: Continues and Ends

Goal: When made and its value, Definition, Rule of scoring

Throw-in, time-out, substitution: Definition, Rules and procedures.

Game Lost by Forfeit, default, violation: Rules and Penalty

Player out of bounce and Ball Out of Bounds: Definition and Rule

Dribbling: Definition, a dribble starts, a dribble ends, rule for dribbling

Travelling: Definition, Pivot

Closely Guarded Player: Definition and Rule

3 Seconds rule, 8 Seconds rule, 24 Seconds rule and procedure

Ball returned to backcourt: Definition, Rule and Penalty

Goaltending and Interference: Definition and rule; Meaning and penalty of Interference; Penalty for The Respective Violations

Fouls – Definition; Personal Foul, Double Foul - Definition and Penalty; Technical Foul: Rules of

conduct, Violence, Definition and Penalty; Unsportsmanlike Foul, Disqualifying foul - Definition and Penalty

Fighting - Definition, Rule and Penalty; Penalty for the respective Fouls; Five fouls by a player; Team fouls: Definition and Rule.

Contact: General principles: Cylinder principle, Principle of verticality, Legal guarding position, Guarding a player who controls the ball, Guarding a player who **does not** control the ball, A player who is in the air, Screening (Legal and Illegal), Charging, Blocking, No charge semi-circle areas, Contacting an opponent with the hand(s) or arm(s), Holding, Pushing

Free Throws - Definition, Rule and Penalty

Duties and Powers of: Officials, Table officials and Commissioner; Referee; Scorer and Assistant Scorer; Timer; Short clock operator

3. Fundamental Skills and Technique

Dribbling (high dribble, change of pace, crossover, between the legs and behind the back)

Passing (chest pass, bounce pass, baseball pass, outlet pass and no-look pass)

Shooting (layup, jump shot, hook shot, free throw, bank shot and slam dunk)

Defence (man to man defence, zone defence and combination defence)

Offence (early offence, set offence, motion offence, zone offence and spread offence)

Rebounding (Offensive and Defensive)

Pivot

4. Terminology

Drive,	Fake,	Fast Break,
Blocking,	Charge,	Carry,
Screen,	Double Dribble,	Travel,
Triple Threat,	Ball Handler,	Dead Ball,
Front Court,	Loose Ball,	Held Ball,
Dunk,	Field Goal,	Alley-Oop,

Back Court, Press, Box out,

Double foul, Jump stop, Timeout

Air ball, Jump ball, Game clock,

Block, Possession arrow

5. National and International Governing Bodies of Basketball

BFI - Basketball Federation of India

FIBA - Federation Internationale De Basketball

6. National and International tournaments

National Tournaments:

Youth National Basketball Championships, Federation Cup Basketball Championship, UBA Pro Basketball League

International Tournaments:

FIBA World Championship, European Basketball championship, FIBA Asia Championship

VOLLEYBALL

1. Knowledge of the game

2. Rules of the game

Playing Area: Diagram of the Play Area with Measurements and Specifications; Diagram of Net, Antenna and Posts with measurements and specifications

Ball: Shape, Material, Weight, Circumference, Air Pressure

Composition of teams

Players equipment and forbidden objects

Team Leaders: Responsibility of Captain, Coach and Assistant coach

Playing Format: To score a point, To win a set, To win the match

Structure of Play: The Toss, Official warm-up session, Team starting line-up, Positions and Positional fault, Rotation and Rotation fault

States of Play: Ball in play, Ball out of play, Ball "IN", Ball "OUT"

Playing the ball: Team Hits, Characteristics of the hit, Faults in playing the ball, Ball at the net, Ball crossing the net, Ball touching the net, Ball in the net.

Player at the net: Reaching beyond the net, Penetration under the net, Contact with the net, Player's faults at the net

Service: First service in a set, Service order, Authorization of the service, Execution of the service, Screening, Faults made during service, Serving faults and Positional faults

Attack hit: Characteristics, Restrictions, Faults

Block: Blocking, Block contact, Blocking within the opponent's space, Block and team hits, Blocking the service, Blocking faults

Interruptions, Delays and Intervals: Interruptions (meaning); Number of regular game interruptions; Sequence of regular game interruptions; Request for regular game interruptions;

Time-outs and Technical time-outs

Exceptional game interruptions: Injury/illness, External interference, Prolonged interruptions

Substitution: Limitation, Exceptional, Expulsion/disqualification, Illegal, Procedure, Improper request

Game delays: Types of delays, Delay sanctions

Intervals and change of court

Libero player: Designation of the Libero, Equipment, Actions involving the libero, Re-designation of a new libero

Participants' conduct: Sportsmanlike conduct, Fair play

Misconduct and its sanctions: Minor misconduct, Misconduct leading to sanction, Sanction scale,

Cards used: Warning (Verbal and Yellow card); Penalty (Red card); Expulsion (Red plus Yellow card jointly); Disqualification (Red plus Yellow card separately)

Referees: Composition, Procedures, Location, Authority and Responsibilities of: First referee, Second referee, Scorer, Assistant scorer, Line judges.

3. Fundamental Skills and Techniques

Service (Underhand, Topspin, Float, Jump serve and Jump float)

Pass (Underarm pass and Overhand pass)

Set (Overhead and Bump)

Attack/spike (Backcourt, Line and cross-court shot, Dip, Block-abuse, Off-speed hit, Quick hit, Slide and Double quick hit)

Block (Single block, Double block and Triple block)

Dig

4. Terminology

Back row attack,	Block assist,	Side out,
Blocking error,	Floater,	Two set,
Extension roll,	Free ball,	Joust,
Overlapping,	Back set,	Carry,
Closing the block,	Ball down,	Quick set,
Serving zone,	Defence zone,	Attack zone,
Foot fault,	Net violation,	Trap set,
Reading an opponent,		
Cross-court attack		

5. National and International Governing Bodies of Volleyball

VFI - Volleyball Federation of India

FIVB - Federation International De Volleyball

6. National and International tournaments

National Tournaments: Indian Volleyball League, Federation Cup, Poornima Trophy

International Tournaments: World Championship, World Cup Volleyball, Super Challenge Cup

BADMINTON

1. Knowledge of the game

2. Rules of the game

Court: Diagram of the court with Measurements and Specifications, Court equipment (Posts and Net)

Shuttle: Dimensions and Specifications, Testing a shuttle for speed

Racket: Diagram of the racket with Measurements and Specifications

Toss: Procedure

Scoring system

Change of ends

Service: Singles (serving and receiving courts);
 Doubles: Serving and receiving courts, Order of
 play and position on court, Scoring and serving,
 Sequence of serving
 Service court errors
 Lets
 Shuttle not in play
 Continuous play, Misconduct and Penalties
 Officials duties and appeals: Referee, Umpire,
 Service judge, Line judges

3. Fundamental Skills

Grip (Forehand grip and Backhand grip)
 Footwork
 Serve (High serve, Low serve, Flick serve)
 Strokes (Overhead forehand stroke, Overhead
 backhand stroke, Underarm forehand stroke and
 Underarm backhand stroke)
 Shots (Clearing/lobbing, Drop shots and Smash)

4. Terminology

Short serve	Long serve	Wide serve
Service order,	Love,	All,
Deuce,	Forecourt,	Mid-court,
Rear court,	Rally,	Set,
Rubber,	Lunge,	Clear lob,
Half smash,	Full smash,	Carry,
Baseline smash,	Drive,	Push shot,
Tumbling net shot,	Net kill,	Net lift
Hairpin net shot,	Alley,	Back alley,
Follow through,	Court,	Wood shot
Flick,	Bird,	
Singles footwork base		

5. National and International Governing Bodies of Badminton

BAI - Badminton Association of India
 BWF - Badminton World Federation

6. National and International tournaments

National Tournaments: Indian Open Badminton
 Championship, Senior National Badminton
 championship
 International Tournaments: World Championship,
 Thomas Cup

PART 2: INTERNAL ASSESSMENT (100 marks)

Practical work will be assessed in two parts as follows:

- (i) *Assessment by the Teacher(s).*
 (ii) *Assessment by an External Examiner.*

1. Work to be assessed by Teacher (s) - 50 marks.

The skill and performance of the candidates will be assessed by the teacher(s), responsible for preparing the candidates for the examination, in two of the following games and activities of their choice:

Athletics, cricket, hockey, football, handball, volleyball, softball, basketball, tennis, badminton, swimming, dancing, gymnastics, yoga, boxing, wrestling, judo and karate, table tennis, kho-kho and kabaddi.

2. Work to be assessed by the External Examiner - 50 marks

The assessment of the work of the candidates by the External Examiner will be in two parts:

- A. Physical efficiency tests.
 B. Specialization tests.

A. Physical Efficiency Tests

The following tests to evaluate the physical fitness of candidates will be organized and conducted in the presence of the External Examiner. **Tests should be carried out over the duration of two days.**

(a) Test 1

50 metre run. Standing start. Timings to be taken to the nearest tenth of a second (weather should be relatively windless without extremes of temperature).

(b) Test 2

Standing long jump. A flat non-slip surface should be used. The candidates should stand with toes just behind the take-off line and jump when ready. After making a preliminary swing with the arms, the candidate swings them forward vigorously, springing with both feet simultaneously to land as far forward as possible. Distance jumped, to be measured in centimeters.

(c) Test 3

Distance run - 1000 meters run for boys, 600 meters run for girls. Time to be taken to the nearest second.

(d) Test 4

- (i) Floor push-ups for boys - The boys take a front-leaning position with body supported on hands and balls of feet; the arms are straight and at right angle to the body. He then dips or lowers the body so that the chest nearly touches the floor, he then pushes back to the starting position by straightening the arms and repeats the procedures as many times as possible. The arms must be completely extended with each push-up; the body must be held straight throughout. Scoring consists of the number of correct push-ups.
- (ii) Push-ups for girls -- This is executed from a stall bar bench or a stool 32cm high by 50 cm long and 35 cm wide. It should be placed on the floor about 15 cm from a wall so that the subjects will not take a position too far forward. The girl should grasp the outer edges of the bench, or stool, at the nearest corners and assume the front-leaning rest position, with the balls of her feet on the floor and with her body and arms forming a right angle. She should then lower her body so that the upper chest touches the near edge of the bench or stool, then raise it to a straight arm position as many times as possible. The girl's body should be held straight throughout. If the body sways or arches, if the subject does not go completely down or does not push completely up, half credit is given (up to 4 half credits).

(e) Test 5

Shuttle run. A flat course of 10 meters is required to be measured between two parallel base lines. Behind each base line, as a semicircle 50 cm radius with centre on the base line is required to be marked. Two wooden blocks (10x5x5 cm) are to be placed in the far semicircle. The candidate stands with feet behind the base line, and on a signal, runs to the far line and picks up one block which the candidate places in the starting semicircle when he/she returns. Then turning without a rest, they run back to retrieve the second block and carry it back across the finish line.

(f) Test 6

30 - second sit-ups. The candidate lies with his/her back on a mat or flat surface, feet about 30 cm apart and knees flexed at right angles. The candidate's hands with fingers interlocked are placed behind the head. A partner holds the candidate's feet in contact with the mat or floor. On the signal "Go" the candidate sits up to touch the knees with his/her elbows. Without pause he/she returns to his/her starting position and immediately sits up again. The number of sit-ups completed in 30 seconds are to be counted.

B. Specialization Tests

Candidates will be tested in the presence of an External Examiner, in **one** of the following activities listed below:

- (a) Athletics (b) Gymnastics (c) Swimming
(d) Dancing (e) Yoga.

- (a) **Athletics** - The candidates will choose any two of the following events in which they wish to be tested:

(i) *Track events*

Boys - 100 m, 200m, 400m, 800m and 1500m.

Girls - 50m, 100m, 200m and 800m.

(ii) *Fields events*

Boys - long jump, high jump, hop-step-and-jump, pole vault, shot puts, discus and javelin throw.

Girls - long jump, high jump, shot put (8 lbs.) and throwing the softball.

- (b) **Gymnastics** - The candidates will be tested in four exercises using any two of the following apparatus of their choice:

(i) Ground/mat work

Boys - Front roll, back roll, cartwheel, headspring, handspring, handstand, and somersault.

Girls - Ballet, flexibility and agility movements -- the front split, the pirouette, the toe stand, the ballet touch, the body sweep, the arabesque, the single- leg balance, the balance; front roll, back roll, cartwheel.

(ii) The balance beam - (girls only)

Mounts - The straight arm support mount, the squat mount, the one knee mount, and the crotch seat mount. Poses and Movements, walking the beam, the pivot, the pirouette turn, jumping on the beam. Dismounts -- the side-seat dismount, the front vault dismount.

(iii) Parallel bars

Boys - The straight arm support, the straddle seat, the back roll to a straddle-seat, the shoulder balance, the single-let flank dismount, the double-leg flank dismount.

Girls - The straight arm support, swinging, the straddle seat, the forward roll.

(iv) Vaulting Horse

Boys - The side vault, the through vault, the straddle vault, the head spring vault. High horse - the side vault, the through vault, the straddle vault. Long horse -- the through vault, the straddle vault.

Girls - The side vault, the squat stand dismount, the straddle vault, the straddle stand, the head spring vault.

(v) Horizontal bar - (boys only)

Upward swing and dismount, swinging to mount and dismount, swinging and changing hands to face opposite direction.

(c) **Swimming** - The candidates will be tested in any two of the following of their choice.

Boys - Freestyle - 50m, 100m, 200m and 400m;

Breast stroke - 50m, 100m;

Backstroke - 50m, 100m;

Butterfly stroke - 50m, 100m;

Diving - standing one-leg dive, standing semi-crouch dive, standing stationary dive, the front jump dive from the springboard.

Girls - Freestyle - 50m, 100m and 200m;

Breast stroke - 50m, 75m;

Backstroke - 50m, 75m;

Butterfly stroke - 50m, 75m;

Diving - standing one-leg dive, standing semi-crouch dive, standing stationary dive, the front jump dive from the springboard.

(d) **Dancing** - The candidates will be required to give a performance of any *two* of the following dances/movements, of their choice, with suitable accompaniments:

(i) Combination of dance movements and ground-mat work.

(ii) Indian dancing -- Bharatanatyam, Kuchipudi, Kathakali, Kathak, Manipuri, Bhangra, any other folk dance.

(iii) Western dancing -- ballet; ballroom dancing - waltz, foxtrot, tango, samba, Charleston, square dancing; pop-dancing - jitterbug, twist, rock and roll.

(e) **Yoga** - The candidates will be tested in any *four* of the following. asanas.

Ugrasam, dhamrekhasan, singhasan, ultanmandhukasan, kukutasans, naunli, kapala, bhathi, shavasan, shirashasan, shalabhasan, bakasan and mayurasan.

METHOD OF ASSESSMENT BY TEACHERS

The teacher(s) will assess the candidates, skill and performance in the two games and activities of their choice. They will mark the candidates out of 50 marks as follows:

	<i>Marks</i>
(a) Achievement of skills and performance	30
(b) Attendance	05
(c) Participation in voluntary and intramural activities	10
(d) Representation of the School at different levels - Inter-School, District, State	05

Achievement of skills and performances

In assessing the achievement of skills and performances, the following factors should be considered:

(a) Team games (See para 2, Section B)	<i>Marks</i>
(i) Ability in fundamental skills	15
(ii) Ability in a particular skill	05
(iii) Utilisation of fundamental skills during a game	05
(iv) Offensive and defensive skills	05

(b) **Athletics**

The actual performance of the candidates should be tested in the events chosen by him/her and assessed according to the five-point grading system given below:

	<i>Marks</i>
A – Excellent	26-30
B - Very Good	21-25
C – Good	16-20
D – Average	11-15
E - Below Average	10 & less

(c) **Swimming**

(i) Ability in basic skills	15
e.g. breathing, floating, arm movements, combined elementary movement, changing body positions and directions and treading water	
(ii) Ability in stroke skills	05
(iii) Ability in diving skills	05
(iv) Speed and endurance	05

(d) **Dancing**

(i) Ability to keep rhythm	10
(ii) Expression and grace of movements	08
(iii) Ease of performance	08
(iv) Endurance	04

(e) **Gymnastics**

(i) Willingness to perform	05
(ii) Knowledge of sequence & performance of exercise	15
(iii) Form, grace and ease of performance	05
(iv) Landing or recovery technique	05

(f) **Boxing, Wrestling, Judo and Karate** *Marks*

(i) Courage, confidence, self-reliance & endurance	10
(ii) Foot work/holds	04
(iii) Offensive techniques	08
(iv) Defensive techniques	08

(g) **Yoga**

(i) Ability to assume the posture/activity	10
(ii) Knowledge of sequence for final pose/activity	10
(iii) Perfection in posture/activity with grace & poise	05
(iv) Performing a post activity with ease & maintaining it for a length of time with relaxation	05

METHOD OF ASSESSMENT BY THE EXTERNAL EXAMINER

Physical Efficiency Tests

The External Examiner will assess the performance of the candidates in the physical efficiency test in accordance with the Performance Table at Appendix A attached. He/she will mark the candidates out of 30 marks based on his assessment.

Specialisation Tests

The External Examiner will assess the performance of the candidates in the activity that they have chosen for specialisation (See (ii) Specialisation Tests) out of 20 marks. The basis of his/her assessment for each activity is given in the ensuing paragraphs.

(a) Athletics

The candidates will be assessed in their performance in any *two* of the events of their choice as given in the syllabus, in accordance with the table attached as Appendix B.

(b) Gymnastics

The candidates will be assessed in their performance in *four* exercises, to be nominated by the External Examiner, using any two apparatus of the candidates' choice. The External Examiner will give marks for each exercise as follows:

	<i>Marks</i>	<i>Qualities</i>	<i>Marks</i>
(i) Perfect performance in form, grace and timing	05	(i) Knowledge of the steps/poses	04
(ii) Satisfactory performance but for minor fault in form & timing	04	(ii) Grace and poise	02
(iii) Performance with poor form e.g. bent knees, toes not pointed	03	(iii) Rhythm and timing	02
(iv) No form or grace but knowledge of performance of exercise	02	(iv) Endurance	02
(v) An attempt to perform	01		

(c) Swimming

The candidates will be assessed in any two of the events of their choice in accordance with the table given at Appendix D attached.

(d) Dancing

The candidates will be assessed in two dance performances of their choice as given in the syllabus. The External Examiner will mark them on each performance as follows:

(e) Yoga

The candidates will be assessed in any four of the asanas given in the syllabus, to be nominated by the External Examiner. The External Examiner will mark the candidates in each asana as follows:

	<i>Marks</i>
(i) Perfect performance	05
(ii) Satisfactory performance with minor error in form	04
(iii) Performance with poor form	03
(iv) No form but knowledge of how to perform the asanas	02
(v) Poor form and knowledge of performance	01

APPENDIX A

PERFORMANCE TABLE - PHYSICAL EDUCATION - PHYSICAL EFFICIENCY TESTS

Marks	Test No.1 50 m dash (Timings in seconds and tenths)		Test No.2 Standing long jump (Distance in cm)		Test No.3 Distance run (Timings in min. and s)		Test No.4 Push-ups (Numbers)		Test No.5 Shuttle run (Timings in s and tenths)		Test No.6 30 sit-ups (Numbers)	
	Boys	Girls	Boys	Girls	Boys 1000 m	Girls 600 m	Boys	Girls	Boys	Girls	Boys	Girls
5	7.3	7.7	179	164	4min 40s	2min 45s	24	20	10.4	11.0	22	15
4	7.4	8.0	172	152	4min 50s	2min 55s	16	12	10.7	11.3	20	13
3	7.6	8.3	165	146	5min	3min 05s	10	6	11.0	11.6	18	11
2	7.9	8.6	158	139	5min 10s	3min 15s	6	3	11.3	11.9	16	9
1	8.3	8.9	151	129	5min 20s	3min 25s	3	1	11.7	12.2	13	6

* Note: For timings in between or higher than those indicated in the table the lower mark should be given.

For distances in between or lower than those indicated in the table the lower mark should be given.

APPENDIX B
PERFORMANCE TABLE - PHYSICAL EDUCATION -SPECIALISATION TESTS
ATHLETICS - TRACK EVENTS
(All Measurements in Metres and Centimetres)

Marks	50 m (s and tenths)	100 m (s and tenths)		200 m (s and tenths)		400 m (s and tenths)	800 m (min and s)		1500 m (min and s)
		Boys	Girls	Boys	Girls		Boys	Girls	
10	7.3	13.0	15.5	26.5	31.0	57.0	2:25	2:55	5:10
9	7.5	13.2	15.7	27.0	31.5	58.0	2:30	3:00	5:15
8	7.6	13.3	16.0	27.3	32.0	59.0	2:34	3:04	5:20
7	7.7	13.5	16.3	27.5	32.5	60.0	2:36	3:06	5:25
6	7.8	13.6	16.5	27.7	33.0	61.0	2:38	3:08	5:30
5	7.9	13.7	16.7	28.0	33.5	62.0	2:40	3:10	5:35
4	8.0	14.6	17.0	28.5	34.0	63.0	2:42	3:12	5:40
3	8.1	15.1	17.5	29.0	34.5	63.5	2:44	3:16	5:45
2	8.2	15.5	18.0	29.5	35.0	64.0	2:46	3:20	5:50
1	8.4	16.0	18.5	30.0	35.5	64.5	2:48	3:30	6:00

*Note: For timings in between or higher than those indicated in the table the lower mark should be given.

APPENDIX C

PERFORMANCE TABLE – PHYSICAL EDUCATION SPECIALIZATION TESTS

ATHELETIC – FIELD EVENTS

Marks	Long Jump (m & cm)		High Jump (m & cm)		Shot Put (m & cm)		Hops step & Jump (m & cm)	Pole Vault (m & cm)	Discuss (m & cm)	Javelin (m & cm)	Soft ball Throw (m & cm)
	Boys	Girls	Boys	Girls	12 lbs	8 lbs					
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Boys	Boys	Boys	Girls
10	5.00	4.50	1.45	1.35	9.00	7.50	10.00	2.00	22.00	33.00	20.00
9	4.70	4.20	1.40	1.30	8.00	7.00	9.60	1.90	20.00	31.00	18.00
8	4.40	3.90	1.35	1.25	7.50	6.50	9.20	1.80	18.50	29.00	16.00
7	4.10	3.60	1.30	1.20	7.00	6.00	8.80	1.70	17.00	27.00	14.00
6	3.80	3.30	1.25	1.15	6.50	5.50	8.40	1.60	15.50	25.00	12.00
5	3.50	3.00	1.20	1.10	6.00	5.00	8.00	1.50	14.00	23.00	10.00
4	3.20	2.70	1.15	1.05	5.50	4.50	7.60	1.40	12.50	21.00	9.00
3	2.90	2.40	1.10	1.00	5.00	4.00	7.20	1.30	11.00	19.00	8.00
2	2.60	2.10	1.05	0.95	4.50	3.50	6.80	1.20	9.50	17.00	7.00
1	2.30	1.80	0.95	0.90	4.00	3.00	6.40	1.10	8.00	15.00	6.00

Note: For distance in between or lower than those indicated in the table the lower marks should be given.

APPENDIX D

PERFORMANCE TABLE - PHYSICAL EDUCATION - SPECIALISATION TESTS - SWIMMING

Marks	50 m free style (s and tenths)		100 m free style (min and s)		200 m free style (min and s)		400 m free style (min and s)	50 m breast stroke (min and s)		75m breast stroke (min and s)	100m breast stroke (min and s)
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Boys	Girls	Girls	Boys
10	45.0	55.0	1:30	1:50	3:00	3:40	6:00	1:05	1:20	2:00	2:15
9	46.3	56.3	1:32.5	1:53	3:05	3:46	6:10	1:07.5	1:22.5	2:03.5	2:17.5
8	47.5	57.5	1:35	1:55	3:10	3:50	6:20	1:10	1:25	2:07.5	2:20
7	50.0	60.0	1:40	2:00	3:20	4:00	6:40	1:12.5	1:27.5	2:10.5	2:25
6	52.5	62.5	1:45	2:05	3:30	4:10	7:00	1:15	1:30	2:15	2:30
5	55.0	65.0	1:50	2:10	3:40	4:20	7:20	1:17.5	1:32.5	2:18.5	2:35
4	57.0	67.5	1:55	2:15	3:50	4:30	7:40	1:20	1:35	2:22.5	2:40
3	58.7	68.7	1:57.5	2:17.5	3:55	4:35	7:50	1:22	1:37	2:25.5	2:42.5
2	60.0	70.0	2:00	2:20	4:00	4:40	8:00	1:24	1:39	2:28.5	2:45
1	61.2	71.2	2:02.5	2:22.5	4:05	4:45	8:10	1:26	1:41	2:30.5	2:47

*Note: For timings in between or higher than those indicated in the table the lower mark should be given.

APPENDIX E

PERFORMANCE TABLE - PHYSICAL EDUCATION - SPECIALISATION TESTS - SWIMMING (CONTINUED)

Marks	50 m back stroke (min and s)		75 m back stroke (min and s)	100 m back stroke (min and s)	50m butterfly stroke (min and s)		75 m butterfly stroke (min and s)	100 m butterfly stroke (min and s)	Diving
	Boys	Girls	Girls	Boys	Boys	Girls	Girls	Boys	Description of action
10	0:55	1:10	1:45	2:00	0:55	1:05	1:37.5	1:50	Vertical, erect body, arms and legs together
9	1:00	1:15	1:52	2:00.5	0:57	1:10	1:45	1:52.5	
8	1:02.5	1:17.5	1:56	2:05	1:00	1:12.5	1:49	1:55	Poor angle (either backward or forward)
7	1:05	1:20	2:00	2:10	1:02.5	1:15	1:53	2:00	
6	1:07.5	1:22.5	2:05	2:15	1:05	1:17.5	1:58	2:05	Poor angle, opening of arms in front, side, etc.
5	1:10	1:25	2:07.5	2:20	1:07.5	1:20	2:01	2:10	
4	1:12.5	1:27.5	2:11	2:25	1:10	1:22.5	2:04	2:15	Poor angle, opening of arms and legs
3	1:14	1:29	2:14	2:27.5	1:12.5	1:24	2:07	2:17.5	
2	1:15	1:30	2:16	2:30	1:14	1:25	2:09	2:20	Poor angle, opening of arms and legs and fight
1	1:16	1:31	2:18	2:32.5	1:16	1:26	2:11	2:25	

*Note: For timings in between or higher than those indicated in the table the lower mark should be given.