# ENGLISH (01)

## CLASS X

*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**

All questions 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.

There will be a summary question 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 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.

**Syllabus prescribed for**
**ICSE (Class X) Examination for**
**Literature in English (English Paper – 2)**

1. **THE MERCHANT OF VENICE** (Shakespeare's **unabridged** play by *A.W. Verity -Acts 3,4 & 5 only)*

**TREASURE TROVE** - ***A Collection of ICSE Poems and Short Stories*** (Evergreen Publications)

2. **POETRY:**
   (i) *Daffodils* – William Wordsworth
   (ii) *I know why the Caged Bird Sings* – Maya Angelou
   (iii) *The Patriot* – Robert Browning
   (iv) *Abu Ben Adhem* – Leigh Hunt
   (v) *Nine Gold Medals* – David Roth

3. **PROSE (short stories):**
   (i) *An Angel in Disguise*– T.S. Arthur
   (ii) *The Little Match Girl* – Hans Christian Andersen
   (iii) *The Blue Bead* – Norah Burke
   (iv) *My Greatest Olympic Prize* – Jesse Owens
   (v) *All Summer in a Day* – Ray Douglas Bradbury

***NOTE: The ICSE (Class X) Examination paper will be set ONLY on the portion of the syllabus that is prescribed for Class X.***

## 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 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** | **(20 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 Class 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 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**

**(CLASS 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**

**(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 LITERATURE IN ENGLISH -GUIDELINES FOR MARKING WITH GRADES (CLASS 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 |

# INDIAN LANGUAGES

## *Note: The Syllabi for Indian Languages have not been changed.*

### CLASS X

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

Papers will be set in the following languages:

Ao-Naga, Assamese, Bengali, Dzongkha, Garo, Gujarati, Hindi, Kannada, Kashmiri, Khasi, Kokborok, 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.

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

*Section A: Language* *(40 Marks)*

*Section B: Prescribed Texts* *(40 Marks)*

### SECTION A: LANGUAGE - 40 Marks

***This Section 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.
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.
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.
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.

### SECTION B: PRESCRIBED TEXTS - 40 Marks

Candidates will be required to answer questions from **ONLY two** of the prescribed textbooks. 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 Council has not prescribed bifurcation of the syllabus prescribed for this subject.***

### INTERNAL ASSESSMENT

**Language and Literature:**

**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 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):**

**Class 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 (CLASS 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 expresses 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- 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 (CLASS 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 |

# SANSKRIT

## SECOND LANGUAGE

**(Under Group I)**

***Candidates offering Sanskrit as a Group II subject may not opt for Sanskrit as a Group I subject.***

***Note: The Syllabus for this Subject has not been changed.***

**CLASS X**

*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)*

### SECTION A: LANGUAGE - 40 Marks

***This section will be compulsory.***

1. **Composition**: Candidates will be required to write, in the language, one short composition 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 or objects.

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.

3. **Comprehension**: An unseen passage will be given in Sanskrit. Questions in the language will be set for answers in the language, designed to test the candidates' understanding of the content of the passage.

4. **Grammar**: In addition to the grammar topics listed below, questions will also be set from the grammar topics covered in the prescribed text books. These will include tests in vocabulary, syntax and idiom, synthesis in sentence construction, formation of sentences in the language correctly embodying given words or forms.

I (क) स्वर और व्यंजन का सामान्य ज्ञान और उनका उच्चारण–स्थान।

(ख) सन्धि :

(i) स्वर–सन्धि
(ii) हल–सन्धि
(iii) विसर्ग–सन्धि

(ग) शब्द रूप :

(i) पुल्लिंग–राम, हरि, गुरू, पितृ, गो, भवत्, विद्वस्, राजन्, करिन्।

(ii) स्त्रीलिंग–रमा, नदी, धेनु, वधू, वाच्, सरित् मातृ।

(iii) नपुसंक लिंग–गृह, वारि, दधि, मधु, जगत्, नामन्, मनस्।

(iv) सर्वनाम–सर्व, तद्, यद्, किम्, युष्मद्, अस्मद्।

(v) एक से दस तक संख्यावाचक शब्द सभी लिंगों में।

(घ) धातु रूप :

(i) निर्धारित लकार–लट् लृट, लङ्, लोट् एवं विधिलिंग।
(ii) इन लकारों में नीचे लिखी धातुओं के परस्मैपद, आत्मनेपद एवं उभयपद के रूप।
(iii) परस्मैपद–भू, पठ्, पा, गम्, हस्, स्था, जि, नश्, अस्, जी, शक्, इष्, प्रच्छ।
(iv) आत्मनेपद–लभ्, वृध्, जन्, याच्, सेव्।
(v) उभयपद–नी, दा, ग्रह, ज्ञा, कृ।

(ड) कारकों का समान्य ज्ञान।

II (क) समास–अव्ययीभाव, तत्पुरुष, कर्मधारय,द्वन्द्व एवं बहुव्रीहि।

(ख) कारक तथा उपपद विभक्तियाँ

(ग) प्रत्यय

(i) कृदन्त–क्त्वा, तुमुन, क्त (क्त), तव्यत्, अनीयर, क्तवतु।

(ii) तद्धित–मतुप, इक, त्व, तल्।

(iii) स्त्री प्रत्यय –टाप्, डीप्।

**SECTION B: PRESCRIBED TEXTS - 40 Marks**

Candidates will be required to answer questions from **ONLY two** of the prescribed textbooks. 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.*

**INTERNAL ASSESSMENT – 20 Marks**

The teacher shall set and mark specific work assigned to candidates over the two years.

**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 Sanskrit of Class VIII may be deputed to be an External Examiner for Class X, Sanskrit 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 SANSKRIT - GUIDELINES FOR MARKING WITH GRADES - CREATIVE WRITING

| 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.<br>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;<br>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 expresses 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 SANSKRIT - GUIDELINES FOR MARKING WITH GRADES - ORAL ASSIGNMENT

| 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 SANSKRIT - GUIDELINES FOR MARKING WITH GRADES - AURAL ASSIGNMENT

| 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 SANSKRIT (PRESCRIBED TEXTS) - GUIDELINES FOR MARKING WITH GRADES

| 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 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 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.***

### CLASS X

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

## SECTION A: CIVICS

### 1. The Union Legislature

*Definition of a federal setup.*

*(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 any four functions.*

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

*Powers and functions of Union Parliament – (legislative, financial, 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, discretionary and emergency (only the three types of emergencies and circumstances leading to proclamation of these emergencies).*

(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, three categories of the Council of Ministers, tenure, functions - policy making, administrative and legislative. Position and powers of the Prime Minister (with reference to the President, the Cabinet, the Parliament and role as the Leader of the Nation), 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 and Appellate.*

(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 (only end of the Company's Rule and changes introduced in administration). 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 *– repressive policies of Lord Lytton and Ilbert Bill Controversy, socio-religious reform movements (any two contributions of Raja*

*Rammohan Roy and Jyotiba Phule) and role of the Press*.

Foundation of the Indian National Congress - *The year of formation and its founder - the first two sessions and their Presidents should be mentioned. Immediate objectives of the Indian National Congress.*

(c) First Phase of the Indian National Movement (1885-1907) - *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 – Lord Curzon's view and the view of the Nationalists. Objectives and methods of struggle of the Assertive Nationalists. Any two contributions of Bal Gangadhar Tilak, Bipin Chandra Pal and Lala Lajpat Rai. The difference between the objectives and methods of the Assertive and early Nationalists.*

*The Muslim League: Year of formation, the first session and the name of the President. The objectives of the Muslim League.*

*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 *(the name of the founder, objectives and any two achievements), Contributions of* Subhas Chandra Bose.

(c) Independence and Partition of India – *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, division of Europe and Sarajevo crisis) and Results (Treaty of Versailles, objectives of the League of Nations).*

(b) Rise of Dictatorships

*Causes for the rise of Fascism in Italy and the rise of Nazism in Germany. Similarities between 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, Japanese invasion of China, failure of League of Nations and Hitler's invasion of Poland). Consequences (brief mention of defeat of Axis Powers, formation of the United Nations and Cold War between the two power blocs).*

(d) United Nations

(i) The objectives of the U.N.

*The composition and any four 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 - any four functions only.*

(e) Non-Aligned Movement (NAM)

*Brief meaning; objectives; Names of the architects of NAM (Nehru, Nasser and Tito).*

## 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.

## 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 | ▪ Follows instructions with understanding.<br>▪ Masters research techniques easily.<br>▪ Reference work is orderly. | ▪ A good deal of relevant matter.<br>▪ Uses wide range of sources. | ▪ Good understanding of historical concepts - sequence/ reconstruction- causes and consequences- continuity and change<br>▪ Empathy. | ▪ Different interpretations of evidence.<br>▪ Can draw Inferences/ deductions/ conclusions. | ▪ Matter presented is clear and is in coherent form (sub-headings, sections, chapters etc.)<br>▪ Work is neat and tidy and not over elaborate. | 4 |
| II | ▪ Follows instructions but needs a little help in research techniques.<br>▪ Reference notes quite orderly. | ▪ Selects matter relevant to context.<br>▪ Limited use of references/ sources. | ▪ Understanding of concepts is adequate. | ▪ Limited / Single interpretation of evidence with some examples.<br>▪ Some inferences/ conclusions are drawn. | ▪ Matter is presented in coherent form but not organized into sections etc.<br>▪ Presentation neat and tidy but not elaborate. | 3 |
| III | ▪ Follows instructions but needs constant guidance.<br>▪ Reference notes at times disorderly. | ▪ Relevant matter but limited reference work.<br>▪ Matter is sketchy. | ▪ Displays limited use of concepts. | ▪ Few examples /single example to support reasoning. | ▪ Work is presented in an orderly way, but not organized into sections.<br>▪ Over use of 'cosmetics' to hide lack of substance.<br>▪ Work is quite neatly presented. | 2 |
| IV | ▪ Struggles with research methods and needs constant guidance.<br>▪ Reference notes copied without reference to keywords. | ▪ Hardly any reference material.<br>▪ Use of irrelevant matter.<br>▪ Matter is sketchy. | ▪ Minimal competency in concepts.<br>▪ A few of the required concepts. | ▪ Finds it difficult to make conclusions/ deductions/ inferences.<br>▪ No examples to support reasoning. | ▪ Matter presented in a confused way at times (no sub-headings, chapters, etc.)<br>▪ Tendency to copy from reference books.<br>▪ Use of "cosmetics" to hide lack of substance.<br>▪ Untidy work. | 1 |
| V | ▪ Cannot follow instructions.<br>▪ Works 'blindly' without reference to keywords. | ▪ No reference work/copied from other textbooks/ sketchy matter. | ▪ Unable to demonstrate concepts. | ▪ Unable to make inferences/ deductions or come to any conclusions. | ▪ Matter presented in an incoherent/ disorganized way.<br>▪ Copied from textbooks "blindly".<br>▪ Use of "cosmetics" to hide lack of substance.<br>▪ Untidy work. | 0 |

# HISTORY, CIVICS AND GEOGRAPHY (50)

# GEOGRAPHY

## H.C.G. - Paper - 2

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

## CLASS X

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

(a) *Locating features with the help of a four-figure grid reference.*

(b) *Definition of contour and contour interval. Identification of landforms marked by contours (steep slope, gentle slope, hill), triangulated height, spot height, benchmark, relative height/ depth.*

(c) *Interpretation of colour tints and conventional symbols used on a topographical survey of India map.*

(d) *Identification and definition of types of scale given on the map.*

*Measuring direct distance and calculating area using the scale given therein.*

(e) *Marking directions between different locations, using eight cardinal points.*

(f) *Identify: Site of prominent villages and/or towns, types of land use / land cover and means of communication with the help of the index given at the bottom of the sheet.*

(g) *Identification of drainage (direction of flow, left bank and right bank) and patterns (Dendritic, Trellis, and Radial); nature of streams. Settlement patterns (Scattered and Compact).*

(h) *Identification of natural and man-made features.*

**2. Map of India**

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

***Mountains, Peaks and Plateaus:*** *Himalayas, Karakoram, Aravali, Vindhyas, Satpura, Western and Eastern Ghats, Nilgiris, Mount Godwin Austin (K2), Mount Kanchenjunga. Deccan Plateau, Chota Nagpur Plateau.*

***Plains:*** *Gangetic Plains and Coastal plains – (Konkan, Malabar, Coromandel, Northern Circars).*

***Desert:*** *Thar (The Great Indian Desert)*

***Rivers:*** *Indus, Jhelum, Satluj, Ganga, Yamuna, Kosi, Chambal, Betwa, Damodar, Brahmaputra, Narmada, Tapti, Mahanadi, Godavari, Krishna, Cauveri, Tungabhadra.*

***Water Bodies:*** *Gulf of Kutch, Gulf of Khambhat, Andaman Sea, Chilka Lake, Wular Lake.*

***Passes:*** *Karakoram, Nathu-La Passes.*

***Latitude and Longitudes:*** *Tropic of Cancer, Standard Meridian (82° 30'E).*

***Direction of Winds****: Southwest Monsoons (Arabian Sea and Bay of Bengal Branches), Northeast Monsoons.*

***Distribution of Minerals****: Oil - Mumbai High (Offshore Oil Field); Iron – Singhbhum, Coal – Jharia.*

***Soil Distribution*** *– Alluvial, Black and Red Soil.*

***Cities -*** *Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bengaluru, Kochi, Prayagraj/ Allahabad.*

***Population -*** *Distribution of Population (Dense and sparse).*

## PART - II

## GEOGRAPHY OF INDIA

### 3. Climate

*Distribution of Temperature, Rainfall, winds in Summer and Winter and factors affecting the climate of the area. Monsoon and its mechanism. Seasons: March to May – Summer; June to September – Monsoon; October to November - Retreating Monsoon. December to February – Winter.*

### 4. Soil Resources

- *Types of soil (alluvial, black, red and laterite) distribution, composition and characteristics such as colour, texture, minerals and crops associated.*
- *Soil Erosion – causes, prevention and conservation.*

### 5. Natural Vegetation

- *Importance of forests.*
- *Types of vegetation (tropical evergreen, tropical deciduous, tropical desert, littoral and mountain), distribution and correlation with their environment.*
- *Forest conservation.*

### 6. Water Resources

- *Sources (Surface water and ground water).*
- *Need for conservation and conservation practices (Rainwater harvesting and its importance).*
- *Irrigation: Importance and methods.*

### 7. Mineral and Energy Resources

- *Iron ore, Manganese, Copper – uses and their distribution.*
- *Conventional Sources: Coal, Petroleum, Natural gas (distribution, advantages and disadvantages).*
- *Hydel power (Bhakra Nangal Dam and Hirakud).*
- *Non-conventional Sources: Solar, wind, nuclear and biogas (important areas and advantages).*

### 8. Agriculture

- *Indian Agriculture – importance, problems and reforms.*
- *Types of farming in India: subsistence and commercial: intensive, extensive, plantation and mixed.*
- *Agricultural seasons (rabi, kharif, zayad).*
- *Climatic conditions, soil requirements, methods of cultivation, processing and distribution of the following crops:*
  - *rice, wheat and pulses.*
  - *sugarcane, oilseeds (groundnut and, mustard).*
  - *cotton, jute, and tea.*

### 9. Manufacturing Industries

Importance and classification

- *Agro based Industry - Sugar, Textile (Cotton and Silk).*
- *Mineral based Industry – Iron & Steel (TATA STEEL Rourkela) Petro Chemical and Electronics.*

### 10. Transport

*Importance and Modes – Roadways, Railways, Airways and Waterways –- Advantages and disadvantages.*

### 11. Waste Management

- *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. Local Geography:
   (a) Land use pattern in different regions of India– a comparative analysis.
   (b) The survey of a local market on the types of shops and services offered.
2. Environment:
   Wildlife conservation efforts in India.
3. Current Geographical Issues:
   Development of tourism in India.
4. Transport in India:
   Development of Road, Rail, Water and Air routes.
5. List different type of industries in the States 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. Need for industrialization in India, the latest trends and its impact on economy of India.
7. Visit a water treatment plant, sewage treatment plant or garbage dumping or vermicomposting sites in the locality and study their working.

**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 Geography of Class VIII may be deputed to be an External Examiner for Class X, Geography 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 GEOGRAPHY - 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 analyse 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 analyse data. Does not use the suggested methods.<br>Makes conclusions but does not relate them to the original aim. | Presents the report without reference. |

# MATHEMATICS (51)

## CLASS X

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

***Certain questions may require the use of Mathematical tables (Logarithmic and Trigonometric tables).***

### 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:*

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

$$M\,V = P \times n + I$$

### 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.*

(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 Progression

- *Finding the General term of an A.P.*
- *Finding Sum of first 'n' terms of an A.P.*

(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 $\theta$ 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.*

**3. Geometry**

(a) Similarity

*Similarity, conditions of similar triangles.*

*(i) Comparison with congruency, keyword being proportionality.*

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

*(iii) Applications of Basic Proportionality Theorem.*

(b) 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.*
- *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.*

(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 are not required.**

**Applications of all Circle Theorems in solving numerical and theoretical problems are included.**

(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 prove simple algebraic trigonometric expressions*

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

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

$1+cot^2 A = cosec^2 A;\ 0 \le A \le 90°$

(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 class and modal class for grouped data (only continuous data).*

  ** Mean by all 3 methods included:*

  *Direct* : $\frac{\Sigma fx}{\Sigma f}$

  *Short-cut* : $A + \frac{\Sigma fd}{\Sigma f}$ where $d = x - A$

  *Step-deviation:* $A + \frac{\Sigma ft}{\Sigma f} \times i$ 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.*

## 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

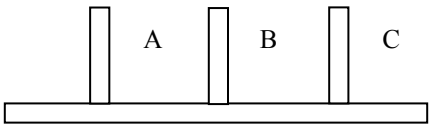
| | | | |
|---|---|---|---|
| **In general** | | | |
| Implies that | $\Rightarrow$ | is logically equivalent to | $\Leftrightarrow$ |
| Identically equal to | $\equiv$ | is approximately equal to | >> |
| **In set language** | | | |
| Belongs to | $\in$ | does not belong to | $\notin$ |
| is equivalent to | $\leftrightarrow$ | is not equivalent to | $\not\leftrightarrow$ |
| union | $\cup$ | intersection | $\cap$ |
| universal set | $\xi$ | is contained in | $\subset$ |
| natural (counting) numbers | N | the empty set | ø |
| | | whole numbers | W |
| integers | Z | 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

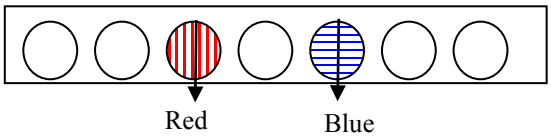
The minimum number of assignments: Two assignments as prescribed by the teacher.

**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, 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 setsquare 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

### CLASS X

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

***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) Work, energy, power and their relation with force.

*Definition of work. $W = FS\cos\theta$; special cases of $\theta = 0^0$, $90^0$. 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 horsepower (1hp=746W) [Simple numerical problems on work, power and energy].*

(iii) 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= ½ $mv^2$ (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.*

(iv) Machines as force multipliers; load, effort, mechanical advantage, velocity ratio and efficiency; 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 ($\eta$), relation between $\eta$ and MA, VR (derivation included); for all practical machines $\eta < 1$; MA < VR.*

*Pulley system: single fixed, single movable, block and tackle; MA, VR and $\eta$ in each case. [Pulleys using single tackle]*

(v) Principle of Conservation of energy.

*Statement of the principle of conservation of energy; theoretical verification that U + K = 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 μ = c/V, V = fλ. 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;* ***[Diagrammatic representation not to be tested]****; 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) μ = 1/sin C. Essential conditions for total internal reflection. Total internal reflection in a triangular glass prism; ray diagram, different cases - angles of prism (60º,60º,60º), (60º,30º,90º), (45º,45º,90º); use of right-angle prism to obtain δ = 90º and 180º (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.

*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.*

**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:

*Definitions of the characteristics of sound and factors affecting them only.*

## 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; super conductors, electromotive force (emf); combination of resistances in series and parallel. Simple numerical problems using the above relations. [Simple network of resistors including not more than four external resistors. Internal resistance may be included].*

(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 $P = (W/t) = VI = I^2R = V^2/R$. 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 × hour = kW h), [simple numerical problems].*

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

*House wiring (ring system – no diagrammatic representation), power distribution; main circuit (3 wires-live, neutral, earth) with fuse / MCB, main switch and its advantages - circuit diagram, 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, statement of laws not required); electromagnetic induction (elementary).

*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; conductor carrying current in a magnetic field experiences a force, Fleming's Left Hand Rule, and its understanding, Simple introduction to electromagnetic induction; a magnet moved along the axis of a solenoid induces current, Fleming's Right Hand Rule and its application in understanding the direction of current in a coil and Lenz's law. Comparison of AC and DC.*

## 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 ($^oC$, 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

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. $\alpha$, $\beta$ and $\gamma$ - their nature and properties; changes within the nucleus. One example each of $\alpha$ and $\beta$ 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.*

## A NOTE ON SI UNITS

SI units (*Systeme International d'Unites*) 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 square | 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 = 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 $\delta$.Repeat for four different angles of incidence (say $i_1=40^0$ , $50^0$, $60^0$ and $70^0$). 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 $\delta$. Explain briefly. Do this for prisms with $A=60^0$, $45^0$ and $90^0$.

8. Calculate the specific heat capacity 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 specific heat capacity of a metal by method of mixtures.

10. Determination of specific latent heat of ice.

11. Using as 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 ten 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)
## CHEMISTRY
## SCIENCE Paper - 2
### CLASS X

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

***Note:** All chemical processes / reactions should be studied with reference to the reactants, products, conditions, observation, the (balanced) equations and diagrams.*

**1. Periodic Properties and variations of Properties – Physical and Chemical**

(i) Periodic properties and their variations in groups and periods.

*Definitions and trends of the following periodic properties in groups and periods should be studied:*

- *atomic size*
- *metallic character*
- *non-metallic character*
- *ionisation potential*
- *electron affinity*
- *electronegativity*

(ii) Periodicity on the basis of atomic number for elements.

- *The study of modern periodic table up to period 4(students to be exposed to the complete modern periodic table but no questions will be asked on elements beyond period 4 - Calcium).*
- *Periodicity and other related properties to be explained on the basis of nuclear charge and shells (not orbitals).*

***(Special reference to the alkali metals, alkaline earth metals, halogens and inert gases).***

**2. Chemical Bonding**

Electrovalent, covalent and co-ordinate bonding, structures of various compounds, Electron dot structure.

(a) Electrovalent bonding:

- *Electron dot structure of Electrovalent compounds NaCl, $MgCl_2$, CaO.*
- *Characteristic properties of electrovalent compounds – state of existence, melting and boiling points, conductivity (heat and electricity), dissociation in solution and in molten state to be linked with electrolysis.*

(b) Covalent Bonding:

- *Electron dot structure of covalent molecules on the basis of duplet and octet of electrons (example: hydrogen, oxygen, chlorine, nitrogen, ammonia, carbon tetrachloride, methane.*
- *Polar Covalent compounds – based on difference in electronegativity*:

  *Examples – HCl, $NH_3$ and $H_2O$ including structures.*
- *Characteristic properties of Covalent compounds – state of existence, melting and boiling points, conductivity (heat and electricity), ionisation in solution.*

***Comparison of Electrovalent and Covalent compounds**.*

(c) Coordinate Bonding:

- *Definition*
- *The lone pair effect of the oxygen atom of the water molecule and the nitrogen atom of the ammonia molecule to explain the formation of $H_3O^+$ and $OH^-$ ions in water and $NH_4^+$ ion.*

***The meaning of lone pair; the formation of hydronium ion and ammonium ion must be explained with the help of electron dot diagrams.***

**3. Study of Acids, Bases and Salts**

(i) Simple definitions, classification and their characteristic properties.

(ii) Ions present in mineral acids, alkalis and salts and their solutions; use of litmus and pH paper to test for acidity and alkalinity.

- *Examples with equation for the ionisation/dissociation of acids, bases and salts.*
- *Acids form hydronium ions (only positive ions) which turn blue litmus red, alkalis form hydroxyl ions (only negative ions) with water which turns red litmus blue.*
- *Salts are formed by partial or complete replacement of the hydrogen ion of an acid by a metal or ionic definition of salt. (To be explained with suitable examples).*
- *Introduction to pH scale to test for acidity, neutrality and alkalinity by using pH paper or Universal indicator and common acid base indicators.*

(iii) *Types of salts: normal salts, acid salt, basic salt, definition and examples*.

(iv) Action of dilute acids on salts.

*Decomposition of hydrogen carbonates, carbonates, sulphites and sulphides by appropriate acids with heating if necessary. (Relevant laboratory work must be done).*

**4. Analytical Chemistry**

(i) Action of Ammonium Hydroxide and Sodium Hydroxide on solution of salts: colour of salt and its solution; formation and colour of hydroxide precipitated for solutions of salts of Ca, Fe, Cu, Zn and Pb; special action of ammonium hydroxide on solutions of copper salt and sodium hydroxide on ammonium salts.

*On solution of salts:*

- *Colour of salt and its solution.*
- *Action on addition of Sodium Hydroxide to solution of Ca, Fe, Cu, Zn, and Pb salts drop by drop and in excess. Formation and colour of hydroxide precipitated to be highlighted with the help of equations.*
- *Action on addition of Ammonium Hydroxide to solution of Ca, Fe, Cu, Zn, and Pb salts drop by drop and in excess. Formation and colour of hydroxide precipitated to be highlighted with the help of equations.*
- *Special action of Ammonium Hydroxide on solutions of copper salts and sodium hydroxide on ammonium salts.*

(ii) Action of alkalis (*NaOH, KOH) on* certain metals, their oxides and hydroxides.

*The metals must include aluminium, zinc and lead, their oxides and hydroxides, which react with caustic alkalis (NaOH, KOH), showing the amphoteric nature of these substances*.

**5. Mole Concept and Stoichiometry**

(i) Gay Lussac's Law of Combining Volumes

*Statement and explanation with numerical problems.*

(ii) Vapour Density and its relation to relative molecular mass:

- *Molecular mass = 2×vapour density (formal proof not required)*
- *Deduction of simple (empirical) and molecular formula from:*
  - *(a) the percentage composition of a compound.*
  - *(b) the masses of combining elements.*

**6. Electrolysis**

(i) Electrolytes and non-electrolytes.

*Definitions and examples.*

(ii) Substances containing molecules only, ions only, both molecules and ions.

- *Substances containing molecules only ions only, both molecules and ions.*
- *Examples: relating their composition with their behaviour as* ***strong and weak electrolytes as well as non-electrolytes****.*

(iii) Definition and explanation of electrolysis, electrolyte, electrode, anode, cathode, anion,

cation, oxidation and reduction (on the basis of loss and gain of electrons).

(iv) An elementary study of the migration of ions, with reference to the factors influencing selective discharge of ions (reference should be made to the activity series as indicating the tendency of metals, e.g., Na, Mg, Fe, Cu, to form ions) illustrated by the electrolysis of:

- *Molten lead bromide*
- *acidified water with platinum electrodes*
- *Aqueous copper (II) sulphate with inert electrode, copper electrodes; electron transfer at the electrodes.*

***The above electrolytic processes can be studied in terms of electrolyte used, electrodes used, ionization reaction, anode reaction, cathode reaction, use of selective discharge theory, wherever applicable.***

(v) Applications of electrolysis.

- *Electroplating with nickel and silver, choice of electrolyte for electroplating.*
- *Electro refining of copper.*

***Reasons and conditions for electroplating; names of the electrolytes and the electrodes used should be given. Equations for the reactions at the electrodes should be given for electroplating, refining of copper.***

## 7. Metallurgy

(i) Occurrence of metals in nature:

- *Mineral and ore - Meaning only.*
- *Common ores of iron, aluminium and zinc.*

(ii) Extraction of Aluminium.

*(a) Chemical method for purifying bauxite by using NaOH – Baeyer's Process.*

*(b) Electrolytic extraction – Hall Heroult's process:*

*Structure of electrolytic cell - the various components as part of the electrolyte, electrodes and electrode reactions.*

***Description of the changes occurring, purpose of the substances used and the main reactions with their equations.***

(iii) Alloys – composition and uses.

*Stainless steel, duralumin, magnalium, brass, bronze, fuse metal / solder.*

## 8. Study of Compounds

### A. Hydrogen Chloride

Hydrogen chloride: preparation of hydrogen chloride from sodium chloride; refer to the density and solubility of hydrogen chloride (fountain experiment); reaction with ammonia; acidic properties of its solution.

- *Preparation of hydrogen chloride from sodium chloride; the laboratory method of preparation can be learnt in terms of reactants, product, condition, equation, diagram or setting of the apparatus, procedure, observation, precaution, collection of the gas and identification /tests.*
- *Simple experiment to show the density of the gas (Hydrogen Chloride) –heavier than air.*
- *Solubility of hydrogen chloride (fountain experiment); setting of the apparatus, procedure, observation, inference.*
- *Method of preparation of hydrochloric acid by dissolving the gas in water- the special funnel arrangement and the mechanism by which the back suction is avoided should be le*arnt.
- *Reaction with ammonia*
- *Acidic properties of its solution - reaction with metals, their oxides, hydroxides and carbonates to give their chlorides; decomposition of carbonates, hydrogen carbonates, sulphides, sulphites.*
- *Reaction of Manganese dioxide with concentrated HCl.*
- *Precipitation reactions with silver nitrate solution and lead nitrate solution.*

### B. Ammonia

Ammonia: its laboratory preparation from ammonium chloride and collection; ammonia from nitrides like $Mg_3N_2$ and AlN and ammonium salts. Manufacture by Haber's Process; density and solubility of ammonia

(fountain experiment); aqueous solution of ammonia; its reactions with hydrogen chloride and with hot copper (II) oxide and lead monoxide and chlorine; the burning of ammonia in oxygen.

*Laboratory preparation from ammonium chloride and collection; (the preparation to be studied in terms of, setting of the apparatus and diagram, procedure, observation, collection and identification/tests.)*

- *Ammonia from nitrides like $Mg_3N_2$ and AlN using warm water.*

  *Ammonia from ammonium salts using alkalies*.

***The reactions to be studied in terms of reactants, products, conditions and equations.***

- *Manufacture by Haber's Process.*
- *Density and solubility of ammonia (fountain experiment).*
- *The burning of ammonia in oxygen.*
- *The catalytic oxidation of ammonia (with conditions and reaction)*
- *Its reactions with hydrogen chloride and with hot copper (II) oxide, lead monoxide and chlorine (both chlorine in excess and ammonia in excess).*

***All these reactions may be studied in terms of reactants, products, conditions, equations and observations.***

- *Aqueous solution of ammonia - reaction with sulphuric acid, nitric acid, hydrochloric acid and solutions of iron(III) chloride, iron(II) sulphate, lead nitrate, zinc nitrate and copper sulphate.*

**C. Nitric Acid**

Nitric Acid: one laboratory method of preparation of nitric acid from potassium nitrate or sodium nitrate. Large scale preparation. Nitric acid as an oxidizing agent.

- *Laboratory preparation of nitric acid from potassium nitrate or sodium nitrate; the laboratory method to be studied in terms of reactants, products, conditions, equations, setting up of apparatus, diagram, precautions, collection and identification/tests.*
- *Manufacture of Nitric acid by Ostwald's process (Only equations with conditions where applicable).*
- *As an oxidising agent: its reaction with copper, carbon, sulphur.*
- *Thermal decomposition of nitrates.*

**D. Sulphuric Acid**

Large scale preparation, its behaviour as an acid when dilute, as an oxidizing agent when concentrated - oxidation of carbon, sulphur and copper; as a dehydrating agent - dehydration of sugar (cane sugar/glucose) and copper (II) sulphate crystals; its non-volatile nature.

- *Manufacture by Contact Process Equations with conditions where applicable).*
- *Its behaviour as an acid when dilute - reaction with metal, metal oxide, metal hydroxide, metal carbonate, metal bicarbonate*, metal *sulphite, metal sulphide.*
- *Concentrated sulphuric acid as an oxidizing agent - the oxidation of carbon sulphur and copper.*
- *Concentrated sulphuric acid as a dehydrating agent- (a) the dehydration of sugar (b) Copper (II) sulphate crystals.*
- *Non-volatile nature of sulphuric acid - reaction with sodium or potassium chloride and sodium or potassium nitrate*.
- *Tests for dilute and concentrated sulphuric acid.*

**9. Organic Chemistry**

(i) Introduction to Organic compounds.

- *Unique nature of Carbon atom – tetra valency, catenation.*
- *Formation of single, double and triple bonds, straight chain, branched chain, cyclic compounds (only benzene)*.

(ii) Structure and Isomerism.

- *Structure of compounds with single, double and triple bonds.*
- *Structural formulae of hydrocarbons. Structural formula must be given for: alkanes, alkenes, alkynes, alcohols, aldehydes and carboxylic acid up to 5 carbon atoms.*
- *Isomerism – structural (chain, position)*

(iii) Homologous series – characteristics with examples.

*Alkane, alkene, alkyne series and their gradation in properties and the relationship with the molecular mass or molecular formula.*

(iv) Simple nomenclature.

*Simple nomenclature of the hydrocarbons with simple functional groups – (double bond, triple bond, alcoholic, aldehydic, carboxylic group) longest chain rule and smallest number for functional groups rule – trivial and IUPAC names (compounds with only one functional group).*

(v) Hydrocarbons: alkanes, alkenes, alkynes.

- *Alkanes - general formula; methane (greenhouse gas) and ethane - methods of preparation from sodium ethanoate (sodium acetate), sodium propanoate (sodium propionate), from iodomethane (methyl iodide) and bromoethane (ethyl bromide). Complete combustion of methane and ethane, reaction of methane and ethane with chlorine through substitution.*
- *Alkenes – (unsaturated hydrocarbons with a double bond); ethene as an example. Methods of preparation of ethene by dehydro halogenation reaction and dehydration reactions.*
- *Alkynes - (unsaturated hydrocarbons with a triple bond); ethyne as an example of alkyne; Methods of preparation from calcium carbide and 1,2 dibromoethane ethylene dibromide).*

***Only main properties, particularly addition products with hydrogen and halogen namely $Cl_2$, $Br_2$ and $I_2$ pertaining to alkenes and alkynes.***

## INTERNAL ASSESSMENT OF PRACTICAL WORK

Candidates will be asked to observe the effect of reagents on substances supplied to them. The exercises will be simple and may include the recognition and identification of certain gases and ions listed below. The examiners will not, however, be restricted in their choice to substances containing the listed ions.

**Gases**: Hydrogen, Oxygen, Carbon dioxide, Chlorine, Hydrogen chloride, Sulphur dioxide, Hydrogen sulphide, Ammonia, Water vapour, Nitrogen dioxide.

**Ions**: Calcium, Copper, Iron, Lead, Zinc and Ammonium, Carbonate, Chloride, Nitrate, Sulphide, Sulphite and Sulphate.

Knowledge of a formal scheme of analysis is not required. Semi-micro techniques are acceptable but candidates using such techniques may need to adapt the instructions given to suit the size of the apparatus being used.

Candidates are expected to have completed the following minimum practical work:

1. Make a solution of the unknown substance: add sodium hydroxide solution or ammonium hydroxide solution, make observations and give your deduction. Warming the mixture may be needed. Choose from substances containing $Ca^{2+}$, $Cu^{2+}$, $Fe^{2+}$, $Fe^{3+}$, $Pb^{2+}$, $Zn^{2+}$, $NH_4^+$.
2. Determine which of the given solutions is acidic and which is basic, giving two tests for each.
3. Add concentrated hydrochloric acid to each of the given substances, warm, make observations, identify any product and make deductions: (a) copper oxide (b) manganese dioxide.

**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 Chemistry of Class VIII may be deputed to be an External Examiner for Class X Chemistry 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.

***NOTE: According to the recommendation of International Union of Pure and Applied Chemistry (IUPAC), the groups are numbered from 1 to 18 replacing the older notation of groups IA …. VIIA, VIII, IB …… VIIB and 0. However, for the examination both notations will be accepted.***

| Old notation | IA | IIA | IIIB | IVB | VB | VIB | VIIB | VIII | | | IB | IIB | IIIA | IVA | VA | VIA | VIIA | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New notation | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |

# SCIENCE (52)

## BIOLOGY

## SCIENCE Paper - 3

### CLASS X

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

**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.*
- *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.

- *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 $O_2$, formation of ATP (photophosphorylation) and NADPH.*
- *Dark reaction - only combination of hydrogen released by NADP with $CO_2$ 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.*

(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.*

(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.*

**4. 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.*

**5. 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 $O_2$ 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. |

# ENVIRONMENTAL SCIENCE (82)

***Candidates offering Environmental Applications (Group III) are not eligible to offer Environmental Science (Group II).***

***Note: The Syllabus for this Subject has not been changed.***

**CLASS X**

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

**1. Controlling Air Pollution**

(a) From domestic combustion.

*Reducing pollution from domestic cooking; clean cooking - kerosene as a desirable cooking fuel in rural areas.*

(b) From industries.

*Measures for controlling industrial air pollution - technological measures (energy efficient devices, clean technologies), meteorological controls; zoning strategy; penalties and subsidies.*

*Case Study: the Taj Trapezium.*

(c) From vehicles.

*Vehicle emission control - modify engine design (catalytic converters, four stroke engines), clean fuels, public transport options, traffic management, economic policy measures.*

**2. Addressing Population**

(a) The link between growing population and environmental degradation.

*UN's population projections for 2050, the climate link, the choice of alternative futures. Growing population in the developing countries and rising consumption in the developed countries.*

(b) The demographic transition.

*Stages of transition, transition stages of certain developed nations and developing nations (such as India, China, Korea, Malaysia). **Not to be tested, for knowledge and understanding only.***

(c) Strategies for controlling growth of population.

*Strategies to include family planning and birth control, health care, education, economic development; women-centered human development.*

(d) Development framework for poverty alleviation.

*Social mobilisation, agricultural development, small-scale industries, human development. **Not to be tested, for knowledge and understanding only.***

**3. Managing the Urban environment**

(a) Urbanisation - a challenge to the future.

*Sustainable cities: the need of the hour.*

(b) Planning environmental improvement.

*Efficient land use, planning energy, shelter and transport; water supply management, wastewater and sanitary waste management, construction activities.*

(c) Rural development to counter migration.

*Self-explanatory.*

(d) Development of secondary cities to counter migration.

*Self-explanatory.*

(e) Community participation and contribution of private enterprises.

*Community participation in keeping surroundings clean, participation of private enterprises in city improvement, measures to increase private enterprise participation.*

**4. Managing Soil and Land**

(a) Conserving soil.

*Erosion control techniques - terracing, contour ploughing, dry farming, tree planting, bunds, gullies, wind-breaks, use of organic fertilisers.*

*Soil conservation techniques - land-use management, vegetative and mechanical practices, conserving soil and water together; appropriate cropping systems – cropping patterns (strip cropping), tree crops, and foliage crops.*

(b) Land reforms.

*Meaning, measures enforced in India to give land to the landless*.

(c) Integrated rural development.

*Objectives, self-help schemes like social and community forestry.*

(d) Role of women and community in conservation.

*Self-explanatory.*

(e) Combating deforestation.

*Reforestation, energy plantations, forest harvesting of non-timber forest products, exploring alternative sources of livelihood, change in consumption patterns*.

(f) Managing forest grazing.

*Causes and consequences of overgrazing, controlled forest grazing as in National Forest Policy, 1988.*

(g) Alternatives to timber.

*Recycling of timber and paper*.

**5. Food**

(a) Sustainable agriculture.

*Integrated pest management – understanding the term, aims, advantages, disadvantages.*

*Genetically modified organisms, application in plants and animals and environmental risks.*

*New crop strains – high yielding varieties and their viability, hybrid varieties.*

*Mixed cropping – advantages and disadvantages; regenerative farming techniques - intercropping, crop rotation, agroforestry, polyvarietal cultivation and polyculture.*

*Conservation tillage farming - meaning of conservation tillage, advantages and disadvantages.*

*Trickle drip irrigation – need for a trickle drip irrigation system; operation of a drip irrigation system; advantages and disadvantages.*

*New organic fertilizers – integrated nutrient supply programme, organic fertilizers - bulky organic manures, green manures, bio-fertilizers, and sewage sludge.*

*Gene banks – what are gene banks; objectives of maintaining gene banks.*

(b) Problem of global food security, food aid.

*Global food imbalance, distributional inequality; role of food aid in achieving global food security*.

**6. Biodiversity**

(a) Biodiversity at risk due to human actions.

*Reasons for loss of biodiversity; Man - the super consumer: impact of his actions on the earth's resources; reasons for concern: economic, ecological and aesthetic*.

(b) Conserving our genetic resource: in-situ and ex-situ; harvesting wildlife.

*In-situ - wildlife sanctuaries, national parks and biosphere reserves.*

*Ex-situ – zoological parks, botanical gardens, gene banks in agricultural research centres and forestry institutions.*

*Harvesting wildlife to meet commercial needs.*

(c) Conservation strategies at national and international levels.

*Wildlife (Protection) Act 1972, Project Tiger 1973, IUCN, the Ramsar Convention on Wetlands, 1971, CITES, The Convention on Biolog*ical Diversity.

**7. Energy**

(a) Fossil fuels used to produce electricity.

*Electricity: energy on demand; dwindling supplies of fossil fuels; renewable and non-renewable energy resources.* ***Not to be tested, for knowledge and understanding only.***

(b) Nuclear energy.

*Nuclear fission, advantages and disadvantages of nuclear energy; safety concerns (the Chernobyl disaster); nuclear fusion.*

(c) A sustainable energy future.

*Energy conservation; alternative energy sources - solar energy, wind energy, hydroelectricity, geothermal energy, biomass, liquid fuels from biomass- methanol, ethanol, gasohol, CNG, hydrogen.*

**8. Waste**

(a) Solid waste: the throwaway society.

*Solid waste, biodegradable and non-biodegradable materials; where does the trash go - landfills and incinerators*.

(b) Solid waste: options for the future.

*Producing less waste, reusing, recycling, composting, vermiculture, biotechnology; finding alternatives to materials we use.*

**9. Environment and Development**

(a) Global environmental pollution.

*Who is responsible - developed or developing countries? Need for mutual cooperation*.

(b) Economic development and environmental degradation.

*Role of developed and developing countries; contrasting views of developed and developing countries; debt trap*.

(c) International trade.

*Its link to environmental deterioration – unfair trade practices*.

(d) Role of multinational corporations.

*Definition of MNCs, their contribution to development and debatable contribution to environment; case study - Bhopal gas tragedy; measures to regulate activities of MNCs in developing countries.*

**10. Towards a Sustainable Future**

(a) Global interdependence – economic and environmental.

*Concept of economic and environmental global interdependence; global environmental health – the shared responsibility of nations; trade and aid as ways of reducing world inequalities.*

(b) International cooperation.

*The Montreal Protocol; the Global Environmental Facility (GEF) support; the Earth Summit, UN's International Conference on Population and Development (Cairo); the Kyoto Treaty.*

(c) Sustainable development.

*The concept of sustainable development, sustainable development and developed countries; sustainable development and developing countries*.

(d) Role of non-governmental organisations.

*Self-explanatory.*

(e) Technology that sustains.

*Satellite imagery as a means of monitoring the global environment: satellite remote sensing, advantages in collecting environmental data, applying data in areas of environmental damage as deforestation, desertification, land degradation, wastelands, mining, ozone layer depletion and predicting droughts and floods.*

*The concept of alternate technology, adopting alternate technology to create self-sustaining societies in the developed and developing world.*

*Role of biotechnology in achieving global food security.*

## INTERNAL ASSESSMENT

A minimum of three assignments as prescribed by the teacher, need to be completed.

**Suggested Assignments**

1. Make a field study of the effect of human interaction on the natural environment and write a project report (1500 words) on the likely impact of the interaction on the global environment.
2. Prepare an original study/essay (2000 words) on an area of the prescribed curriculum that is indicative of his/her appreciation/concern for environmental issues and make a functional model to support the above.

## 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 Environmental Science of Class XI may be deputed to be an External Examiner for Class X, Environmental Science 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 ENVIRONMENTAL SCIENCE - GUIDELINES FOR MARKING WITH GRADES

| Criteria | Preparation | Investigation/ Gathering Data | Analysis/Inference | Solutions Alternatives/ Innovations | Presentation | Marks |
|---|---|---|---|---|---|---|
| Grade I | Follows instructions with understanding, modifies if needed. Background information correct. Level of awareness high. | Is able to ask right questions. Knows whom to ask, when and how. Can deal with more than one variable. | Analyses systematically. Can see sequences or correlation. Can segregate fact from opinion. | Innovative ideas presented. Alternatives suggested. | Accurate. Feasible, neat, well labelled diagrams. Index and references given. | 4 marks |
| Grade II | Follows instructions step-by-step. Awareness is good. Background information correct. | Is able to ask questions and identify whom to ask when and how. Can handle two variables only. | Makes observations correctly. Analysis fair. | Alternatives presented. Innovative but not practical. | Accurate. Neat, well labelled diagrams, index and references given. | 3 marks |
| Grade III | Follows simple instructions only. Awareness basic. Background information sketchy. | Needs help with the investigations. Has suggestions but cannot decide. | Observation - help needed. Needs guidance to see correlations or sequence. | Obvious solutions presented. Not innovative. | A bit disorganised, but neat and accurate. Either index or references missing. | 2 marks |
| Grade IV | Follows some instructions but confused. Has to be made aware. Background information incorrect in places. | Needs to be told what questions to be asked, whom to ask or where to gather the data from. | Detailed instructions required to draw inferences. Charts have to be made. | Thinks of solutions under guidance. | Poorly organised. Some things missing. Index and references missing. | 1 mark |
| Grade V | Confused about instructions. Has to be made aware. Needs help with background information. | Gets stuck at every step. Questionnaire has to be formulated. | Even with help, analysis is not clear. Takes teacher's word for it. | Solutions not forthcoming. | Overall impression very poor. Not very accurate. | 0 mark |

# PHYSICAL EDUCATION (72)

***Note: The Syllabus for this Subject has not been changed.***

**CLASS X**

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

## 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 Sportsperson

*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.**

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. 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 (10 cm x 5 cm x 5 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, 200 m, 400 m, 800 m and 1500 m.

Girls – 50 m, 100 m, 200 m and 800 m.

*(ii) Fields events*

Boys - long jump, high jump, hop-step-and-jump, pole vault, shot put, 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 – 50 m, 100 m, 200 m and 400 m;

Breast stroke – 50 m, 100 m;

Backstroke – 50 m, 100 m;

Butterfly stroke – 50 m, 100 m;

Diving - standing one-leg dive, standing semi-crouch dive, standing stationary dive, the front jump dive from the springboard.

*Girls* - Freestyle – 50 m, 100 m and 200 m;

Breast stroke – 50 m, 75 m;

Backstroke – 50 m, 75 m;

Butterfly stroke – 50 m, 75 m;

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:

| | | *Marks* |
|---|---|---|
| (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)

| | *Marks* |
|---|---|
| (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:

| | *Marks* |
|---|---|
| A – Excellent | 26-30 |
| B - Very Good | 21-25 |
| C – Good | 16-20 |
| D – Average | 11-15 |
| E - Below Average | 10 & less |

(c) **Swimming**

| | *Marks* |
|---|---|
| (i) Ability in basic skills e.g. breathing, floating, arm movements, combined elementary movement, changing body positions and directions and treading water | 15 |
| (ii) Ability in stroke skills | 05 |
| (iii) Ability in diving skills | 05 |
| (iv) Speed and endurance | 05 |

(d) **Dancing**

| | *Marks* |
|---|---|
| (i) Ability to keep rhythm | 10 |
| (ii) Expression and grace of movements | 08 |
| (iii) Ease of performance | 08 |
| (iv) Endurance | 04 |

(e) **Gymnastics**

| | *Marks* |
|---|---|
| (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**

| | *Marks* |
|---|---|
| (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:

| | *Marks* |
|---|---|
| (i) Perfect performance in form, grace and timing | 05 |
| (ii) Satisfactory performance but for minor fault in form & timing | 04 |
| (iii) Performance with poor form e.g. bent knees, toes not pointed | 03 |
| (iv) No form or grace but knowledge of performance of exercise | 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:

| *Qualities* | *Marks* |
|---|---|
| (i) Knowledge of the steps/poses | 04 |
| (ii) Grace and poise | 02 |
| (iii) Rhythm and timing | 02 |
| (iv) Endurance | 02 |

**(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:

| | *Marks* |
|---|---|
| (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 | 4 min 40 s | 2 min 45 s | 24 | 20 | 10.4 | 11.0 | 22 | 15 |
| 4 | 7.4 | 8.0 | 172 | 152 | 4 min 50 s | 2 min 55 s | 16 | 12 | 10.7 | 11.3 | 20 | 13 |
| 3 | 7.6 | 8.3 | 165 | 146 | 5 min | 3 min 05 s | 10 | 6 | 11.0 | 11.6 | 18 | 11 |
| 2 | 7.9 | 8.6 | 158 | 139 | 5 min 10 s | 3 min 15 s | 6 | 3 | 11.3 | 11.9 | 16 | 9 |
| 1 | 8.3 | 8.9 | 151 | 129 | 5 min 20 s | 3 min 25 s | 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)** |
|---|---|---|---|---|---|---|---|---|---|
| | Girls | Boys | Girls | Boys | Girls | Boys | Boys | Girls | Boys |
| 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)** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **12 lbs** | **8 lbs** | | | **1 kg** | | |
| | 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)** | **100 m 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 | 5705 | 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)** | **50 m 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.