# DESIGN OF THE QUESTION PAPER

## FIRST MID TEST – Subjective

## Class: X

## Subject: Science Time: 60 Min. Max. Marks: 20

## YEAR: 2024-25

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The weightage or the distribution of marks over different dimensions of the question paper shall be as follows:

### 1. Weightage to Learning Outcomes:

| Sr.No | Learning Outcomes | Marks | Percentage of Marks |
|---|---|---|---|
| 1. | Knowledge | 05 | 27% |
| 2. | Understanding | 08 | 40% |
| 3. | Application | 05 | 23% |
| 4. | Skill | 02 | 10% |
| | **Total** | 20 | 100% |

### 2.Weightage to Content/Subject Units:

| Ch. No. | Units | Marks | Deletions |
|---|---|---|---|
| 1 | Chemical Reactions and Equations | 4 | No Deletions |
| 7 | Control and Coordination | 5 | No Deletions |
| 12 | Electricity | 6 | No Deletions |
| 6 | Life Processes | 5 | No Deletions |
| | **Total** | **20** | |

### 3.Weightage to Forms of Questions:

| Sr.No. | Form of Questions | Marks for each question | Number of questions | Total Marks |
|---|---|---|---|---|
| 1. | Long Answer Type (LA) | 4 | 01 | 04 |
| 2. | Short Answer Type (SA-II) | 3 | 01 | 03 |
| 3. | Short Answer Type (SA-I) | 2 | 05 | 10 |
| 4. | Very Short Answer Type (VSA) | 1 | 03 | 03 |
| | **Total** | | | **20** |

### 4.The expected time for different types of question would be as follows :

| S.No. | Form of Questions | Approx. time for each Question in mins (t) | Number of questions (n) | Approx. time for each form of Questions in mins (n x t) |
|---|---|---|---|---|
| 1 | Long Answer Type (LA) | 12 | 01 | 12 |
| 2 | Short Answer Type (SA-II) | 09 | 01 | 9 |
| 3 | Short Answer Type (SA-I) | 06 | 05 | 30 |
| 4 | Very Short Answer Type (VSA) | 03 | 03 | 09 |
| | **Total** | | | **60** |

As the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers, it would, therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

### 5.Scheme of Options

(There will be no overall choice, However, there is an internal choice in some questions.)

## 6.Weightage to Difficulty level of questions :

| S.No. | Estimated difficulty level of question | Percentage |
|---|---|---|
| 1 | Easy | 32% |
| 2 | Average | 50% |
| 3 | Difficult | 18% |

A question may vary in difficulty level from individual to individual, As such, the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its weightage, rather than to determine the pattern of marking at any stage.

### 7.Number of main Questions:

It has been decided to introduce serial wise question number and to do away with sub-question among the questions.

# DESIGN OF THE QUESTION PAPER

## FIRST TERM EXAM – Subjective

## Class: X

## Subject: Science TIME: 180 Min. Max. Marks: 70

## YEAR: 2024-25

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The weightage or the distribution of marks over different dimensions of the questionpaper shall be as follows :

## Weightage to Learning Outcomes:

| Sr.No | Learning Outcomes | Marks | Percentage of Marks |
|---|---|---|---|
| 1. | Knowledge | 19 | 27 % |
| 2. | Understanding | 28 | 40 % |
| 3. | Application | 16 | 23 % |
| 4. | Skill | 07 | 10 % |
| | **Total** | 70 | 100 |

## Weightage to Content/Subject Units:

| Ch. No. | Units | Marks | Deletions |
|---|---|---|---|
| 2 | Acids, Bases and Salts | 10 | No Deletions |
| 3 | Light | 8 | No Deletions |
| 8 | How do Organisms Reproduce? | 12 | No Deletions |
| 13 | Magnetic Effects of Electric Current | 10 | No Deletions |
| 1 | Chemical Reactions and Equations | 7 | No Deletions |
| 7 | Control and Coordination | 7 | No Deletions |
| 12 | Electricity | 8 | No Deletions |
| 6 | Life Processes | 8 | No Deletions |
| | **Total** | **70** | |

## 3.Weightage to Forms of Questions:

| Sr.No. | Form of Questions | Marks for each question | Number of questions | Total Marks |
|---|---|---|---|---|
| 1. | Long Answer Type (LA) | 4 | 3 | 12 |
| 2. | Short Answer Type (SA-II) | 3 | 4 | 12 |
| 3. | Short Answer Type (SA-I) | 2 | 14 | 28 |
| 4. | Very Short Answer Type (VSA) | 1 | 18 | 18 |
| | **Total** | | **39** | **70** |

## 4.The expected time for different types of question would be as follows :

| S.No. | Form of Questions | Approx. time for each Question in mins (t) | Number of questions (n) | Approx. time for each form of Questions in mins (n x t) |
|---|---|---|---|---|
| 1 | Long Answer Type (LA) | 10 | 03 | 30 |
| 2 | Short Answer Type (SA-II) | 7 | 04 | 28 |
| 3 | Short Answer Type (SA-I) | 4 | 14 | 56 |
| 4 | Very Short Answer Type (VSA) | 2 | 18 | 36 |
| | **Total** | | | **150** |

As the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers, it would, therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

## 5.Scheme of Options

(There will be no overall choice, However, there is an internal choice in some questions.)

## 6.Weightage to Difficulty level of questions:

| S.No. | Estimated difficulty level of question | Percentage |
|---|---|---|
| 1 | Easy | 20% |
| 2 | Average | 60% |
| 3 | Difficult | 20% |

A question may vary in difficulty level from individual to individual, As such, the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its weightage, rather than to determine the pattern of marking at any stage.

## 7.Number of Main Questions:

It has been decided to introduce serial wise question number and to do away with sub-question among the questions.

# DESIGN OF THE QUESTION PAPER

## FINAL BOARD EXAM – Subjective

## Class: X

## Subject: Science TIME: 180 Min. Max. Marks: 70

## YEAR: 2024-25

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The weightage or the distribution of marks over different dimensions of the question paper shall be as follows:

### 1. Weightage to Learning Outcomes:

| Sr.No | Learning Outcomes | Marks | Percentage of Marks |
|---|---|---|---|
| 1. | Knowledge | 19 | 27 % |
| 2. | Understanding | 28 | 40 % |
| 3. | Application | 16 | 23 % |
| 4. | Skill | 07 | 10 % |
| | **Total** | 70 | 100 |

## Weightage to Content/Subject Units:

| Sr.No. | Units | Marks | Deletions |
|---|---|---|---|
| 1. | Chemical Reactions and Equations | 4 | No deletion |
| 2. | Acids, Bases and Salts | 6 | No deletion |
| 3. | Metals and Non metals | 4 | No deletion |
| 4. | Carbon and its Compounds | 6 | No deletion |
| 5. | Life Processes | 7 | No deletion |
| 6. | Control and Co-ordination | 5 | No deletion |
| 7. | How do Organisms Reproduce? | 6 | No deletion |
| 8. | Heredity and Evolution | 4 | No deletion |
| 9. | Light-Reflection and Refraction | 6 | No deletion |
| 10. | Human Eye and Colourful world | 5 | No deletion |
| 11. | Electricity | 7 | No deletions |
| 12. | Magnetic Effect of Electric Current | 6 | No deletion |
| 13. | Our Environment | 4 | No deletion |
| | **Total** | **70** | |

## 3.Weightage to Forms of Questions:

| Sr.No. | Form of Questions | Marks for each question | Number of questions | Total Marks |
|---|---|---|---|---|
| 1. | Long Answer Type (LA) | 4 | 3 | 12 |
| 2. | Short Answer Type (SA-II) | 3 | 4 | 12 |
| 3. | Short Answer Type (SA-I) | 2 | 14 | 28 |
| 4. | Very Short Answer Type (VSA) | 1 | 18 | 18 |
| | **Total** | | **39** | **70** |

## 4.The expected time for different types of question would be as follows:

| S.No. | Form of Questions | Approx. time for each Question in mins (t) | Number of questions (n) | Approx. time for each form of Questions in mins (n x t) |
|---|---|---|---|---|
| 1 | Long Answer Type (LA) | 10 | 03 | 30 |
| 2 | Short Answer Type (SA-II) | 7 | 04 | 28 |
| 3 | Short Answer Type (SA-I) | 4 | 14 | 56 |
| 4 | Very Short Answer Type (VSA) | 2 | 18 | 36 |
| | **Total** | | | **150** |

As the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers, it would, therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

## 5.Scheme of Options

(There will be no overall choice, However, there is an internal choice in somequestions.)

## 6.Weightage to Difficulty level of questions:

| S.No. | Estimated difficulty level of question | Percentage |
|---|---|---|
| 1 | Easy | 20% |
| 2 | Average | 60% |
| 3 | Difficult | 20% |

A question may vary in difficulty level from individual to individual, As such, the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its

weightage, rather than to determine the pattern of marking at any stage.

## 7.Number of Main Questions:

It has been decided to introduce serial wise question number and to do away with sub-question among the questions.

**GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION, ALTO _ BETIM GOA**

**SUBJECT: SCIENCE DURATION: 150 min** — **BLUE PRINT SSC EXAMINATION 2024-25** — **MAX. MARKS:70**

| | OBJECTIVE | KNOWLEDGE | | | | UNDERSTANDING | | | | APPLICATIONS | | | | SKILL | | | | TOTAL | | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ch.no. | CONTENT AREA | VSA | VSA I | VSA II | LA | VSA | VSA I | VSA II | LA | VSA | VSA I | VSA II | LA | VSA | VSA I | VSA II | LA | VSA | VSA I | VSA II | LA | QUES | MARK |
| 1 | Chemical Reactions and Equations | 1 | | | | | 2 | | | 1 | | | | | | | | 2 | 2 | | | 4 | 4 |
| 2 | Acids, Bases and Salts | 1 | 2 | | | | 2 | | | 1 | | | | | | | | 2 | 4 | | | 6 | 6 |
| 3 | Metals and Non metals | | | | | 1 | 2 | | | 1 | | | | | | | | 2 | 2 | | | 4 | 4 |
| 4 | Carbon and its Compounds | 1 | | | | | 2 | 1 | | | | 1 | | | | 1 | | 1 | 2 | 3 | | 6 | 6 |
| 5 | Life Processes | | | | | | 2 | | 1 | 1 | | | 1 | | | | 2 | 1 | 2 | | 4 | 6 | 7 |
| 6 | Control and Co- ordination | 2 | 2 | | | | | | | 1 | | | | | | | | 3 | 2 | | | 5 | 5 |
| 7 | How do Organisms Reproduce? | | 1 | 1 | | | 1 | 1 | | 1 | | 1 | | | | | | 1 | 2 | 3 | | 6 | 6 |
| 8 | Heredity and Evolution | | 2 | | | | 1 | | | | 1 | | | | | | | | 4 | | | 4 | 4 |
| 9 | Light-Reflection and Refraction | | | | 1 | 1 | | | 1 | 1 | | | | | | | 2 | 2 | | | 4 | 5 | 6 |
| 10 | Human Eye and Colourful world | | 1 | | | | 1 | 2 | | | | 1 | | | | | | | 2 | 3 | | 5 | 5 |
| 11 | Electricity | 1 | | | | | 2 | | 1 | | | | 1 | | | | 2 | 1 | 2 | | 4 | 6 | 7 |
| 12 | Magnetic Effect of Electric Current | | | 1 | | | 2 | 1 | | 1 | | 1 | | | | | | 1 | 2 | 3 | | 6 | 6 |
| 13 | Our Environment | 2 | | | | | 1 | | | | 1 | | | | | | | 2 | 2 | | | 4 | 4 |
| | | | 19 | | | | 28 | | | | 16 | | | | 7 | | | 18 | 28 | 12 | 12 | 67 | 70 |

## Pattern 0f SSC Final Exam Question Paper

## YEAR: 2024-25

**Subject: SCIENCE** **TIME: 180 Min.** **Max. Marks: 70**

| Sr. No. / Q. No. | Objectives | Content Area / Major area of content topic | CONTENTS | Form of the questions | Language of questions | Difficultness of Answers | Difficulty level of the questions | Marks Alloted | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | K | Ch1 | Chemical Reactions and Equations | VSA(MCQ) | Specific | Definite | Easy | 1 | | |
| 2 | A | Ch1 | Chemical Reactions and Equations | VSA(MCQ) | Specific | Definite | Easy | 1 | | |
| 3 | K | Ch 2 | Acids, Bases and Salts | VSA(MCQ) | Specific | Definite | Easy | 1 | | |
| 4 | A | Ch 2 | Acids, Bases and Salts | VSA(MCQ) | Specific | Definite | Easy | 1 | | |
| 5 | U | ch 3 | Metals and Non metals | VSA(MCQ) | Specific | Definite | Average | 1 | | |
| 6 | A | ch 3 | Metals and Non metals | VSA(MCQ) | Specific | Definite | Easy | 1 | | |
| 7 | K | ch4 | Carbon and its Compounds | VSA(MCQ) | Specific | Definite | Average | 1 | | |
| 8 | A | ch6 | Life Processes | VSA(MCQ) | Specific | Definite | Easy | 1 | | |
| 9 | K | ch7 | Control and Co- ordination | VSA(MCQ) | Specific | Definite | Easy | 1 | | |
| 10 | A | ch7 | Control and Co- ordination | VSA(MCQ) | Specific | Definite | Average | 1 | | |
| 11 | A | ch7 | Control and Co- ordination | VSA(MCQ) | Specific | Definite | Average | 1 | | |
| 12 | A | ch8 | How do Organisms Reproduce? | VSA(MCQ) | Specific | Definite | Easy | 1 | | |
| 13 | U | ch10 | Light-Reflection and Refraction | VSA(MCQ) | Specific | Definite | Average | 1 | | |
| 14 | A | ch10 | Light-Reflection and Refraction | VSA(MCQ) | Specific | Definite | Average | 1 | | |
| 15 | K | ch12 | Electricity | VSA | Specific | Definite | Average | 1 | | |
| 16 | A | ch13 | Magnetic Effect of Electric Current | VSA | Specific | Definite | Difficult | 1 | | |
| 17 | K | ch15 | Our Environment | VSA | Specific | Definite | Easy | 1 | | |
| 18 | K | ch15 | Our Environment | VSA | Specific | Definite | Easy | 1 | | 18 |
| 19 | U | Ch1 | Chemical Reactions and Equations | SA I | Specific | Definite | Easy | 1 | | |
| 20 | U | | | | Specific | Definite | Easy | 1 | 2 | |
| 21 | K | ch2 | Acids, Bases and Salts | SA I | Specific | Definite | Average | 1 | | |
| 22 | U | | | | Specific | Definite | Average | 1 | 2 | |
| 23 | K | ch2 | Acids, Bases and Salts | SA I | Specific | Definite | Average | 1 | | |
| 24 | U | | | | Specific | Definite | Average | 1/2 + 1/2 | 2 | |
| 25 | U | ch3 | Metals and Non metals | SA I | Specific | Definite | Average | 1 | | |
| 26 | U | | | | Specific | Definite | Average | 1 | 2 | |
| 27 | U | ch4 | Carbon and its Compounds | SA I | Specific | Definite | Average | 1 | | |
| 28 | U | | | | Specific | Definite | Average | 1 | 2 | |
| 29 | U | ch6 | Life Processes | SA I | Specific | Definite | Average | 1 | | |
| 30 | U | | | | Specific | Definite | Average | 1 | 2 | |
| 31 | K | ch7 | Control and Co- ordination | SA I | Specific | Definite | Average | 1 | | |
| 32 | K | | | | Specific | Definite | Average | 1 | 2 | |
| 33 | K | ch7 | How do Organisms Reproduce? | SA I | Specific | Definite | Average | 1 | | |
| 34 | U | | | | Specific | Definite | Average | 1 | 2 | |
| 35 | K | ch9 | Heredity and Evolution | SA I | Specific | Definite | Average | 1 | | |
| 36 | U | | | | Specific | Definite | Average | 1 | 2 | |
| 37 | K | ch9 | Heredity and Evolution | SA I | Specific | Definite | Average | 1 | | |
| 38 | A | | | | Specific | Definite | Average | 1 | 2 | |
| 39 | K | ch11 | Human Eye and Colourful world | SA I | Specific | Definite | Average | 1 | | |
| 40 | U | | | | Specific | Definite | Average | 1 | 2 | |
| 41 | U | ch12 | Electricity | SA I | Specific | Definite | Difficult | 1 | | |
| 42 | U | | | | Specific | Definite | Difficult | 1 | 2 | |
| OR | | | | OR | | | | | | |
| 41 | U | ch12 | Electricity | SA I | Specific | Definite | Difficult | 1 | | |
| 42 | U | | | | Specific | Definite | Difficult | 1 | 2 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 43 | U | ch13 | Magnetic Effect of Electric Current | SA I | Specific | Definite | Easy | 1 | | |
| 44 | U | | | | Specific | Definite | Easy | 1 | 2 | |
| OR | | | | OR | | | | | | |
| 43 | U | ch13 | Magnetic Effect of Electric Current | SA I | Specific | Definite | Easy | 1 | | |
| 44 | U | | | | Specific | Definite | Easy | 1 | 2 | |
| 45 | U | ch15 | Our Environment | SA I | Specific | Definite | Average | 2 | | |
| 46 | A | | | | Specific | Definite | Average | | 2 | |
| OR | | | | OR | | | | | | |
| 45 | U | ch15 | Our Environment | SA I | Specific | Definite | Average | 2 | | |
| 46 | A | | | | Specific | Definite | Average | | 2 | 28 |
| | | | | | | | | | | |
| 47 | SK | ch4 | Carbon and its Compounds | SA II | Specific | Definite | Average | 1 | | |
| 48 | U | | | | Specific | Definite | Average | 1 | | |
| 49 | A | | | | Specific | Definite | Average | 1 | 3 | |
| 50 | K | ch8 | How do Organisms Reproduce? | SA II | Specific | Definite | Average | 1 | | |
| 51 | U | | | | Specific | Definite | Average | 1 | | |
| 52 | A | | | | Specific | Definite | Average | 1 | 3 | |
| 53 | U | ch11 | Human Eye and Colourful world | SA II | Specific | Definite | Average | 1 | | |
| 54 | U | | | | Specific | Definite | Average | 1 | | |
| 55 | A | | | | Specific | Definite | Average | 1 | 3 | |
| OR | | | | OR | | | Average | 1 | | |
| 53 | U | ch11 | Human Eye and Colourful world | SA II | Specific | Definite | Average | 1 | | |
| 54 | U | | | | Specific | Definite | Average | 1 | | |
| 55 | A | | | | Specific | Definite | Average | 1 | 3 | |
| 56 | K | ch13 | Magnetic Effect of Electric Current | SA II | Specific | Definite | Difficult | 1 | | |
| 57 | U | | | | Specific | Definite | Difficult | 1 | | |
| 58 | A | | | | Specific | Definite | Difficult | 1 | 3 | |
| OR | | | | OR | | | | | | |
| 56 | K | ch13 | Magnetic Effect of Electric Current | SA II | Specific | Definite | Difficult | 1 | | |
| 57 | U | | | | Specific | Definite | Difficult | 1 | | |
| 58 | A | | | | Specific | Definite | Difficult | 1 | 3 | 12 |
| | | | | | | | | | | |
| 59 | SK | ch9 | LIGHT | LA | Specific | Definite | Difficult | 1 | | |
| | SK | Labelling | | | Specific | Definite | Difficult | 1 | | |
| 60 | K | | | | Specific | Definite | Difficult | 1 | | |
| 61 | U | | | | Specific | Definite | Difficult | 1 | 4 | |
| 62 | SK | ch6 | Life Processes | LA | Specific | Definite | Average | 1 | | |
| | SK | Labelling | | | Specific | Definite | Average | 1 | | |
| 63 | U | | | | Specific | Definite | Average | 1 | | |
| 64 | A | | | | Specific | Definite | Average | 1 | 4 | |
| 65 | SK | ch12 | Electricity | LA | Specific | Definite | Difficult | 1 | | |
| | SK | Labelling | | | Specific | Definite | Difficult | 1 | | |
| 66 | U | | | | Specific | Definite | Difficult | 1 | | |
| 67 | A | | | | Specific | Definite | Difficult | 1 | 4 | |
| OR | | | | OR | | | | | | |
| 65 | SK | ch12 | Electricity | LA | Specific | Definite | Difficult | 1 | | |
| | SK | Labelling | | | Specific | Definite | Difficult | 1 | | |
| 66 | U | | | | Specific | Definite | Difficult | 1 | | |
| 67 | A | | | | Specific | Definite | Difficult | 1 | 4 | 12 |
| | | | | | | | | | | 70 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | VSA - No Internal Choice | | Level | Marks | % | | |
| | | | SA I - 3 Internal Choices(3 Questions) | | Easy | 14 | 20% | | |
| | | | SA-II - 2 Internal Choices ( 2 Questions) | | Average | 42 | 60% | | |
| | | | LA - 1 Internal Choice ( 1 Question ) | | Difficult | 14 | 20% | | |
| | | | | | | | | | |

NOTE: ➢ There will be 25% MCQ's in the question paper.

➢ Relaxation is given to the paper setter to change the questions based on skill and difficulty level.

**Revised pattern of assessment /grading in science for std X with effect from the academic year 2024-25:**

| FIRST MID TEST | FIRST TERM | Innovative Test Assignment/Project (Internal Marks) | Final Board Exam | Practical's | Total |
|---|---|---|---|---|---|
| | | A | B | C | A+B+C |
| MARKS | MARKS | MARKS | MARKS | MARKS | MARKS |
| 20 | 70 | 10 | 70 | 20 | 100 |

**Final Board Exam**:
Theory 70 marks + practical's 20 marks + Innovative Test (Internal Marks)10 marks

**Internal marks**, to be sent to the Goa Board, are solely based on an innovative test. This may include activity-based assessments, project work, case studies, or paper presentations.

## Distribution of Practical marks in science for SSC examination:

Max. Marks: 20 marks Duration: 1Hour
Long experiment: 10 marks
Short experiment: 5 marks
Journal: 5 marks

## DIAGRAMS FOR EVALUATION (skill)

## (ANNEXURE—1)

| Ch. No | Name of Chapter | Title of Diagrams | Fig. No. |
|---|---|---|---|
| 1 | Chemical reactions and equations | ---------- | |
| 2 | Acids, Bases and Salts | ---------- | |
| 3 | Metals and nonmetals | Electrolytic refining of copper | 3.12 |
| 4 | Carbon and its compounds | A molecule of hydrogen | 4.1 |
| | | Single bond between two hydrogen atoms | 4.2 |
| | | Double bond between two oxygen atoms | 4.3 |
| | | Triple bond between two nitrogen atoms | 4.4 |
| | | Electron dot structure of methane | 4.5 |
| | | Electron structure of ethane | 4.6 (b) (c) |
| | | Electron dot structure of ethane | 4.7 |
| | | Complete molecule for two structures of $C_4H_{10}$ | 4.8 (b) |
| | | Structure of cyclohexane | 4.9 |
| | | Structure of benzene | 4.10 |
| | | Formation of micelle | 4.12 |

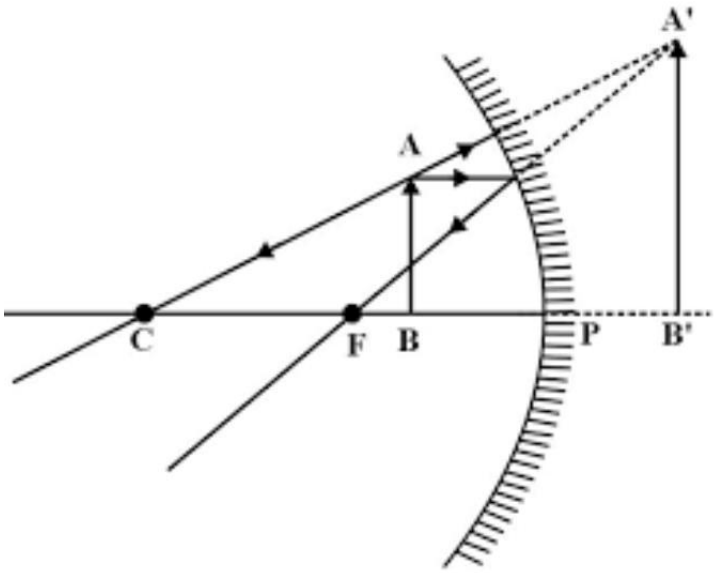
| | | | |
|---|---|---|---|
| 6 | Life process | Open and closed stomata | 6.3<br>(a) (b) |
| | | Nutrition in amoeba | 6.5 |
| | | Human elementary canal | 6.6 |
| | | Excretory system in human beings | 6.13 |
| 7 | Control and coordination | Structure of neuron | 7.1 (a) |
| | | Human brain | 7.3 |
| 8 | How do organisms reproduce? | Binary fission in amoeba | 8.1 |
| | | Budding in hydra | 8.4 |
| | | Leaf of Bryophyllum with buds | 8.5 |
| | | Spore formation in Rhizopus | 8.6 |
| | | Longitudinal section of flower | 8.7 |
| | | Germination of pollen on stigma | 8.8 |
| | | Germination | 8.9 |
| | | Human – female reproductive system | 8.11 |
| 9 | Hereditary and evolution | ---------- | |
| 10 | Light –reflection and refraction | Concave and convex mirror | 10.2<br>(a) (b) |

| | | | |
|---|---|---|---|
| | | Ray diagram for the image formation by a concave mirror<br><br>**Note**: (an alternate diagram for 10.7 (f) is given below the table | 10.7<br>(a to f) |
| | | Formation of image by a convex mirror | 10.8 |
| | | Converging action of convex lens and diverging action of concave lens | 10.12<br>(a) (b) |
| | | The position, size and the nature of the image formed by convex lens for various positions of the object | 10.16<br>(a to f) |
| | | Nature, position and size of the image formed by a concave lens | 10.17<br>(a) (b) |
| 11 | The human eye and the colourful world | The myopic eye and the correction for myopia with concave lens | 11.2<br>(b) (c) |
| | | The hypermetropic eye and correction for hypermetropia | 10.3<br>(b) (C) |
| | | Dispersion of white light by a glass prism | 11.5 |
| 12 | Electricity | A schematic diagram of an electric circuit and the symbols of some commonly used components in circuit diagrams | 12.1<br>Table 12.1 |

| | | | |
|---|---|---|---|
| | | Electric diagram for studying ohms law | 12.2 |
| | | Resistors in series | 12. 6 |
| | | Resistors in parallel | 12.7 |
| 13 | Magnetic effect of electric current | ---------- | |
| 15 | Our environment | ---------- | |

## Concave Mirror Ray Diagram :

## When object is placed between F and P



# DIAGRAM FOR EVALUATION

## (not for drawing)

## ANNEXURE –2

| **Ch. No.** | **Name of the chapter** | **Title of the diagram** | **Fig. no.** |
|---|---|---|---|
| 1 | Chemical reactions and equations | Electrolysis of water | 1.6 |
| 2 | Acids, Bases and Salts | ---------- | |
| 3 | Metals and nonmetals | Action of steam on metal | 3.3 |
| 4 | Carbon and its compounds | ---------- | |
| 6 | Life processes | Human respiratory system | 6.9 |
| | | Structural view of human heart | 6.10 |
| | | Schematic representation of transport and exchange of oxygen and carbon dioxide | 6.11 |
| 7 | Control and coordination | Reflex arc | 7.2 |
| | | Endocrine glands in human beings | 7.7<br>(a) (b) |
| 8 | How do organism reproduce? | Regeneration in planaria | 8.3 |
| | | Human – male reproductive system | 8.10 |
| 9 | Heredity and Evolution | ---------- | |
| 10 | Light | Refraction of light through a rectangular glass slab | 10.10 |

| | | | |
|---|---|---|---|
| 11 | The human eye and colourful world | Human eye | 11.1 |
| 12 | Electricity | ---------- | |
| 13 | Magnetic effect of electric current | Field lines around a magnet | 13.4 |
| | | A simple electric circuit in which a straight copper wire is placed | 13.5 (a)(b) |
| | | A pattern of concentric circles indicating field lines | 13.6 (a) |
| | | Flemings left hand rule | 13.13 |
| | | Current is induced in coil 2 when current in coil 1 is changed | 13.17 |
| | | Flemings right hand rule | 13.18 |
| 15 | Our environment | Food chain | 15.1(a) (b)(c) |
| | | Trophic levels | 15.2 |
| | | Food web | 15.3 |
| | | Diagram showing flow of energy in an ecosystem | 15.4 |

# THE EVALUATION PATTERN FOR SCIENCE

**STD: X SUB: SCIENCE YEAR:2024-25**

**First Mid Test**: 20 marks
**First Term Exam**: 70 marks
**Preliminary Exam**: 70 marks

**Final Board Exam**:
Theory 70 marks + practical's 20 marks + Innovative Test (Internal Marks)10 marks

**INTERNAL ASSESSMENT SCHEME YEAR: 2024-25**
**(INNOVATIVE TEST)**
**SUB: SCIENCE MAX. MARKS: 20 (To be converted to 10 marks)**

## Internal Assessment Guidelines:

**1.Activities and Assessment Criteria**:

- A comprehensive list of activities and corresponding assessment criteria, each carrying a maximum of 20 marks, is provided for internal assessment.

**2.Student Choice under Guidance (Individual Activity)**:

- Students are empowered to choose any one activity from the list under the guidance of their teachers.

**3.Maximum Marks Allocation**:

- Each chosen activity is allotted a maximum of 20 marks, ensuring a standardized evaluation framework.

**4.Record Maintenance**:

- A meticulous record of each student's activity must be maintained in both hard and soft copies, facilitating scrutiny by the Board.

**5.Group Participation Option (Group Activity)**:

- Group participation is encouraged, with a maximum of four students per group for a given activity.

**6.Individual Contribution in Groups**:

- In group activities, every student is required to actively participate in presenting data. Additionally, each student must maintain a separate report for evaluation.

**7.Adaptation by Guide Teachers**:

- Guide teachers have the flexibility to adapt or modify activities based on subject-specific requirements, grade levels, and the unique interests of students. The emphasis is on promoting creativity, critical thinking, and a hands-on learning approach.

**8.Innovative Test for Internal Marks**:

- Internal marks, to be sent to the Goa Board, are solely based on an innovative test. This may include activity-based assessments, project work, case studies, or paper presentations.

**9.Timeline for Activity Completion**:

- Each student is expected to complete the assigned activity between **July and December**, ensuring a consistent and structured approach to internal assessment.

**EVALUATION SHEET:**

**INTERNAL ASSESSMENT** **SUB: SCIENCE** **MAX. MARKS : 20**

**NAME OF THE SCHOOL:**_____

**SCHOOL CODE:**_____

**SUBJECT TEACHER:** _____

| Roll No. | Name of the student | Name of the Activity | Originality of idea and concept | Relevance of project to the theme | Understanding the issue | Data collection and Analysis | Interpretation and problem solving attempt | Oral presentation /use of ppt / Video making | Written Report | Total marks | To be converted to 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2 | 2 | 2 | 4 | 3 | 4 | 3 | 20 | 10 |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
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| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |

**Head of the school** **School seal** **Science Tr's Signature**

**TOPICS FOR ACTIVITY**:

**1.Activity**: **Science Museum Exploration and Project Presentation**.
Organize a field trip to a science museum, allowing students to explore various exhibits and projects. Instruct students to select 4 to 5 projects that they find more interesting and challenging. Encourage students to collect detailed information about each chosen project. Gather data on the scientific principles, innovations, and technologies demonstrated in the projects. Arrange a session where students present their findings.

2.**Activity**: **Medicinal Plant Mini Biodiversity Register Creation for the school.**
Organize a field trip to local areas, parks, or botanical gardens where students can find various medicinal plants. Instruct students to collect samples of at least 5to 6 different medicinal plants. Guide students in compiling the collected information into a comprehensive mini biodiversity register. Organize the information systematically, making it accessible for future reference. Arrange a session where students present their findings.

3. **Activity**: Taking training from an electrical engineer or technician on how to use a multimeter for measuring current, voltage, and resistance:

4. **Activity**: Visiting a garbage treatment plant to learn about garbage handling, segregation, and treatment.

5.**Science Fair**: Students can participate in a science fair where they choose a scientific concept or experiment or a model to demonstrate. They can create presentations, videos, or interactive models to showcase their chosen topic.

6.**Environmental Impact Study**: Students can conduct a study on the environmental impact of a local issue (e.g., deforestation, pollution, depleting ground water table, sand dune destruction and its effect on coastal vegetation or waste management). They can propose solutions and present their findings.

7. **Health and Nutrition Awareness Campaign**:
Students can create an awareness campaign on health and nutrition. They can design informative materials, conduct surveys, and Propose practical tips for a healthy lifestyle.

**8.Activity**: **"Empower Tomorrow: Students Unite in Saying No to Drugs, Alcohol, and Tobacco"**
Student-Led Awareness Campaign: "Say No to Drugs, Alcohol, and Tobacco" Host workshops with guest speakers, counsellors, or recovering individuals to share personal stories and insights. Involve teachers, parents, and locals in supporting the campaign. Organize events to create a supportive and informed community. Encourage students to express their commitment through creative outlets like art, poetry, or music. Create a social media campaign using school accounts or student-driven platforms. Conduct pre- and post-campaign surveys to measure changes in awareness and attitudes

**9.Activity: Understanding and Managing Electricity Consumption.**
Learn how to calculate and compare electricity bills, visit the electricity department for insights, work on the last eight months' bills, develop strategies to reduce bills, identify personal limitations in using appliances, and check the effectiveness of changes made in reducing electricity consumption.

10. **Activity: Visit to Plantation, Garden, or Plant Nursery.**
The main objective of this science activity is to study and document essential information about 6 to10 different plants. This includes their scientific names, local names, water and manure requirements, growth periods, pesticides used, economical value, ornamental properties, medicinal values, and any other relevant data. The goal is to gain a comprehensive understanding of various plant species and their ecological and economic significance.

**11.Activity**: "**Nature's Engineers: Understanding the Ecological**

**Dynamics of Bee Farms and Bee Diversity"**
Plan visit to a bee farm. Understand the structure and functioning of a bee farm, Identify and classify the types of bees present on the farm and the availability of flowers, the role of different bee species in honey Production, Examine the stages involved in honey production. Learn about the collection, processing, and packaging of honey. Investigate the equipment and materials used in beekeeping. Explore the various products derived from bees and their market value.

**12.Activity**: **"Health Empowerment in Action: Exploring Vital Measurements and Essential First Aid Practices at the Community Health Centre"**
Schedule interviews with medical officers, nurses, and attendants. Discuss their roles, responsibilities, and experiences in providing immediate care. Request a practical demonstration of basic healthcare skills such as wound dressing, vital sign monitoring, and first aid techniques. Learn the proper technique for measuring blood pressure. Understand the significance of blood pressure readings and their impact on health. Explore the process of blood sugar level testing. Gain insights into the importance of monitoring blood sugar levels, especially for individuals with diabetes. Acquire basic knowledge and skills for providing immediate care in common accidents. Learn how to assess and respond to injuries, burns, and cuts. Understand the initial response to emergencies such as heart attacks, epilepsy, and fainting. Learn the appropriate steps for handling severe conditions until professional medical help arrives. Explore first aid measures for common health issues like loose motion and vomiting. Learn about different methods for measuring and managing fever.

**13.Activity: Unveiling the Secrets of Salt Pans through Exploration**.
Plan visit to salt pans, participate in hands-on activities related to salt harvesting under the guidance of salt farmers. Experience the various tools and techniques used in the salt formation. learn about the process of salt formation, and gather information from salt farmers, understand the methods involved in salt production, explore the health benefits of consuming salt, and assess the market value of locally produced salt. Understand the nutritional value of locally produced

salt and its uses. Document the pricing, packaging, and distribution of salt products.

**14.Activity: "Pristine Waters Unveiled: A Journey Through Water Treatment – Understanding Purification Processes, Storage and distribution Systems"**

Plan your visit to the water treatment plant, ensuring a thorough understanding of the water purification process and storage systems. Explore the step-by-step process of water purification at the treatment plant. Learn about the various techniques and technologies employed for removing impurities. Take a guided tour of the water treatment facilities, including filtration units, chemical treatment areas, and disinfection processes. Observe the journey of water from its source to the final purified state. Arrange for discussions with water treatment experts and engineers. Learn about the challenges faced in water treatment and the innovations in the field. Understand how treated water is stored, tested, and distributed to consumers.

15.**Activity**: **Exploring Aquaculture/Pisciculture: A Comprehensive Study on Types of Cultured Fish and Shellfish**

To observe and gain insights into culture practices used by visiting a fish farms. The project aims to understand the methods employed in fish farming, the ecosystem's dynamics, the precautions taken, and the role of pesticides and food in ensuring a healthy fish population, economical value involved, etc.

**16.Activity: Visit to Paddy Field /Sugarcane Field / Cotton Field / cashew plantation. (Select any one)**

To observe and gather information about agricultural practices in different fields, focusing on paddy cultivation / sugarcane field / cotton cultivation / cashew plantation. Understand the methods of farming, irrigation practices, water requirements, types of manure and pesticides used, seasonal variations, economical value and any precautions taken by local farmers.

**17.Activity: Exploring Biodiversity in Mangroves: A Scientific Expedition.**

Survey the mangrove area and note the different species encountered. Identify and record bird species through observation and birdwatching. Conduct seining and visual surveys to document fish diversity. Sample mud and water for microorganisms through core sampling and water quality testing.

18.**Study of mangrove ecosystem:** Understand various food chains and food web operating in that ecosystem with the help of sketches / photos /videos. Also, list the usefulness of this ecosystem.

19.**Study of sand dune ecosystem**: List the floral and faunal Biodiversity in the sand dune ecosystem. Also, do research on the impact of various tourism related activities on the biodiversity of sand dune ecosystem.

20.**A case study of lifestyle diseases** affecting respiratory, excretory, Circulatory, etc. system/s, the reasons, long term impacts and suggestion of ways and means to create a healthy mind in a healthy body.

21.**Preparation of an herbarium** of wild flowering and non-flowering plants in your school campus / locality and study usefulness of it.

22.**Study the effect of different types of detergents** on stain removal and compare cleaning capacity of different samples of soap in soft water and hard water.

23.**Comparative study of circulatory systems**: compare the circulatory system of different animals focussing on adaptations that enhance their life processes such as oxygen transport and waste removal.

24.**Effect of light intensity / colours of photosynthesis**: This project involves testing the effect of light intensity / various colours on the rate of photosynthesis using the aquatic plants.

25.**Chemical reactions in everyday life**: Study of various chemical reactions that occur in daily activities from cooking to cleaning in plants and animals around us, etc.

26.**The science behind food preservation**: Investigate methods like canning, freezing and drying to understand how to preserve food.

27.**Effects of pollution on local water sources**: Research the impact of pollution on rivers, lakes or ground water in your area. Special mention of "declining fish catch".

28.**Bio-diversity and conservation**: Explore the importance of biodiversity and efforts to conserve endangered species. Management of resources, recycling resources (case studies).

29.**Effectiveness of natural indicators in acid base titration**: Extraction and characterisation of natural dyes for indicators. Study the extraction processes by natural dyes from plants / Fruits (Turmeric, Onion, Clove, Red cabbage, Beetroot, etc) and analyse their chemical composition for potential use as indicators. Investigate its accuracy and reliability.

30. **"Millets Marvel: A Scientific Exploration into the Nutritional Bounty and Culinary Wonders of Millets"**(Use of millets in diet)
Conduct a scientific study on the nutritional content of different millet varieties. Explore the health benefits and dietary advantages of incorporating millets into daily nutrition. Invite nutrition specialists to conduct workshops on the health benefits of millets. Organize interactive sessions to address questions and concerns about millet consumption. Provide hands-on cooking sessions to demonstrate the versatility of millets in various dishes. Create a visually appealing cookbook or recipe guide featuring millet-based dishes.
Include nutritional information and cooking tips. Prepare a comprehensive report summarizing survey results.
Highlight key insights, attitudes, and areas for improvement regarding millet awareness, Health benefits and consumption.

**Example 1:**
**Activity:** Science Museum Exploration and Project Presentation.
**Objective:** To enhance students' understanding of scientific concepts through hands-on exploration and effective presentation skills.
**Visit to Science Museum**: Organize a field trip to a science museum, allowing students to explore various exhibits and projects. Instruct students to select 5 to 6 projects that they find more interesting and challenging.
**Data Collection**: Encourage students to collect detailed information about each chosen project. Gather data on the scientific principles, innovations, and technologies demonstrated in the projects.
**Documentation**: Instruct students to document their findings in the form of written reports or research papers. Include details such as project objectives, scientific principles involved, and any notable applications.
**Preparing Presentation**: Guide students in creating a PowerPoint presentation summarizing their chosen projects. Emphasize the importance of clear visuals, concise content, and effective communication.
**Peer Presentation**: Arrange a session where students present their projects to their classmates. Encourage a Question &Answer session to foster discussion and deeper understanding.
**Assessment**: Evaluate the depth of understanding displayed in the project documentation and presentation. Assess the clarity of communication, creativity, and the ability to connect theoretical knowledge with real-world applications.
**Allocation of marks**: Allocate marks based on the overall quality of the documentation and the effectiveness of the presentation. Emphasize the application of scientific concepts and critical thinking demonstrated by the students. This activity not only engages students in real-world exploration but also sharpen their research and presentation skills, aligning with the innovative test requirement.

**Example 2**:
**Activity:** Medicinal Plant Mini Biodiversity Register Creation for the school.

**Objective**: To promote awareness of local biodiversity, understand the medicinal properties of plants, and contribute to the creation of a mini biodiversity register for the school.
**Field Trip and Plant Collection**: Organize a field trip to local areas, parks, or botanical gardens where students can find various medicinal plants. Instruct students to collect samples of at least 5to 6 different medicinal plants.
**Documentation**: For each collected plant, students should document the following:
**Local Name**: Commonly used names for the plant in the local community.
**Scientific Name**: The botanical or scientific name of the plant.
**Potential Medicinal Uses**: Research and document the traditional or potential medicinal uses of each plant.
**Brief Description**: Include information about the appearance, habitat, and any distinctive features of the plant.
**Creation of Mini school Biodiversity Register**: Guide students in compiling the collected information into a comprehensive mini biodiversity register. Organize the information systematically, making it accessible for future reference.
**Presentation**: Have students present their findings to the class, highlighting the importance of preserving local biodiversity and the medicinal value of the identified plants.
**Assessment**: Evaluate the accuracy and completeness of the documented information for each plant. Assess students' understanding of the significance of biodiversity and the medicinal properties of the collected plants.
**Allocation of marks**: Allocate marks based on the quality of documentation, presentation skills, and the depth of understanding demonstrated by each student. Emphasize the relevance of the collected data for the creation of a biodiversity register. This activity not only engages students in hands-on exploration of their local environment but also contributes valuable information to the preservation of biodiversity.

**Example 3:**
**Activity**: Multimeter Training for Electrical Measurements under the guidance of an electrical engineer or technician.

**Objective**: To provide students with practical training on using a multimeter to measure current, voltage, and resistance under the guidance of an electrical engineer or technician.

**Guest Speaker / Technician Arrangement or student personally take training from known local technician:** Coordinate with a knowledgeable electrical engineer or technician to conduct a training session on multimeter usage.

**Introduction to Multimeter Functions**: The training begins with an overview of the multimeter, including its various settings and functions. Emphasis on the importance of accurate electrical measurements in various applications.

**Voltage Measurement**: Detailed instruction on setting up the multimeter for measuring voltage. Practical demonstrations on measuring voltage across different electrical components.

**Current Measurement**: Explanation of the process of setting up the multimeter for measuring current. Hands-on practice with various circuits to measure current accurately.

**Resistance Measurement**: Instruction on configuring the multimeter for measuring resistance. Practical exercises involving resistors and circuits to measure resistance values.

**Safety Guidelines**: Emphasize safety protocols when working with electrical equipment. Discuss precautions and best practices to ensure the safety of both equipment and individuals.

**Hands-on Practice**: Students engage in hands-on practice sessions under the supervision of the engineer or technician. Each student is provided with the opportunity to perform measurements on different circuits.

**Question and Answer Session**: Encourage students to ask questions and seek clarification on any aspects of using the multimeter for electrical measurements.

**Encourage the creation of reports or presentations** summarizing the key learnings.

**Assessment**: Evaluate students based on their proficiency in setting up and using the multimeter for accurate measurements. Assess their understanding of safety measures and their ability to troubleshoot issues during measurements.

**Allocation of marks**: Allocated marks should reflect the students' mastery of multimeter functions, accuracy in measurements, and adherence to safety protocols. Emphasize the practical application of knowledge gained during the training session.

**Example 4**:
**Activity**: Garbage Handling and Treatment Plant Visit.
**Objective:** To provide students with firsthand experience and knowledge about the processes involved in garbage handling, segregation, and treatment at a garbage treatment plant.
**Field Trip to a Garbage Treatment Plant**: Organize a field trip to a local garbage treatment plant. Ensure that students have the opportunity to observe and interact with professionals working at the facility.
**Introduction to Garbage Handling**: Begin the visit with an introduction to the various types of garbage and waste materials. Discuss the challenges associated with improper garbage disposal.
**Segregation Processes**: Explore the segregation methods employed at the plant. Witness the sorting of different types of waste, including recyclables, organic matter, and non-recyclables.
**Treatment Techniques**: Provide an overview of the treatment processes used to manage different types of waste. Discuss methods such as composting, recycling, and waste-to-energy technologies.
**Environmental Impact Discussion**: Engage students in a discussion about the environmental impact of effective garbage handling and treatment. Discuss the benefits of recycling and responsible waste management practices.
**Question and Answer Session**: Encourage students to ask questions about the processes they observe. Facilitate a discussion on the importance of individual and community efforts in waste reduction.
**Documentation**: Instruct students to document their observations and insights during the visit.
**Encourage the creation of reports or presentations** summarizing the key learnings.
**Assessment:** Evaluate students based on their engagement during the visit and the quality of their documentation. Assess their

understanding of the importance of proper garbage handling and treatment.
**Allocation of marks**: Allocated marks should reflect the students' ability to comprehend and communicate the processes involved in garbage handling and treatment. Emphasize the application of knowledge gained through the visit to real world situations.

**Example 5:**
**Activity**: Student-Led Awareness Campaign: "Say No to Drugs, Alcohol, and Tobacco"
**Objectives**: Clearly outline the goals of the campaign, specifying what the students aim to achieve in terms of awareness and education. Raise awareness about the dangers of drug abuse, alcohol consumption, and tobacco use. Educate fellow students and the community about the physical and mental health risks associated with these substances. Promote a healthy and drug-free lifestyle.
**Organize Workshops (To be organised by students)**: Plan and conduct educational workshops, inviting professionals or experts to speak about the dangers of substance abuse.
**Interactive Elements**: Include interactive elements such as Q&A sessions, group discussions, or activities to engage participants.
**Poster and Art Campaign**: (Student Artwork) Encourage students to create impactful posters and artwork addressing the harmful effects of drugs, alcohol, and tobacco.
**Exhibition**: Host an exhibition within the school, showcasing the student created visuals.
**Create Content**: Develop engaging content for social media platforms, example: short videos.
**Community Outreach**: (Collaboration) Partner with local community organizations, health professionals, and NGOs to extend the campaign beyond the school.
**Community Events**: Organize events in the local community, such as seminars or awareness walks.
**Documentation and Reporting**: Document Progress, Keep a record of campaign activities, including visuals, feedback, and key learnings.
**Create a Report:** Develop a comprehensive report summarizing the campaign's impact and outcomes.

**Evaluation**: Assess the impact of the campaign through surveys, feedback sessions.

Example 6:
**Activity:** Understanding and Managing Electricity Consumption.
**Objective of the Activity**: _____
**Data Collection:**
Gather electricity bills for the last six months.
Record the consumption in kilowatt-hours (kWh) and note any variations.
**Factors Influencing Electricity Consumption:**
Calculating Average Monthly Consumption:
Calculate the average monthly electricity consumption over the six-month period.
**Insights from Electricity Department Visit:**
Gain insights from a visit to the electricity department regarding billing procedures and common issues.
Understand how to interpret electricity bills and address concerns.

**Comparative Analysis:**
Create visual representations (graphs or charts) to compare monthly consumption.
Identify peak months and factors contributing to higher usage.
**Identifying Energy-Intensive Appliances:**
Identify and list appliances that contribute significantly to electricity consumption.
Determine their energy efficiency ratings.
**Calculating Electricity Costs:**
Calculate the cost per unit of electricity (kWh) based on the current tariff.
Sum up the total cost for each month.
**Proposed Strategies to Reduce Consumption:**
Research and suggest energy-efficient alternatives for high-consumption appliances.
Propose behavioral changes, such as turning off lights and appliances when not in use.

Recommend the use of smart home devices for efficient energy management.

**Steps Taken to Reduce Consumption:**

Implement specific measures to reduce electricity consumption.
Document changes made to lifestyle or appliances.
Understand the factors contributing to fluctuations in the bills.

**Post-Implementation Data Collection:**

Record electricity consumption for the next two months after implementing changes.
Note any significant reductions in usage and costs.

**Presentation:**

Prepare a visual and engaging presentation with slides.
Include graphs, charts, and images to illustrate data and changes made.

**Documentation:**

Create a detailed report documenting the entire project.
Include a summary of data, analysis, proposed strategies, steps taken, and post-implementation results.

**Conclusion:**

Summarize the project's findings and outcomes.
Reflect on the effectiveness of the implemented strategies in reducing electricity consumption and costs.

**Allocation of marks:**

Example 7: (Any one activity to be selected)

Activity: **Aquaculture / Pisciculture / Bee farming Exploration**

**Objectives: _____**

**Selection of Aquaculture Facility:**

Identify and contact a local aquaculture / pisciculture / Bee farming facility.
Obtain permission to visit and gather information for the science activity.

**Preparation and Documentation:**

Prepare a set of questions and topics to explore during the visit.
Create a documentation plan, outlining the key aspects to observe and record.

**Visit to Aquaculture / Bee farm Facility:**
Conduct a visit to the selected aquaculture / Bee farm facility.
Observe and document the infrastructure, water management systems, and fish rearing / Bee farming practices.

**Information Gathering:**
Collect information on the types of fish / shells / Bees being farmed, breeding practices, and growth cycles.
Understand the water quality management system, including filtration and aeration (In case of aquaculture).

**Precautions Taken:**
Investigate the biosecurity measures in place to prevent diseases.
Explore quarantine procedures for new fish arrivals and measures to control the spread of infections.

**Pesticides Used:**
Inquire about the use of pesticides in aquaculture.
Identify the types of pesticides used, their purpose, and the frequency of application.
Document any measures taken to minimize environmental impact.

**Food Used:**
Gather information on the types of feed provided to the fish.
Understand the nutritional requirements and feeding schedules.
Inquire about any sustainable or alternative feed practices.

**Data Collection:**
Record quantitative data, such as fish growth rates and water quality parameters.
Document qualitative observations, including the overall health and behavior of the fish.

**Photography and Visuals:**
Take photographs and videos to visually document the aquaculture / Bee farming practices.
Capture images of fish / Bee, equipment, and any noteworthy aspects of the facility.

**Economical value**: _____

**Documentation and Presentation:**
Compile all gathered information into a comprehensive document.
Develop a visually appealing presentation with key findings and visuals.

**Conclusion:**
Summarize the insights gained from the aquaculture bee farm facility visit. Reflect on the significance of sustainable aquaculture practices for environmental conservation and food production.
**Allocation of marks**: