**Class -X**

**Subject :-Science**

**Session : 2023 – 2024**

The subject of Science plays an important role in developing well-defined abilities in cognitive, affective and psychomotor domains in children. It augments the spirit of enquiry, creativity, objectivity and aesthetic sensibility.Upper primary stage demands that a number of opportunities should be provided to the students to engage them with the processes of Science like observing, recording observations, drawing. tabulation, plotting graphs, etc., whereas the secondary stage also expects abstraction and quantitative reasoning to occupy a more central place in the teaching and learning of Science. Thus, the idea of atoms and molecules being the building blocks of matter makes its appearance, as does Newton's law of gravitation.The present syllabus has been designed around seven broad themes viz. Food; Materials; The World of The Living. How Things Work, Moving Things. People and Ideas, Natural Phenomenon and Natural Resources Special care has been taken to avoid temptation of adding too many concepts than can be comfortably learnt in the given time frame. No attempt has been made to becomprehensive.At this stage, while Science is still a common subject, the disciplines of Physics, Chemistry andBiology begin to emerge. The students should be exposed to experiences based on hands on activities as well as modes of reasoning that are typical of the subject.

**General Instructions:**

**1. There will be an Annual Examination based on the entire syllabus.**

**2. The Annual Examination will be of 80 marks and 20 marks weightage shall be for Internal Assessment.**

**3. For Internal Assessment: a There will be Periodic Assessment that would include:**

# For 5 marks- Three periodic tests conducted by the school. Average of the best two teststo be taken that will have a weightage of 05 marks towards the final result.

# For 5 marks-Diverse methods of assessment as per the need of the class dynamics and curriculum transaction. These may include short tests, oral test, quiz, concept maps, projects, posters, presentations and enquiry based scientific investigations etc. and use rubrics for arguing them objectively. This will also have a weightage of 05 marks towards the final result.

# b Practical / Laboratory work should be done throughout the year and the student should maintain record of the same. Practical Assessment should be continuous. There will be weightage of 5 marks towards the final result. All practicals listed in the syllabus must be completed.

# c Portfolio to be prepared by the student- This would include classwork and other sample of student work and will carry a weightage of 5 marks towards the final results

**Examination Scheme**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pen-Paper**  **Test** | **Months** | **Marks** | **Chapter Name** | **Type of Examination** |
| Periodic | July | 20 Marks | School Based | School Based |
| Test-**(1)** |  |  |  |  |
| Periodic  Test**-(2)** | November | 20 Marks | School Based | School Based |
|  |  |  |  |  |
| Periodic | February | 20 Marks | School Based | School Based |
| Test-**(3)** |  |  |  |  |

**Note :-** First term Examination and Preboard Examination will be **Centralized (Samiti).**

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|  |  |  |
| --- | --- | --- |
| **S.No.** | **Month** | **Activities** |
| 1 | April | * Celebration of Earth Day 22nd April (T-Shirts , Painting, Slogan Writing Poster making etc.) * Pledge on Say No to Single Use Plastics * Save Soil letter to Prime Minister. |
| 2 | May | * Reuse Plastic Waste. |
| 3 | June | **Holiday Homework** |
| 4 | July | * Plantation Drive * Cleanliness Drive (Stagnant Water,Mosquito Breeding Prevention etc.) |
| 5 | August | * Organisation of Health week * Awareness campaign for Corona vaccination project /survey on the status of vaccination in neighbouring area * Presentation (PPT, models, Project Work) |
| 6 | September | * Poster/debate/essay writing/NukkadNatak for Ozone Day |
| 7 | October | Air and Noise Pollution awarenees activities.   * Say No to Crackers (Rally / Speech in Assembly) * Anti Fire Cracker Campaign to reduce Noise pollution. * Essay competition on noise pollution * Debate on Air Pollution (Stop open burning garbage) |
| 8 | November | * Any Visit (Science Museum / Science Centre.   Nehru Planetarium, Mother Dairy Plant ,Biodiversity Park or any other Place |
| 9 | December | * Minimization of plastic packages such as disposables like   thermocol plates, glass, plastic cups etc. |
| 10 | January | * Waste as resource (at school) * Awareness on Yamuna River / Water Conservation. |
| 11 | February | * Contribution of Various Indian Scientists such as : APJ Abdul Kalam, JagdishChanderBasu or any other Indian Scientist. * Celebration of National Science day (28th February) |
| 12 | March | * Talks/Seminars/Workshop on Water pollution * Khelo Holi Naturally. |

**Note :-If any other activity / campaign is conducted by the teacher then it should be informed to subject incharge (PrantPramukh)**

**FIRST–TERM EXAMINATION**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.** |  | **Chapter** | **Chapter Name** | **First Term** | **Annual Term** |
| **No.** | **Month** | **No.** |  | **Marks** | **Marks** |
|  |  |  |  |  |  |
| 1 | April | **1** | Chemical reactions and equations | **10** | **05** |
|  |  |  |  |  |  |
| 2 | May | **2** | Acid ,Bases and salts | **10** | **05** |
| 3 | May | **6** | Life Processes | **15** | **06**  **-** |
| 5  6  7. | July  July  August | **10**  **7**  **11** | Light-reflection and refraction  Control and Co-ordination  Human eye and the Colorful World | **13**  **10**  **10** | **06**  **04**  **06** |
|  |  |  |  |  |  |
| 8. | August | **03** | Metals and Non-Metals | **12** | **07** |
|  |  |  | **Total** | **80** |  |

**FINAL TERM EXAMINATION**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.** |  | **Chapter** | **Topics** | **Final Term** |  |
| **No.** | **Month** | **No.** |  | **( Marks)** |  |
| 1. | October | **12** | Electricity | 07 |  |
|  |  |  |  |  |  |
| 2 | October | **13** | Magnetic Effects of Electric Current | 06 |  |
| 3 | October | **15** | Our Environment | 05 |  |
|  |  |  |  |  |  |
| 4  5.  6. | November  November  December | **4**  **8**  **9** | Carbon and its compounds  How do organisms Reproduce?  Heredity and Evolution | 08  08  07 |  |
|  |  |  |  |  |  |
|  |  |  |  | Total= 80 |  |

**Dec-Jan Revision and Pre-Boards.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TEACHING LEARNING MATERIAL (TLM)** | | | | | |
| **CLASS : X** | | | | | |
|  |  |  |  |  |  |
| **S.No.** | **Chapter No.** | **Chapter Name** | **Topic** | **Activity** | **TLM** |
| 1 | 1 | Chemical reaction and equations | Types of reactions | Burning of magnesium ribbon | Magnesium ribbon |
|  |  |  |  | Precipitation reaction | Lead nitrate,potassium iodide, Barium chloride,sodium sulphate |
|  |  |  |  | Reaction of metals with acid | Metals,acid,match stick |
|  |  |  |  | Combination reaction | Calcium oxide,water |
|  |  |  |  | Decomposition | Ferrous sulphate,boiling tube burner |
|  |  |  |  | Photo decomposition | Silver chloride |
|  |  |  |  | Displacement reaction | copper sulphate,iron nails |
| 2 | 2 | Acid,bases and salts | Acid base test | Acid base test | Litmus solution,paper Phenolphthalein, methyle orange |
|  |  |  |  | To check pH | pH paper, onion,vanilla,clove |
|  |  |  |  | Hydrogen test | metals,acid |
|  |  |  |  | Carbon dioxide test | Sodium carbonate |
|  |  |  |  | Exothermic reaction | Dilution of acid and bases |
| 3 | 3 | Metals and nonmetals |  | To check conductor ,insulator | Electric circuits ,metal strips, plastic,rubberetc |
|  |  |  |  | Metal oxide | Magnesium ribbon,test tube ,water, litmus paper |
|  |  |  |  | Nonmetal oxide | Sulphur , burner , gas jar ,water, litmus paper |
|  |  |  |  | Reactivity series | Copper sulphate,Iron nails |
|  |  |  |  | Reaction of metals with water | cold water,hotwater,steam, metals |
| 4 | 4 | Carbon and its compounds | Carbon compounds |  | Picture chart showing carbon compounds |
|  |  |  |  | Difference between saturated and unsaturated hydrocarbon | Oil and butter samples |
|  |  |  |  | Atomic structures | Atomic Structure kit |
|  |  |  |  | Electron dot structure | clay and tooth picks |
| 6 | 6 | Life process | Photosynthesis | Carbon dioxide is given out ,germinating seed | Potted plant, Bell jar, KOH |
|  |  |  |  | Iodine test | Starch sample,rice |
|  |  |  |  | Saliva action on starch | chewed rice, iodine solution |
| 7 | 7 | Control and coordination | Gustatory receptors | Activity based on taste buds | Sugar sol. Salt sol. |
|  |  |  |  |  | Chart showing endocrine glands |
| 8 | 8 | How do organism reproduce? | Asexual reproduction |  | Picture charts |
|  |  |  |  | Spore formation in bread mould | Bread |
|  |  |  |  | Bulb of onion | onion |
|  |  |  |  | Eye of potato | potato |
|  |  |  | Sexual reproduction | Parts of flower | flower |
|  |  |  |  | Parts of seed | bean seeds |
| 9 | 9 | Heredity |  | Dominant trait | pea plant tall,short |
|  |  |  |  | Recessive trait | pea seeds ,yellow,green |
|  |  |  |  |  | Flash cards showing trait |
| 10 | 10 | Light-Reflection and refraction | Focal length | Concave mirror | Optical bench, scale, screen, concave mirror |
|  |  |  | Focal length | convex lens | convex lens, Optical bench, scale, screen |
|  |  |  |  | Glass slab | Glass slab,thumb pins , all pins, protactor, scale, drawing board |
|  |  |  |  |  |  |
| 11 | 11 | Human eye and the colourful world | Refraction | Prism | Prism, thumb pins , all pins, protactor, scale, drawing board |
|  |  |  | Dispersion | Splitting of white light | prism , torch, white screen |
|  |  |  | Newton's experiment | Recombination of white light | 2 Prism, White screen, torch |
| 12 | 12 | Electricity | Ohm's law |  | Battery eliminator ,connecting wire, voltmeter, ammeter, rheostat, key |
|  |  |  |  | Series and parallel arrangements | Resistors, Battery eliminator ,connecting wire, voltmeter, ammeter, rheostat ,key |
| 13 | 13 | Magnetic effects of electricity | Magnetic field | Magnetic field lines around a Bar magnet | Bar magnet, iron fillings, paper sheet |
|  |  |  |  | Magnetic field around Current carrying conductor | current carrying conductor |
|  |  |  |  | Electro magnet | Battery,nail,copper wire |
| 14 | 15 | Our environment | Food chain | Making terrestrial and aquatic food chain | Chart/a4 size sheet |

**Practicals (Term I)**

**LIST OF EXPERIMENTS:**

* 1. **(i) Finding the pH of the following samples by using pH paper/universal indicator:**
     1. **Dilute Hydrochloric Acid**
     2. **Dilute NaOH solution**
     3. **Dilute Ethanoic Acid solution**
     4. **Lemon juice**
     5. **Water**
     6. **Dilute Hydrogen Carbonate solution**

**(ii) Studying the properties of acids and bases (HCl&NaOH) on the basis of their reaction with:**

* + 1. **Litmus solution (Blue/Red)**
    2. **Zinc metal**
    3. **Solid sodium carbonate**

1. **Performing and observing the following reactions and classifying them into:**
   1. **Combination reaction**
   2. **Decomposition reaction**
   3. **Displacement reaction**
   4. **Double displacement reaction**
      1. **Action of water on quicklime**
      2. **Action of heat on ferrous sulphate crystals**
      3. **Iron nails kept in copper sulphate solution**
      4. **The reaction between sodium sulphate and barium chloride solutions**

**3. Observing the action of Zn, Fe, Cu and Al metals on the following salt solutions:**

* 1. **ZnSO4(aq)**
  2. **FeSO4(aq)**
  3. **CuSO4(aq)**
  4. **Al2 (SO4)3(aq)  
     Arranging Zn, Fe, Cu and Al (metals) in the decreasing order of reactivity based on the above result.**

**4. Preparing a temporary mount of a leaf peel to show stomata.**

**5. Experimentally show that carbon dioxide is given out during respiration.**

**6. Determination of the focal length of**

* 1. **Concave mirror**
  2. **Convex lens by obtaining the image of a distant object.**

**7. Tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. Measure the angle of incidence, the angle of refraction, the angle of emergence and interpret the result.**

1. **Tracing the path of the rays of light through a glass prism.**

**Practicals (Term II)**

**9. Study of the following properties of acetic acid (ethanoic acid):**

* 1. **odour**
  2. **solubility in water**
  3. **effect on litmus**
  4. **reaction with Sodium Hydrogen Carbonate**

**10. Study of the comparative cleaning capacity of a sample of soap in soft and hard water.**

**11. Studying (a) binary fission in Amoeba, and (b) budding in yeast and Hydra with the help of prepared slides.**

1. **Studying the dependence of potential difference (V) across a resistor on the current (I) passing through it and determine its resistance. Also plotting a graph between V and I.**

**13. Determination of the equivalent resistance of two resistors when connected in series and parallel.**

**14. Identification of the different parts of an embryo of a dicot seed (Pea, gram or red kidney bean).**

**Guidelines for the students**

1. Regular attendance is a must .
2. Maintenance of Copies including practical files.
3. Main focus on reading and writing skills.
4. Try to perform the simple science activities at home to improve your skills under the guidance of your parents.
5. Participate in all the competitions, projects both at School level and in Science Fairs.
6. Try to correlate the learning science with your daily life implementation.
7. Try to be in touch with current affairs related to science news or discoveries and paste the cuttings in a separate copy. Follow all the instructions as per given by the teacher time to time.

8Do physical exercises/ yoga/ meditation every day.

**Guidelines for Parents**.

1 Parents should keep an eye on their ward's attendance.Their ward should attend all the classes and activities with full interest.

2 They should attend all the PTM organised in the school from time to time and have regular communication with teachers regarding their progress learning,home works tests ,assignments etc

3 They should keep an eye on their ward's notebooks.Their classwork and homework should be completed in all respects.

4. They should also encourage their ward to participate in every activities of the school with full enthusiasm.

5. They should also keep an eye on their ward's diet. It should be balanced containing all the nutrients.

6. Notice your ward's good behaviour and point it out ,praising success and good tries.They will get encouraged by this.

**Gideulines for Teacher**

1.The chapter Natural Resources (NCERT Chapter 14) will not be assessed in the year-end examination. However, learners may be assigned to read this chapter and encouraged to prepare a brief write up on any concept of this chapter in their Portfolio. This may be for Internal Assessment and credit may be given for Periodic Assessment/Portfolio.

2.The NCERT text books present information in boxes across the book. These help students to get conceptual clarity. However, the information in these boxes would not be assessed in the year-end examination.