

**CENTRAL BOARD OF SECONDARY EDUCATION  
SHIKSHA KENDRA, 2 COMMUNITY CENTRE,  
PREET VIHAR, DELHI-110092**

D(A)/PA/ CIR./05

24<sup>th</sup> May, 2005

**Circular No. 25/2005**

All Heads of Institutions  
Affiliated to the Board

**Subject: Changes in syllabus in the subject of Science and Technology w.e.f the  
academic session 2005-06 for class IX and academic session 2006-07 for class X**

Dear Principal,

This is in continuation to an earlier circular no. 19 dated 25<sup>th</sup> March, 2005 in relation to restructuring of Science Practical work at Secondary stage. The enclosed Concept paper included in the said circular contained all the related information regarding changes in the weightage to theory and practical components and the pattern and duration of examination in the revised scheme.

The following revised weightages to different units of syllabus, the deletions in the syllabus and the list of experiments for classes IX and X may be noted: -

**Class IX**

<b><u>Unit</u></b>	<b><u>Revised Weightage (Marks)</u></b>
1. Matter-Nature and Behaviour	16
2. Motion, Force and work	19
3. Organisation in the Living World	13
4. Natural Resources	07
5. Our Environment	05
Total	----- 60 -----

The following sub-units/content-areas may be considered as **deleted** from the syllabus :

Unit 1 : **Matter-Nature and Behaviour**

- Maintenance of standards
- Colloids
- Atomic theory of matter (Dalton's Postulates)
- A brief historical perspective of periodical classification of elements, ionization energy and electron affinity.

Unit 2 : **Motion, Force and work**

- Free Fall
- Transformation of scales (Celsius, Kelvin), thermometers – laboratory and clinical, coefficients of linear and volume expansion.
- Graphical representation of simple Harmonic waves, nature of sound and its propagation, range of hearing in humans, reflection of sound, echo, SONAR

Unit 4 : **Natural Resources – Animals**

Improved Breeds – cattle and livestock (poultry and fish), breeding, feeding and shelter for live stock, prevention against major diseases.

**List of Experiments**

Every student will be required to perform following fifteen experiments during the academic session:-

1. To prepare
  - a) a true solution of common salt, sugar and alum
  - b) a suspension of soil, chalk powder and fine sand in water
  - c) a colloidal of starch in water and egg albumin in waterand distinguish between these on the basis of
  - i) transparency
  - ii) filtration criterion
  - iii) stability
2. To prepare
  - a) a mixture
  - b) a compoundusing iron filings and sulphur powder and distinguish between these on the basis of :
  - i) appearance i.e homogeneity and heterogeneity

- ii) behaviour towards a magnet
- iii) behaviour towards carbon disulphide ( a solvent)
- iv) effect of heat.

3. To carry out the following chemical reactions and record observations. Also to identify the type of reaction involved in each case.

- i) Iron with copper sulphate solution in water.
  - ii) Burning of Magnesium in air.
  - iii) Zinc with dilute sulphuric acid.
  - iv) Heating of Lead Nitrate
  - v) Sodium sulphate with Barium chloride in the form of their solutions in water.
4. To determine the density of a solid (denser than water) by using a spring balance and a measuring cylinder.
5. To establish the relation between the loss in weight of a solid when fully immersed in (i) tap water (ii) strongly salty water, with the weight of water displaced by it by taking at least two different solids.
6. To study the variation in limiting friction between blocks of different masses and surfaces of different nature.
7. To measure the temperature of hot water as it cools and plot a temperature-time graph.
8. To study the variation in the time period (T) of a simple pendulum with its length (L) and to plot  $L-T^2$  graph.
9. To prepare stained temporary mounts of i) onion peel and ii) human cheek cells and to record observations and draw their labeled diagrams.
10. To identify parenchyma and sclerenchyma tissues in plants, striped muscle fibers and nerve cells in animals, from prepared slides and to draw their labeled diagrams.
11. To prepare methane gas by heating sodium acetate and soda lime and study its physical properties i.e colour, odour, solubility in water and its chemical properties like combustion and action on bromine water and alkaline potassium permagnate solution.
12. To identify the saturated and unsaturated organic compounds out of the following:
- a) Kerosene
  - b) Vegetable oil
  - c) Butter
  - d) Carbon tetrachloride

13. To Test a) the presence of starch in the given food sample b) the presence of the adulterant metanil yellow in dal.
14. To study the adaptive features of a xerophyte such as cactus and hydrophytes such as water lily/lotus. Draw and record observations.
15. To observe and draw the given specimens –earthworm, cockroach, bony fish and bird. For each specimen record
  - a) one specific feature of its phylum
  - b) one adaptive feature with reference to its habitat.

## **Class X**

### **Revised weightages of different content units**

<b><u>Unit</u></b>	<b><u>Revised Weightage (Marks)</u></b>
1. Chemical Reactions and Some important Chemical compounds	06
2. Energy	17
3. Life Processes	17
4. Natural Resources	14
5. Our Environment	03
6. Exploring Space	03
<b>Total</b>	----- <b>60</b> -----

The following sub-topics/ content areas of the syllabus may be considered as **deleted**:

#### Unit 1 : **Chemical Reactions**

pH scale : only qualitative treatment to be done.

#### Unit 2 : **Energy**

- Derivation of mirror formula
- Derivation of lens formula
- Construction and working of Compound microscope and an astronomical telescope
- Mathematical equations of Faraday's laws, electro-chemical cells, dry cells.
- Electric motor and electric generator (D.C)

- Non-renewable sources-fossil fuels ( coal, petroleum and natural gas), conditions of combustion, choice of a good fuel and efficient use of fuels.

Unit 4 : **Natural Resources** :

- Preparation, properties and uses of hydrogen
- Some common synthetic polymers, soaps and detergents

Unit 6 : **Exploring space:**

Solar system, planets, asteroids, comets and meteors, earth-evolution and structure, stars, constellations

### **LIST OF EXPERIMENTS**

Every student will be required to perform following fifteen experiments during the academic session.

1. To find the pH of the following samples by using pH paper/universal indicator.
  - i) Dilute Hydrochloric acid
  - ii) Dilute NaOH solution
  - iii) Dilute Ethanoic acid solution
  - iv) Lemon juice
  - v) Water
  - vi) Dilute Sodium Bicarbonate Solution.
2. To study the properties of acids and bases (Dil. HCl & Dil. NaOH) by their reaction with
  - i) Litmus solution (Blue/Red)
  - ii) Zinc metal
  - iii) Solid Sodium Carbonate
3. To determine the focal length of
  - a) Concave mirror
  - b) Convex lens
 by obtaining the image of a distant object.
4. To trace the path of a ray of light passing through a rectangular glass slab for different angles of incidence. Measure the angle of incidence, angle of refraction and angle of emergence and interpret the result.
5. To study the dependence of current (I) on the potential difference (V) across a resistor and determine its resistance. Also plot a graph between V and I.

6. To determine the equivalent resistance of two resistors when connected in series.
7. To determine the equivalent resistance of two resistors when connected in parallel.
8. To prepare a temporary mount of a leaf to show its stomata.
9. To show experimentally that light is necessary for photosynthesis.
10. To show experimentally that carbon-dioxide is given out during respiration.
11. To study a) binary fission in Amoeba and (b) budding in yeast with the help of prepared slides.
12. To determine the percentage of water absorbed by raisins.
13. To prepare  $\text{SO}_2$  gas, observe its following properties and draw inferences in respect of
  - i) odour
  - ii) solubility in water
  - iii) effect on litmus paper
  - iv) action on acidified potassium dichromate solution.
14. a) To observe the action of Zn, Fe, Cu and Al metals on the following salt solutions-
  - i)  $\text{ZnSO}_4$  (Aq)
  - ii)  $\text{FeSO}_4$  (aq.)
  - iii)  $\text{CuSO}_4$  (aq.)
  - iv)  $\text{Al}_2(\text{SO}_4)_3$  (aq.)

b) Arrange Zn, Fe, Cu and Al metals in the decreasing order of reactivity based on the above results.
15. To study the following properties of acetic acid (ethanoic acid):
  - i) odour
  - ii) solubility in water
  - iii) effect on litmus
  - iv) reaction with sodium bicarbonate

The following additional information may also be taken note of :

- a) The time duration of theory examination for class IX as well as class X will be **2 ½ hours instead of 3 hours. The related information included in Secondary School Curriculum, 2007 stands modified.**

- b)** The above changes are effective with effect from the academic session 2005-06 for class IX and the academic session 2006-07 for class X.
- c)** Sample question papers for theory as well as practicals (written test) for class IX will be made available to the schools shortly.
- d)** The related information is also being made available on Board's website address [www.cbse.nic.in](http://www.cbse.nic.in)
- e)** The above information has been included in the document Secondary School Curriculum, 2007 Vol.I.

Further clarification, if any, may be had from

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Yours faithfully,

**(G.BALASUBRAMANIAN)**

