

Admissions to  
Std 9 & 10  
Students

Dates  
17-18-19-20  
May 2016

**CBSE  
&  
State  
Boards**

**“HANDS-ON”  
SCIENCE  
CRASH  
PROGRAM  
FOR 10<sup>th</sup> STD**

Learn Class 10  
Science By Doing  
Experiments  
As Per Syllabus

All  
Take  
away  
kits...!

Preparatory  
Program to  
Develop Conceptual  
Understanding



Hands on Science Activity programs for school children

[www.sundayscienceschool.com](http://www.sundayscienceschool.com)

**Sunday Science School**

## Activities on Day 1



## Activities



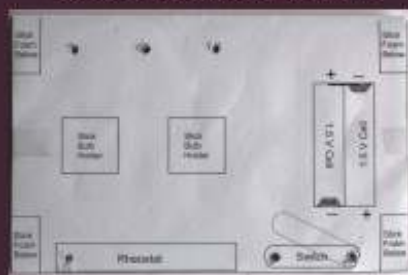
### Chemistry - Session I

- Study of Periodic Table
- Formation of calcium hydroxide by combination of calcium oxide and water
- Conversion of calcium hydroxide to calcium carbonate using carbon dioxide gas
- Electrolysis of water
- Displacement of copper metal from Copper sulphate solution by zinc metal
- Formation of yellow precipitate of lead iodide using lead nitrate and potassium iodide
- Redox Reaction



### Electricity

- Electricity Board making activity
- Making of simple circuit and use of switch
- Understanding short circuit
- Identification of conductors and insulators by using simple circuit.
- Verification of Ohm's law by changing resistance in the circuit - use of rheostat
- Types of circuits - Bulbs in series and bulbs in parallel
- Resistivity of metals
- Use of Carbon Film Resistors along with bulbs in series and parallel circuits
- Making of electrical heater to show heating effect of electrical current



### Magnetism & Electromagnetism

- Tracing magnetic lines of forces using iron filings
- Making of electromagnet to demonstrate magnetic effect of electric current
- Preparing solenoid
- Magnetic lines of in a circular wire loop
- Attraction & repulsion in electromagnet
- Make a working model of simple DC motor
- Making a hand-held Electricity Generator



## Activities on Day 2



### Chemistry - Session II

- Making of molecular models of Carbon compounds, like, Methane, Ethane, Propane, Butane, Ethene, Propene, Ethyne, Propyne, Cyclohexane, Benzene
- Polymer formation Reaction
- Examining samples of acids and bases using Synthetic indicators - methyl orange, Litmus paper, pH Paper
- Reactivity of metals with acids
- Reactivity of acids with carbonates and bicarbonates
- Reactivity of acids with metal oxide
- Reactivity of acid with base (Neutralization)
- Verifying salts as acidic salt, basic salt, and neutral salt (  $\text{NH}_4\text{Cl}$ ,  $\text{Na}_2\text{CO}_3$ ,  $\text{NaCl}$  )

**All Take away kits...!**

## Activities on Day 3



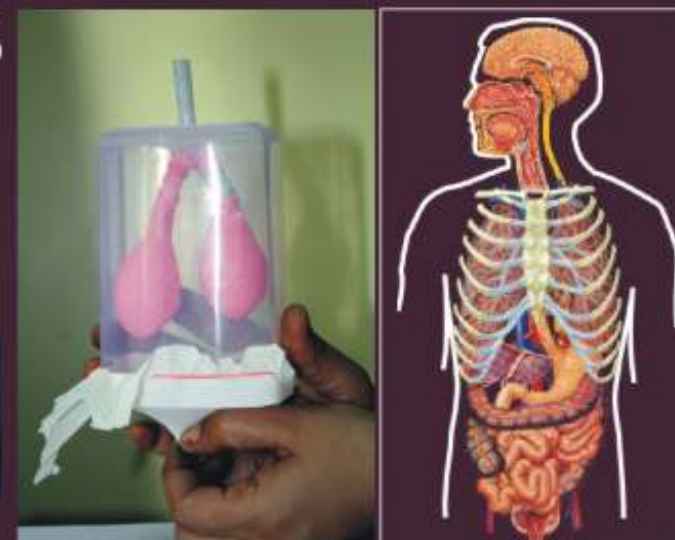
### Optics (Reflection & Refraction)

- Prepare optical bench and light source
- Image formation in plane mirror
- Image formation in Concave and convex mirror using optical bench.
- Convergence, Divergence of light and focal length of Concave and convex lens (Ray box activity)
- Images formed by convex lens with object at different distance (optical bench activity)
- Refraction through glass slab activity
- Dispersion of light - rainbow formation



### Biology

- Human Anatomy - study of Brain, Nervous system, Heart, Circulatory, Respiratory System and more...using colourful card and charts
- Working of Eye - making a model using lens, bowls and screen
- Working of lungs - making a study model
- Flash Card based learning for important Biology topics from syllabus



# Concepts discussed during Workshop

## Electricity & Electromagnetism

Electrical symbols and electrical circuits  
Electrical conductivity  
Electric potential and potential difference  
Relation between Voltage, Current and Resistance  
Resistance in series and parallel  
Ohm's law  
Heating effect of electric current  
Electric power

Magnetic Effect of electric current  
Magnetic lines of force  
Magnetic field due to current carrying conductor  
Force on current carrying conductor in mag. field  
Electricity from Magnetism  
Electricity Generator  
Electric motor

## Optics

Types of Mirror  
Laws of Reflection  
Images formed by concave and convex mirror  
Refraction of light and its uses  
Laws of refraction  
Lenses - their types  
Obtaining parallel beam of light by ray box  
Convergence, Divergence of rays  
Focal length of lenses  
Images formed by convex lens  
Refractive Index  
Twinkling of stars  
Dispersion and scattering of light  
Applications of spherical mirrors and lenses  
Functioning of eye, vision and its defects.

## Chemistry - Elements & Reactions

Atom and its structure  
History and development of Periodic table  
Atomic Mass and atomic number  
Mendeleev's periodic table  
Modern periodic table  
Periodic properties of elements  
Physical changes and chemical changes  
Types of chemical reactions  
Decomposition  
Combination  
Displacement  
Double Displacement  
Redox Reaction  
Electrolysis of water

## Carbon Compounds & Acid-Bases

Different types of chemical bonds  
Covalent bond formation in carbon compounds  
Saturated – Unsaturated Hydrocarbons  
Functional Groups  
Nomenclature of organic compounds  
Acids, Bases and Indicators  
Reactions of Acids and Bases  
Reactivity of acids with metals, metal oxides  
Reaction of acids with Carbonates,  
Reactivity of bases with non-metallic oxides  
Ionization of Acids and Bases  
Types of salts and their properties

## Biology

Study of Human Anatomy  
Central Nervous System  
Heart and Circulatory System  
Respiratory System  
Digestive System  
Urinary System and Reproductive System  
Working of Lungs Model  
Working of Eye Model  
Reproduction in plants  
Heredity and Inheritance theory of Mendel  
Darwin's theory of evolution  
Adaptations in plants and animals  
Transportation in plants  
Photosynthesis  
Ecology and Environment  
Food chain  
Ecosystem  
Sun - The Source of energy  
Renewable and non-renewable Sources

## Why this program?

- ▶ We remember best when we do activities by hand
- ▶ Conceptual clarity helps in solving HOTS questions
- ▶ Useful for School & competitive exams
- ▶ Develops Confidence in students
- ▶ Different technique of revision



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## Head office

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