NCERT Class 10 Science - Detailed Notes with Activities

# Chapter 3: Metals and Non-Metals

This chapter explains the physical and chemical properties of metals and non-metals, reactivity series, extraction of metals, and prevention of corrosion.

## Activity: Reaction of Metal with Water

Take a small piece of sodium and carefully add it to water. Observe that it reacts vigorously to form sodium hydroxide and hydrogen gas. The hydrogen gas catches fire due to the heat of the reaction.  
  
Observation: Sodium floats, reacts, and produces a flame.  
Conclusion: Sodium is highly reactive with water.

[Insert diagram of reaction of sodium with water here]

## Activity: Reaction of Metal with Acid

Add a few zinc granules to dilute HCl in a test tube. Pass the gas produced through soap solution. Bring a burning matchstick near the bubbles.  
  
Observation: Pop sound confirms presence of hydrogen.  
Conclusion: Metals react with acids to produce hydrogen gas.

[Insert image showing Zn + HCl reaction]

# Chapter 5 (Excretion): Human Excretory System

The human excretory system removes nitrogenous waste from the body in the form of urine. It includes kidneys, ureters, bladder, and urethra.

## Diagram:

[Insert labelled diagram of human excretory system here]

## Structure of Nephron

Nephrons are the structural and functional units of kidneys. Each nephron has a glomerulus, Bowman's capsule, and tubule. It filters blood and forms urine.

[Insert labelled diagram of nephron]

# Chapter: Control and Coordination

This chapter discusses how organisms sense and respond to stimuli using the nervous system and hormones. It covers reflexes, human brain structure, and plant movements.

## Activity: Reflex Action

Make a subject touch a hot object. Measure the time it takes to withdraw the hand.  
  
Observation: Immediate withdrawal of hand.  
Conclusion: Reflex action is fast and involuntary.

[Insert diagram showing reflex arc pathway]

## Diagram of Neuron:

[Insert labelled diagram of a neuron here]

# Chapter: How Do Organisms Reproduce?

Reproduction ensures continuity of life. It can be asexual or sexual. Humans reproduce sexually involving gametes and fertilization.

## Activity: Budding in Yeast

Observe yeast cells under a microscope. You will find small outgrowths (buds) forming on the parent cell.  
  
Conclusion: Asexual reproduction by budding.

[Insert microscopic image of budding yeast cells]

## Diagrams:

[Insert diagram of male and female reproductive systems]

# Chapter: Magnetic Effects of Electric Current

This chapter explains how electric current produces magnetic fields, and how devices like electric motors and generators work.

## Activity: Magnetic Field Around a Conductor

Pass current through a straight conductor placed through a cardboard. Sprinkle iron filings and tap gently.  
  
Observation: Iron filings arrange in concentric circles.  
Conclusion: Current creates magnetic field.

[Insert diagram of magnetic field around a wire]

## Right-Hand Thumb Rule Illustration:

[Insert illustration of Right-Hand Thumb Rule]

# Chapter: Electricity

Covers the concepts of current, voltage, resistance, Ohm’s law, and power. Also includes series and parallel circuits.

## Activity: Ohm’s Law Verification

Connect a resistor in series with an ammeter and voltmeter. Vary the voltage using a battery and record current values.  
  
Observation: V-I graph is a straight line.  
Conclusion: Current ∝ Voltage (Ohm’s law holds)

[Insert circuit diagram for Ohm’s Law experiment]

## Series and Parallel Circuits:

[Insert diagrams of series and parallel resistors]