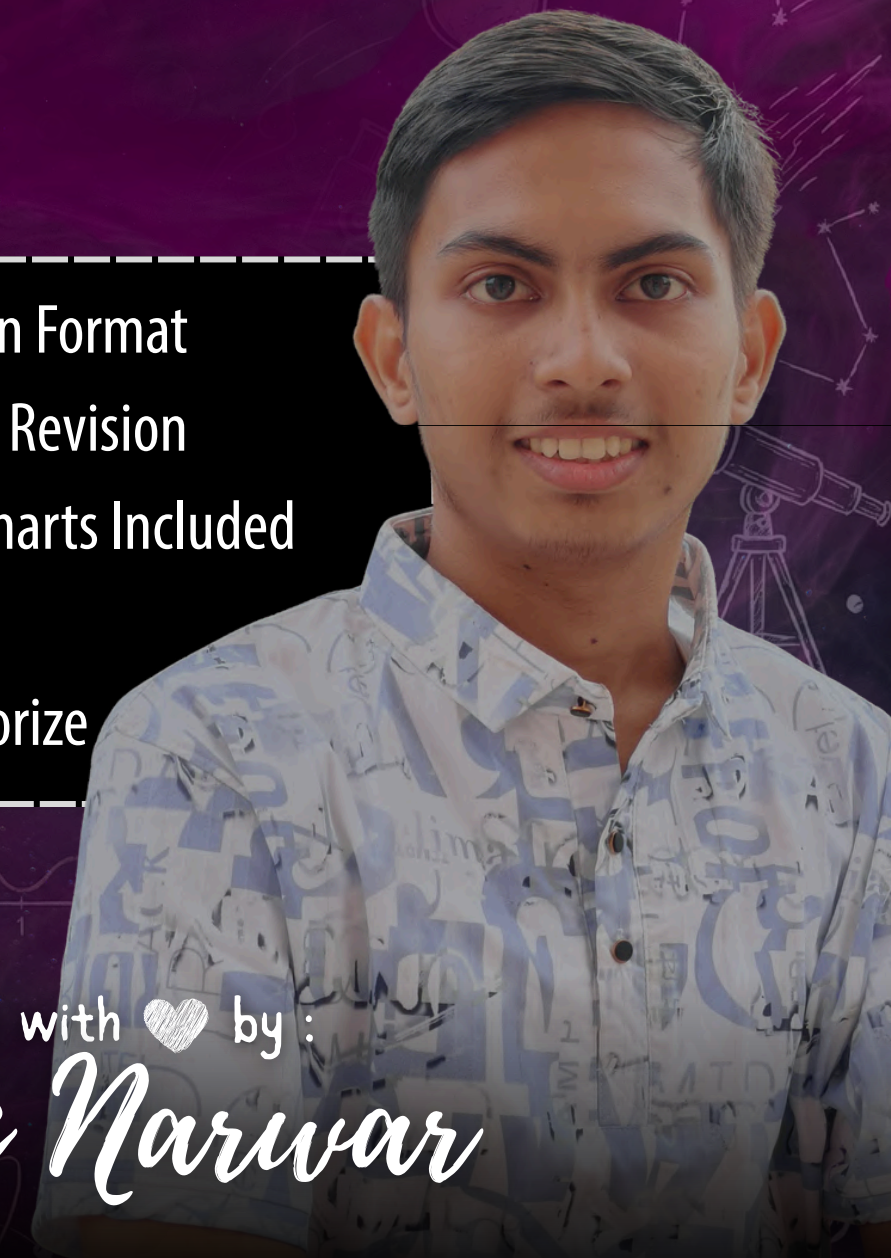
BOARD ZONE

Revision Notes

SCIENCE

10th Class



- 100% Neat Handwritten Format
- Perfect for Last-Minute Revision
- Essential Diagrams & Charts Included
- High-Yield Exam Points
- Easy to Read and Memorize

Made with ♥ by :

Aman Narwar

CONTENTS

Chemical Reactions & Equations

Chemical Change or Chemical Reaction

A **chemical change** happens when one or more substances react to form new substances with different chemical properties. These changes usually **cannot be reversed**.

Physical Change

A **physical change** affects only the **physical properties** like state, color, or shape of a substance. The **chemical composition stays the same**, and such changes are usually **reversible**

Chemical Equation

A **chemical equation** is a **symbolic way of showing a chemical reaction**, where the **reactants** (starting substances) are written on the left and the **products** (new substances formed) are written on the right, separated by an **arrow (→)**.

Balanced Chemical Equation

A **balanced chemical equation** is one in which the **number of atoms of each element** is **equal** on both sides of the equation. This follows the **law of conservation of mass**.

Steps to Balance a Chemical Equation (Hit and Trial Method)

Step 1: Write the unbalanced (skeletal) equation and put the formulas in brackets.
Step 2: List all elements on both sides of the equation.
Step 3: Start balancing one element at a time.
Step 4: Check whether all elements are balanced.
Step 5: Add extra information if needed,like physical states (s, l, g, aq).

Types of Chemical Reactions

1. Combination Reaction

A **combination reaction** is when **two or more reactants combine** to form a **single product**.

Example: A + B → AB

2. Decomposition Reaction

A **decomposition reaction** happens when **one compound breaks down** into **two or more simpler substances**.

Types of Decomposition Reaction:

- **Thermal Decomposition:** The compound breaks down due to **heat**.
- **Electrolytic Decomposition:** The compound breaks down using **electric current**.
- **Photolytic Decomposition:** The compound breaks down in the presence of **light**.

3. Displacement Reaction

In a **displacement reaction**, **one element replaces another** element from its compound.

- **Single Displacement Reaction:** A **more reactive element** replaces a **less reactive** one.
- **Double Displacement Reaction:** **Two compounds** exchange their ions or elements to form **new compounds**.

4. Neutralisation Reaction

A **neutralisation reaction** happens when an **acid reacts with a base**, forming **salt and water**.
Example: Acid + Base → Salt + Water

5. Oxidation and Reduction Reactions (Redox Reactions)

- **Oxidation:** Addition of oxygen or removal of hydrogen / loss of electrons.
- **Reduction:** Addition of hydrogen or removal of oxygen / gain of electrons.
  In many reactions, **oxidation and reduction occur together**, called **redox reactions**.

Oxidising Agent: The substance that **causes oxidation** of another and **gets reduced**.
Reducing Agent: The substance that **causes reduction** of another and **gets oxidised**.

Effects of Oxidation:

- **Corrosion:** Slow damage of metals by air, moisture, or chemicals.
- **Rancidity:** Spoiling of food (like oils or fats) due to oxidation.

6. Exothermic and Endothermic Reactions

- **Exothermic Reaction:** A reaction that **releases heat energy** (e.g., respiration).
- **Endothermic Reaction:** A reaction that **absorbs heat energy** (e.g., photosynthesis).