CLASS 10 SCIENCE NCERT SOLUTIONS

NCERT Solutions for Class 10 Science Chapter 1: Chemical Reactions and Equations – Free PDF Download

Chemical Reactions and Equations is the opening chapter of Class 10 Science and one of the most exam-tested chapters in the whole book — nearly every board paper includes at least one balancing, reaction-identification, or corrosion/rancidity question from it. Here are complete, worked answers to the core exercise...

Contents

Chemical Reactions and Equations is the opening chapter of Class 10 Science and one of the most exam-tested chapters in the whole book — nearly every board paper includes at least one balancing, reaction-identification, or corrosion/rancidity question from it. Here are complete, worked answers to the core exercise-style questions.

NCERT Solutions for Class 10 Science Chapter 1: Chemical Reactions and Equations

Q1. Why should a magnesium ribbon be cleaned before burning in air?
Magnesium reacts slowly with atmospheric oxygen at room temperature to form a thin layer of magnesium oxide on its surface. This layer prevents the metal underneath from burning properly, so cleaning it (usually by rubbing with sandpaper) removes the oxide coating and exposes fresh metal for a clean, complete combustion reaction.

Q2. Write balanced equations for the following reactions:
(i) Hydrogen + Chlorine → Hydrogen chloride: $\mathbf{H_2 + Cl_2 \rightarrow 2HCl}$
(ii) Barium chloride + Aluminium sulphate → Barium sulphate + Aluminium chloride: $\mathbf{3BaCl_2 + Al_2(SO_4)_3 \rightarrow 3BaSO_4 + 2AlCl_3}$
(iii) Sodium + Water → Sodium hydroxide + Hydrogen: $\mathbf{2Na + 2H_2O \rightarrow 2NaOH + H_2}$

Q3. Identify the type of reaction in each of the following:
(i) $KBr(aq) + AgNO_3(aq) \rightarrow AgBr(s) + KNO_3(aq)$ — **double displacement reaction** (and a precipitation reaction, since AgBr is insoluble).
(ii) $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)$ — **combination reaction** (two substances combine to form one product).
(iii) $Zn(s) + CuSO_4(aq) \rightarrow ZnSO_4(aq) + Cu(s)$ — **displacement reaction** (zinc, being more reactive, displaces copper from copper sulphate).

Q4. What is a balanced chemical equation? Why should equations be balanced?
A balanced chemical equation has an equal number of atoms of each element on both the reactant and product sides. Equations must be balanced to satisfy the **Law of Conservation of Mass** — matter can neither be created nor destroyed in a chemical reaction, so the total mass (and hence the count of each type of atom) must stay the same before and after the reaction.

Corrosion and Rancidity

Corrosion: the gradual eating away of a metal surface due to reaction with substances in its environment (moisture, acids, gases). Iron corrodes to form rust (hydrated iron oxide); silver tarnishes with a black coating; copper develops a green coating. Prevention methods include painting, oiling, greasing, galvanising (zinc coating) and alloying.
Rancidity: the oxidation of fats and oils in food, which changes their smell and taste and makes them unfit to eat. It is slowed by adding antioxidants, storing food in airtight containers, refrigeration, and packaging food in nitrogen gas instead of air.

Why This Chapter Matters

Chemical Reactions and Equations sets up the vocabulary (combination, decomposition, displacement, double displacement, oxidation, reduction) used throughout the rest of Class 10 Chemistry, and balancing-equation and reaction-identification questions from this chapter appear almost every year in the CBSE board paper, often worth 3–5 marks combined.

CBSE Exam Weightage

This chapter falls under **Unit I: Chemical Substances – Nature and Behaviour** in the CBSE Class 10 Science board exam syllabus. This unit typically carries around **25 marks (31.25%)** of the 80-mark theory paper, based on CBSE's published unit-wise weightage (Question Paper Design). CBSE sets weightage at the unit level rather than chapter-by-chapter, so the exact share from this specific chapter can vary a little between years and sample papers.

How to Use These Solutions

Practice balancing each equation from scratch on paper rather than just reading the balanced version — the skill being tested is the balancing method (adjusting coefficients, never subscripts), not recall of any single equation. Download the full chapter from our Class 10 Science NCERT book page, or see our Class 10 Maths solutions for the companion subject.