
📘 **Class 10 Science – Chapter 1 (Chemical Reactions & Equations)**

🔥 **30 Important Q&A**

Q1. Define a chemical reaction.
Ans: A process in which one or more substances react to form new substances with different properties.

Q2. What is a balanced chemical equation?
Ans: An equation with equal number of atoms of each element on both sides.

Q3. Write a balanced chemical equation for the burning of hydrogen in oxygen.
Ans: 2H2+O2→2H2O2H_2 + O_2 \--> 2H_2O

Q4. Why should chemical equations be balanced?
Ans: To follow the **law of conservation of mass** (matter is neither created nor destroyed).

Q5. Write the skeletal equation for burning of methane.
Ans: CH4+O2→CO2+H2OCH_4 + O_2 \--> CO_2 + H_2O

Types of Reactions

Q6. What is a combination reaction? Give example.
Ans: Two or more substances combine to form one product.
Example: CaO+H2O→Ca(OH)2CaO + H_2O \--> Ca(OH)_2

Q7. What is a decomposition reaction?
Ans: A single compound breaks down into two or more products.
Example: 2HgO→Δ2Hg+O22HgO \x-->{\Delta} 2Hg + O_2

Q8. What is a displacement reaction?
Ans: A more reactive element displaces a less reactive element.
Example: Fe+CuSO4→FeSO4+CuFe + CuSO_4 \--> FeSO_4 + Cu

Q9. Define double displacement reaction.
Ans: Exchange of ions between two compounds.
Example: AgNO3+NaCl→AgCl+NaNO3AgNO_3 + NaCl \--> AgCl + NaNO_3

Q10. What is a redox reaction?
Ans: Reaction where oxidation and reduction occur simultaneously.
Example: Zn+CuSO4→ZnSO4+CuZn + CuSO_4 \--> ZnSO_4 + Cu

Observation-Based

Q11. What happens when zinc granules are added to dilute HCl? Write equation.

Ans: Gas bubbles evolve (H_2).

Equation: Zn+2HCl→ZnCl2+H2↑Zn + 2HCl \--> ZnCl_2 + H_2\

Q12. Why do ferrous sulphate crystals turn brown on heating?

Ans: Due to formation of ferric oxide.

Equation: 2FeSO4→ΔFe2O3+SO2+SO32FeSO_4 \x-->{\Delta} Fe_2O_3 + SO_2 + SO_3

Q13. What happens when lead nitrate is heated?

Ans: Yellow residue (PbO), brown fumes (NO_2), and O_2 gas.

Equation: 2Pb(NO3)2→Δ2PbO+4NO2+O22Pb(NO_3)_2 \x-->{\Delta} 2PbO + 4NO_2 + O_2

Q14. What change occurs when silver chloride is kept in sunlight?

Ans: Turns grey due to decomposition.

Equation: 2AgCl→sunlight2Ag+Cl2↑2AgCl \x-->{sunlight} 2Ag + Cl_2\

Q15. Why is respiration considered an exothermic reaction?

Ans: Energy is released when glucose breaks down:

C6H12O6+6O2→6CO2+6H2O+energyC_6H_{12}O_6 + 6O_2 \--> 6CO_2 + 6H_2O + energy

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Conceptual

Q16. What is corrosion? Give example.

Ans: Gradual destruction of metals by chemical action of air, moisture, etc. Example: Rusting of iron.

Q17. What is rancidity? How can it be prevented?

Ans: Spoiling of food containing oil/fats due to oxidation.

Prevention: Using antioxidants, refrigeration, or airtight containers.

Q18. Why are food items packed in nitrogen?

Ans: To prevent oxidation and rancidity.

Q19. What is an oxidising agent? Give example.

Ans: A substance that causes oxidation and gets reduced. Example: KMnO4KMnO_4.

Q20. What is a reducing agent? Give example.

Ans: A substance that causes reduction and gets oxidised. Example: H2H_2.

Equation Practice

Q21. Write balanced equation for reaction of aluminium with oxygen.

Ans: 4Al+3O2→2Al2O34Al + 3O_2 \--> 2Al_2O_3

Q22. Write balanced equation for decomposition of calcium carbonate.

Ans: CaCO3→ΔCaO+CO2CaCO_3 \x-->{\Delta} CaO + CO_2

Q23. Write balanced equation for reaction of sodium sulphate with barium chloride.

Ans: Na2SO4+BaCl2→2NaCl+BaSO4↓Na_2SO_4 + BaCl_2 \--> 2NaCl + BaSO_4\

Q24. Write equation for electrolysis of water.

Ans: 2H2O→electricity2H2+O22H_2O \x-->{electricity} 2H_2 + O_2

Q25. Write balanced equation for the reaction of iron with steam.

Ans: 3Fe+4H2O→ΔFe3O4+4H2↑3Fe + 4H_2O \x-->{\Delta} Fe_3O_4 + 4H_2\

Reasoning

Q26. Why do we apply paint on iron articles?

Ans: To prevent rusting by isolating iron from air and moisture.

Q27. Why is respiration a redox reaction?

Ans: Oxygen oxidises glucose and itself gets reduced (forms water).

Q28. Why does magnesium ribbon burn with dazzling light in air?

Ans: Because magnesium reacts vigorously with oxygen to form MgO.

Q29. Why should old oil foods not be consumed?

Ans: Because they undergo rancidity and produce foul smell and taste.

Q30. Why does copper not displace hydrogen from dilute HCl?

Ans: Because copper is less reactive than hydrogen.
