

CBSE Class 10 Science – Chapter 1: Chemical Reactions and Equations

Practice Question Bank with Answers (Based on Previous Year CBSE Questions)

Section A: Multiple Choice Questions (1 Mark Each)

Q1. (2020) Which of the following is a balanced chemical equation?

- A. $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
- B. $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$
- C. $\text{Ca} + \text{O}_2 \rightarrow \text{CaO}$
- D. $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$

Answer: B. $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$

Q2. (2019) The reaction: $\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$ is an example of:

- A. Decomposition
- B. Combination
- C. Displacement
- D. Double displacement

Answer: C. Displacement

Q3. (2022) Which of the following reactions is an example of oxidation?

- A. $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$
- B. $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$
- C. $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
- D. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

Answer: B. $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$

Q4. (2023) Which gas is evolved when dilute HCl reacts with zinc?

- A. Oxygen
- B. Nitrogen
- C. Hydrogen
- D. Carbon dioxide

Answer: C. Hydrogen

Q5. (2021) The brown coating on an iron article left in moist air is:

- A. Iron oxide
- B. Zinc oxide
- C. Silver nitrate
- D. Aluminum oxide

Answer: A. Iron oxide

Q6. (2022) A white precipitate is formed when barium chloride reacts with:

- A. NaOH



- B. HCl
- C. Na_2SO_4
- D. KNO_3

Answer: C. Na_2SO_4

Q7. (2020) Which of the following represents a decomposition reaction?

- A. $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
- B. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
- C. $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
- D. $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$

Answer: B. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

Q8. (2018) Rancidity can be prevented by:

- A. Keeping food in sunlight
- B. Adding antioxidants
- C. Keeping food in open
- D. Storing food in metal containers

Answer: B. Adding antioxidants

Q9. (2021) Identify the exothermic reaction:

- A. $\text{NH}_4\text{Cl} \rightarrow \text{NH}_3 + \text{HCl}$
- B. $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$
- C. $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$
- D. $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$ (with UV)

Answer: B. $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$

Q10. (2023) Which statement is true about a balanced chemical equation?

- A. Atoms can differ on both sides
- B. Mass of reactants > Mass of products
- C. Mass of reactants = Mass of products
- D. Reactants are always more than products

Answer: C. Mass of reactants = Mass of products

Q11. (2020) The process of rusting involves:

- A. Only oxygen
- B. Only moisture
- C. Oxygen and moisture
- D. Sunlight

Answer: C. Oxygen and moisture

Q12. (2019) In the reaction $2\text{FeSO}_4 \rightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$, the type of reaction is:

- A. Combination
- B. Displacement
- C. Decomposition

D. Neutralisation

Answer: C. Decomposition

Q13. (2022) A reaction in which heat is absorbed is called:

- A. Exothermic
- B. Endothermic
- C. Oxidation
- D. Decomposition

Answer: B. Endothermic

Q14. (2018) The reaction between lead nitrate and potassium iodide is:

- A. Displacement
- B. Combination
- C. Decomposition
- D. Double displacement

Answer: D. Double displacement

Q15. (2017) Corrosion of iron is a:

- A. Physical change
- B. Chemical change
- C. Reversible change
- D. Natural process

Answer: B. Chemical change

Section B: 2-Mark Questions

Q16. (2023) What is a balanced chemical equation? Why should it be balanced?

Answer: A balanced equation has equal numbers of atoms of each element on both sides. Balancing obeys the **Law of Conservation of Mass**.

Q17. (2022) Define combination reaction with an example.

Answer: When two or more reactants combine to form a single product.

Example: $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$

Q18. (2018) Write the balanced equation for the decomposition of lead nitrate.

Answer: $2\text{Pb(NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$

Q19. (2021) Identify the type of reaction:

$\text{Al} + \text{Fe}_2\text{O}_3 \rightarrow \text{Al}_2\text{O}_3 + \text{Fe}$

Answer: Displacement reaction (Thermite Reaction)

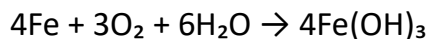
Q20. (2019) Why is respiration an exothermic reaction?

Answer: It releases energy:

$\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{energy}$

Q21. (2020) Write the chemical reaction for rusting of iron.

Answer:



Q22. (2018) What is rancidity? How can it be prevented?

Answer: Oxidation of fats and oils. Prevented by **antioxidants** or airtight packaging.

Q23. (2022) Define displacement reaction.

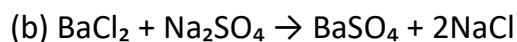
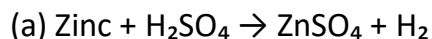
Answer: A more reactive element displaces a less reactive one.



Q24. (2023) What are antioxidants?

Answer: Substances that prevent oxidation, used in food preservation.

Q25. (2019) Products formed when:



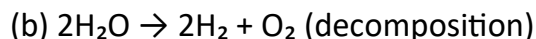
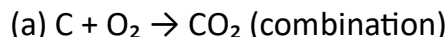
Q26. (2020) Give one example each of:

- Double displacement: $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$
- Precipitation: Formation of BaSO_4 (white ppt)

Q27. (2018) Why is paint applied on iron?

Answer: To prevent rusting (corrosion)

Q28. (2019) Balanced equations for:

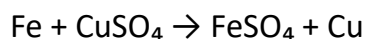


Q29. (2021) Why is balancing necessary?

Answer: To satisfy the Law of Conservation of Mass

Q30. (2023) What happens when iron is placed in copper sulphate?

Answer:



Blue color fades, brown copper deposits

Section C: Long Answer Questions (3–5 Marks)

Q31. (2021) What are decomposition reactions? Give 3 types with equations.

Answer:

- Thermal: $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
- Photolytic: $2\text{AgCl} \rightarrow 2\text{Ag} + \text{Cl}_2$

- Electrolytic: $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$

Q32. (2020) Explain 5 types of reactions with examples.

Answer:

1. Combination – $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$
2. Decomposition – $2\text{Pb(NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$
3. Displacement – $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
4. Double Displacement – $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{NaCl}$
5. Redox – $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$

Q33. (2022) What is corrosion? Mechanism and prevention?

Answer:

- Iron reacts with air and moisture:
 $4\text{Fe} + 3\text{O}_2 + 6\text{H}_2\text{O} \rightarrow 4\text{Fe(OH)}_3$
- Prevention: painting, galvanization

Q34. (2019) Explain with examples:

- (i) Combination: $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$
- (ii) Displacement: $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
- (iii) Double Displacement: $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \rightarrow \text{BaSO}_4 + \text{NaCl}$

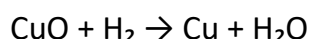
Q35. (2023) What are oxidation and reduction? Give a redox example.

Answer:

Oxidation: Gain of O_2 / Loss of H_2

Reduction: Loss of O_2 / Gain of H_2

Example:



Q36. (2018) State the law of conservation of mass. Prove with example.

Answer:

Mass is neither created nor destroyed.

Example: $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$ (same atoms on both sides)

Q37. (2021) How to identify chemical reactions? Give 4 indicators.

Answer:

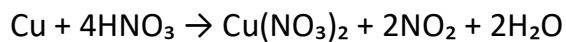
- Change in color
- Gas evolved
- Heat/Light emitted



- Precipitate formed

Q38. (2019) Describe reaction of copper with nitric acid.

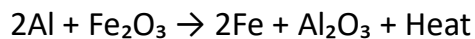
Answer:



Observation: Brown NO_2 gas, blue solution

Q39. (2020) Explain the thermite reaction.

Answer:



Used in rail welding

Q40. (2022) Compare decomposition and combination reactions.

Answer:

Reaction Type	Example	Description
Combination	$\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2$	Two substances combine
Decomposition	$2\text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$	One compound breaks into parts