

CLASS 11

CHEMISTRY

EXTRA QUESTIONS

Class 11 Chemistry Chapter 7 Redox Reactions – Extra Questions with Answers

Extra practice questions for Class 11 Chemistry Chapter 7 (Redox Reactions), beyond the textbook. These Class 11 Chemistry Chapter 7 important questions are handy for last-minute exam practice.

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Extra practice questions for Class 11 Chemistry Chapter 7 (Redox Reactions), beyond the textbook. These Class 11 Chemistry Chapter 7 important questions are handy for last-minute exam practice.

Very Short Answer Questions (1 mark)

Q1. What is the oxidation number of oxygen in H_2O_2 (hydrogen peroxide)?

Ans: -1 .

Q2. What happens to the oxidation number of an element during oxidation?

Ans: It increases.

Q3. Where does oxidation occur in a galvanic cell?

Ans: At the anode.

Q4. What is the oxidation number of an element in its free (uncombined) state?

Ans: Zero.

Q5. Name the two common methods of balancing redox equations.

Ans: Oxidation number method and ion-electron (half-reaction) method.

Short Answer Questions (2–3 marks)

Q6. Find the oxidation number of Mn in KMnO_4 .

Ans: $\text{K}=+1$, $\text{O}=-2(\times 4=-8)$. $\text{Sum}=0$: $1+\text{Mn}-8=0$, so $\text{Mn}=+7$.

Q7. Find the oxidation number of Cr in $\text{K}_2\text{Cr}_2\text{O}_4$.

Ans: $\text{K}=+1(\times 2=+2)$, $\text{O}=-2(\times 7=-14)$. $\text{Sum}=0$: $2+2\text{Cr}-14=0$, so $2\text{Cr}=12$, $\text{Cr}=+6$.

Q8. In the reaction $\text{Zn}+\text{CuSO}_4\rightarrow\text{ZnSO}_4+\text{Cu}$, identify the substance oxidized and the substance reduced.

Ans: Zn is oxidized ($0\rightarrow+2$); Cu^{2+} is reduced ($+2\rightarrow 0$).

Higher-Order Thinking / Application Questions

Q9. In the reaction $\text{Cl}_2+2\text{NaOH}\rightarrow\text{NaCl}+\text{NaOCl}+\text{H}_2\text{O}$, explain why this is classified as a disproportionation reaction, showing the oxidation number changes of chlorine.

Ans: In Cl_2 , chlorine has an oxidation number of 0 (free element). In the products, chlorine appears in two different oxidation states: in NaCl , chlorine is -1 (reduced, since it decreased from 0), and in NaOCl (sodium hypochlorite), chlorine is $+1$ (oxidized, since it increased from 0). Because the same starting element (chlorine, oxidation number 0) is simultaneously oxidized (to $+1$ in NaOCl) and reduced (to -1 in NaCl) within the same reaction, this is classified as a disproportionation reaction — a special type of redox reaction where a single species acts as both the oxidizing and reducing agent for itself.

Q10. Explain, using oxidation numbers, why the reaction $2\text{KMnO}_4+10\text{FeSO}_4+8\text{H}_2\text{SO}_4\rightarrow 2\text{MnSO}_4+5\text{Fe}_2(\text{SO}_4)_3+\text{K}_2\text{SO}_4+8\text{H}_2\text{O}$ requires 5 moles of FeSO_4 for every 1 mole of KMnO_4 , connecting this to the number of electrons transferred.

Ans: In this reaction, manganese in KMnO_4 is reduced from $+7$ (in MnO_4^-) to $+2$ (in Mn^{2+}), a gain of 5 electrons per Mn atom. Meanwhile, iron in FeSO_4 is oxidized from $+2$ (Fe^{2+}) to $+3$ (Fe^{3+}), a loss of only 1 electron per Fe atom. For the overall electron transfer to balance (total electrons lost by the reducing agent must equal total electrons gained by the oxidizing agent), 1 Mn atom gaining 5 electrons must be balanced by 5 Fe atoms each losing 1 electron, giving the 1:5 mole ratio of KMnO_4 to FeSO_4 seen in the balanced

equation — this illustrates how the ion-electron/oxidation number method fundamentally relies on equalizing total electrons lost and gained to correctly balance redox reactions.

Class 11 Chemistry Chapter 7 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the [Class 11 Chemistry Chapter 7 Solutions](#) and [Class 11 Chemistry Chapter 7 Revision Notes](#).

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