

5. How do you balance the redox reaction of Zn with Cu^{2+} in basic solution?
- a) $\text{Zn} + \text{Cu} + 4\text{OH}^- \rightarrow \text{Zn}(\text{OH})_4 + \text{Cu}^{2+} + 2\text{H}_2\text{O}$ b) $\text{Zn} + \text{Cu}^{2+} + 6\text{OH}^- \rightarrow \text{Zn}(\text{OH})_6^{2-} + \text{Cu} + 3\text{H}_2\text{O}$
- c) $\text{Zn} + \text{Cu}^{2+} + 4\text{OH}^- \rightarrow \text{Zn}(\text{OH})_4^{2-} + \text{Cu} + 2\text{H}_2\text{O}$ d) $\text{Zn} + \text{Cu}^{2+} + 2\text{OH}^- \rightarrow \text{Zn}(\text{OH})_2 + \text{Cu} + \text{H}_2\text{O}$
6. What is the oxidation state of chlorine in NaClO_3 ?
- a) +5 b) -1
c) +3 d) +1
7. Describe the steps involved in balancing a redox reaction using the half-reaction method.
- a) Combining half-reactions without balancing b) Ignoring charge balance during the process
c) Identifying only the oxidizing agent d) The steps involved in balancing a redox reaction using the half-reaction method include identifying half-reactions, balancing atoms and charges, and combining them.
8. What is the balanced equation for the oxidation of Fe^{2+} to Fe^{3+} in acidic solution?
- a) $\text{Fe}^{3+} + \text{e}^- \rightarrow \text{Fe}^{2+}$ b) $\text{Fe}^{2+} + 2\text{H}^+ \rightarrow \text{Fe}^{3+} + \text{H}_2$
c) $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + \text{e}^-$ d) $\text{Fe}^{2+} + \text{e}^- \rightarrow \text{Fe}^{4+}$
9. How do you determine the oxidation states of elements in a compound?
- a) Use only the periodic table to assign states. b) Assign oxidation states based on known rules and balance with the overall charge.
c) Ignore the overall charge of the compound. d) Oxidation states are always positive numbers.

15. What are some applications of redox reactions in everyday life?

a) Cooking food

b) Plant growth

c) Applications of redox reactions include batteries, respiration, corrosion, and bleaching.

d) Water purification

