QUIZIZZ Worksheets

Name

Mastering Redox Reactions

Total questions: 15

Worksheet time: 8mins

Instructor name: Dr. Ramanathan Saitechinfo

Class

Date

1. What is the oxidation state of sulfur in H2SO4?

   a) 0
   b) +2
   c) +6
   d) +4

2. Identify the oxidation state of nitrogen in NH3.

   a) +3
   b) -1
   c) +1
   d) -3

3. Using the half-reaction method, how would you balance the reaction of MnO4- with Fe2+ in acidic solution?

   a) MnO4- + 8H+ + 5Fe2+ -> Mn2+ + 4H2O + 5Fe3+
   b) MnO4- + 4H+ + 2Fe2+ -> Mn2+ + 2H2O + 2Fe3+
   c) MnO4- + 10H+ + 5Fe2+ -> Mn2+ + 5H2O + 5Fe3+
   d) MnO4- + 6H+ + 3Fe2+ -> Mn3+ + 3H2O + 3Fe3+

4. What is the balanced equation for the reduction of Cr2O7^2- to Cr^3+ in acidic solution?

   a) Cr2O7^2- + 8 H+ + 3 e- -> 2 Cr^3+ + 4 H2O
   b) Cr2O7^2- + 14 H+ + 6 e- -> 2 Cr^3+ + 7 H2O
   c) Cr2O7^2- + 12 H+ + 4 e- -> 2 Cr^3+ + 6 H2O
   d) Cr2O7^2- + 6 H+ + 2 e- -> Cr^3+ + 3 H2O

5. How do you balance the redox reaction of Zn with Cu2+ in basic solution?

a) Zn + Cu + 4OH- → Zn(OH)4 + Cu2+ + 2H2O

b) Zn + Cu2+ + 6OH- → Zn(OH)6^2- + Cu + 3H2O

c) Zn + Cu2+ + 4OH- → Zn(OH)4^2- + Cu + 2H2O

d) Zn + Cu2+ + 2OH- → Zn(OH)2 + Cu + H2O

6. What is the oxidation state of chlorine in NaClO3?

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 Fe2+ to Fe3+ in acidic solution?

a) Fe^3+ + e^- → Fe^2+

b) Fe^2+ + 2H^+ → Fe^3+ + H2

c) Fe^2+ → Fe^3+ + e^-

d) Fe^2+ + e^- → 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.

10. What is the balanced equation for the reaction of hydrogen peroxide (H_2O_2) with iodide ions (I^-) in basic solution?

a) $2\ H_2O_2 + I^- \rightarrow I_2 + 2\ H_2O$

b) $H_2O_2 + I^- \rightarrow I_2 + H_2O$

c) $2\ H_2O_2 + 2\ I^- \rightarrow I_2 + 2\ H_2O + 2\ OH^-$

d) $H_2O_2 + 2\ I^- \rightarrow I_2 + 2\ OH^-$

11. List a common redox reaction that occurs in batteries.

a) Combustion of methane: $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

b) Photosynthesis reaction: $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

c) Nernst equation in electrochemistry

d) Lead-acid battery reaction: $PbSO_4 + 2e^- \leftrightarrow Pb + SO_4^{2-}$ (reduction) and $PbSO_4 + 2H_2O \leftrightarrow PbO_2 + 2H^+ + SO_4^{2-}$ (oxidation)

12. Explain the role of redox reactions in photosynthesis.

a) Redox reactions in photosynthesis produce oxygen without energy conversion.

b) Photosynthesis relies solely on the absorption of water and carbon dioxide.

c) Redox reactions are not involved in the synthesis of glucose during photosynthesis.

d) Redox reactions in photosynthesis facilitate the conversion of solar energy into chemical energy by transferring electrons, leading to the formation of NADPH and ATP.

13. What is the oxidation state of carbon in CO_2?

a) 0

b) +4

c) +2

d) -4

14. How do you balance the redox reaction of Cl_2 with I^- in acidic solution?

a) $Cl_2 + 2I^- + H_2O \rightarrow 2Cl^- + I_2 + 2H^+$

b) $Cl_2 + 2I^- + 2H^+ \rightarrow 2Cl^- + I_2 + H_2O$

c) $Cl_2 + I^- \rightarrow Cl^- + I_2$

d) $Cl_2 + 4I^- + 4H^+ \rightarrow 2Cl^- + 2I_2 + 2H_2O$

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

Answer Keys

1. c) +6
2. d) -3
3. a) MnO4- + 8H+ + 5Fe2+ -> Mn2+ + 4H2O + 5Fe3+
4. b) Cr2O7^2- + 14 H+ + 6 e- -> 2 Cr^3+ + 7 H2O
5. c) Zn + Cu2+ + 4OH- → Zn(OH)4^2- + Cu + 2H2O
6. a) +5
7. 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. c) Fe^2+ → Fe^3+ + e^-
9. b) Assign oxidation states based on known rules and balance with the overall charge.
10. c) 2 H2O2 + 2 I- -> I2 + 2 H2O + 2 OH-
11. d) Lead-acid battery reaction: PbSO4 + 2e- ↔ Pb + SO4^2- (reduction) and PbSO4 + 2H2O ↔ PbO2 + 2H+ + SO4^2- (oxidation)
12. d) Redox reactions in photosynthesis facilitate the conversion of solar energy into chemical energy by transferring electrons, leading to the formation of NADPH and ATP.
13. b) +4
14. b) Cl2 + 2I- + 2H+ -> 2Cl- + I2 + H2O
15. c) Applications of redox reactions include batteries, respiration, corrosion, and bleaching.