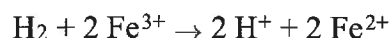


Redox 1 practice test

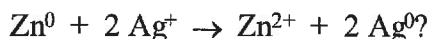
1. Given the oxidation-reduction reaction:



Which species undergoes reduction?

- A) Fe^{3+} B) H_2 C) Fe^{2+} D) H^+

2. What species is reduced in the reaction below?



- A) Ag^+ B) Zn^0 C) Ag^0 D) Zn^{2+}

3. Which expression correctly represents a balanced reduction half-reaction?

- A) $\text{Na} \rightarrow \text{Na}^+ + \text{e}^-$ B) $2 \text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$
C) $\text{Na}^+ + \text{e}^- \rightarrow \text{Na}$ D) $\text{Cl}_2 + 2\text{e}^- \rightarrow \text{Cl}^-$

4. In which substance does chlorine have an oxidation number of +1?

- A) HClO B) HCl
C) Cl_2 D) HClO_2

5. According to Reference Table J, which species is most easily reduced?

- A) F^- B) $\text{F}_2(\text{g})$ C) $\text{Li}(\text{s})$ D) Li^+

6. Which balanced equation represents a redox reaction?

- A) $\text{LiBr} \rightarrow \text{Li}^+ + \text{Br}^-$
B) $\text{PCl}_5 \rightarrow \text{PCl}_3 + \text{Cl}_2$
C) $\text{Ca}^{2+} + \text{SO}_4^{2-} \rightarrow \text{CaSO}_4$
D) $\text{KOH} + \text{HCl} \rightarrow \text{KCl} + \text{H}_2\text{O}$

7. Which half-reaction correctly represents reduction?

- A) $\text{Fe}^{2+} + \text{e}^- \rightarrow \text{Fe}^{3+}$ B) $\text{F}_2 \rightarrow 2 \text{F}^- + 2\text{e}^-$
C) $\text{Ag} \rightarrow \text{Ag}^+ + \text{e}^-$ D) $\text{Au}^{3+} + 3\text{e}^- \rightarrow \text{Au}$

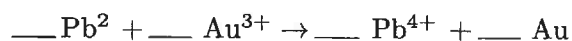
8. What is the oxidation state of phosphorus in the compound Na_3PO_3 ?

- A) +3 B) -3 C) +5 D) 0

9. In a redox reaction, there is a conservation of

- A) mass, only
B) both mass and charge
C) neither mass nor charge
D) charge, only

10. When the equation



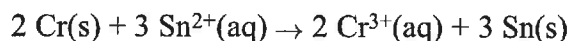
is correctly balanced using the smallest whole number coefficients, the coefficient of the Pb^{2+} will be

- A) 1 B) 2 C) 3 D) 4

11. Which metal reacts spontaneously with a solution containing zinc ions?

- A) copper B) silver
C) nickel D) magnesium

12. Given the redox reaction:



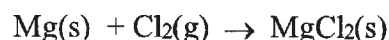
Which species serves as the reducing agent?

- A) Sn B) Cr^{3+} C) Sn^{2+} D) Cr

13. According to Reference Table J, which of these metals will react most readily with 1.0 M HCl to produce $\text{H}_2(\text{g})$?

- A) Mg B) K C) Ca D) Zn

14. Given the reaction:



Which half-reaction correctly represents the reduction that occurs?

- A) $\text{Mg}^{2+} \rightarrow \text{Mg}(\text{s}) + 2\text{e}^-$
B) $2 \text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$
C) $\text{Cl}_2(\text{g}) + 2\text{e}^- \rightarrow 2 \text{Cl}^-$
D) $\text{Mg}(\text{s}) + 2\text{e}^- \rightarrow \text{Mg}^{2+}$

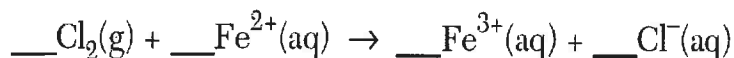
15. How many moles of electrons would be required to completely reduce 1.5 moles of Al^{3+} to Al ?

- A) 0.50 B) 1.5 C) 3.0 D) 4.5

16. Which balanced equation represents an oxidation-reduction reaction?

- A) $\text{H}_3\text{PO}_4 + 3\text{KOH} \rightarrow \text{K}_3\text{PO}_4 + 3\text{H}_2\text{O}$
B) $\text{NH}_3(\text{g}) + \text{HCl}(\text{g}) \rightarrow \text{NH}_4\text{Cl}(\text{s})$
C) $\text{Fe}(\text{s}) + \text{S}(\text{s}) \rightarrow \text{FeS}(\text{s})$
D) $\text{Ba}(\text{NO}_3)_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{NaNO}_3$

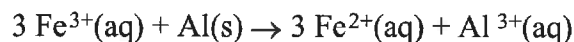
24. Given the reaction:



When the equation is correctly balanced using *smallest* whole numbers, the coefficient of $\text{Cl}^{-}(\text{aq})$ will be

- A) 1 B) 2 C) 6 D) 7

25. Given the balanced equation:



What is the total number of moles of electrons lost by 2 moles of $\text{Al}(\text{s})$?

- A) 1 mole B) 6 moles
C) 3 moles D) 9 moles

26. When an equation is correctly balanced, it must show conservation of

- A) charge but not of mass
B) mass but not of charge
C) both charge and mass
D) neither charge nor mass

27. What is the oxidation number of oxygen in OF_2 ?

- A) +1 B) +2 C) -1 D) -2

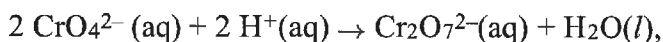
28. What are the two oxidation states of nitrogen in NH_4NO_2 ?

- A) -3 and -3 B) -3 and +3
C) +3 and +5 D) +3 and -5

29. According to Reference Table J, which species is the strongest oxidizing agent?

- A) $\text{F}_2(\text{g})$ B) F^{-} C) Li^{+} D) $\text{Li}(\text{s})$

30. In the reaction:



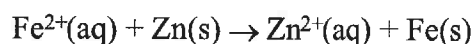
the oxidation number of chromium

- A) decreases B) increases
C) remains the same

31. Which equation shows conservation of charge?

- A) $\text{Fe} \rightarrow \text{Fe}^{2+} + \text{e}^{-}$ B) $\text{Fe} + 2\text{e}^{-} \rightarrow \text{Fe}^{2+}$
C) $\text{Fe} + 2\text{e}^{-} \rightarrow \text{Fe}^{3+}$ D) $\text{Fe} \rightarrow \text{Fe}^{2+} + 2\text{e}^{-}$

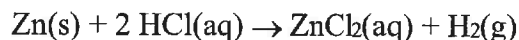
32. Given the redox reaction:



Which species acts as a reducing agent?

- A) $\text{Zn}^{2+}(\text{aq})$ B) $\text{Fe}(\text{s})$
C) $\text{Zn}(\text{s})$ D) $\text{Fe}^{2+}(\text{aq})$

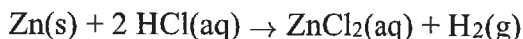
33. Given the reaction:



Which equation represents the correct oxidation half-reaction?

- A) $2 \text{H} + 2\text{e}^{-} \rightarrow \text{H}_2(\text{g})$
B) $\text{Zn}(\text{s}) \rightarrow \text{Zn}^{2+} + 2\text{e}^{-}$
C) $2 \text{Cl}^{-} \rightarrow \text{Cl}_2(\text{g}) + 2\text{e}^{-}$
D) $\text{Zn}^{2+} + 2\text{e}^{-} \rightarrow \text{Zn}(\text{s})$

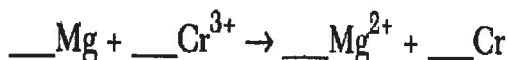
34. Given the reaction:



Which statement correctly describes what occurs when this reaction takes place in a closed system?

- A) Atoms of $\text{Zn}(\text{s})$ gain electrons and are reduced.
B) There is a net gain of mass.
C) Atoms of $\text{Zn}(\text{s})$ lose electrons and are oxidized.
D) There is a net loss of mass.

35. Given the reaction:



When the equation is correctly balanced using smallest whole numbers, the sum of the coefficients will be

- A) 10 B) 7 C) 5 D) 4

Answer Key
redox 1 practice test

1. A
 2. A
 3. C
 4. A
 5. B
 6. B
 7. D
 8. A
 9. B
 10. C
 11. D
 12. D
 13. B
 14. C
 15. D
 16. C
 17. B
 18. A
 19. B
 20. B
 21. D
 22. C
 23. D
 24. B
 25. B
 26. C
 27. B
 28. B
 29. A
 30. C
 31. D
 32. C
 33. B
 34. C
 35. A
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