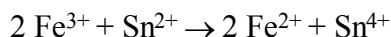


1. Given the reaction:



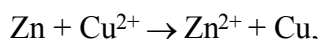
Which species is reduced?

- A) Fe^{3+} B) Sn^{2+} C) Fe^{2+} D) Sn^{4+}

2. Which half-reaction correctly represents reduction?

- A) $\text{Al}(\text{s}) \rightarrow \text{Al}^{3+}(\text{aq}) + 3\text{e}^-$
B) $\text{H}_2(\text{g}) + 2\text{e}^- \rightarrow 2 \text{H}^+(\text{aq})$
C) $\text{I}_2(\text{s}) \rightarrow 2 \text{I}^-(\text{aq}) + 2\text{e}^-$
D) $\text{Cu}^{2+}(\text{aq}) + 2\text{e}^- \rightarrow \text{Cu}(\text{s})$

3. In the reaction



the Cu^{2+}

- A) gains protons B) loses electrons
C) is reduced D) is oxidized

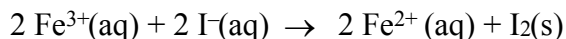
4. Which half-reaction correctly represents reduction?

- A) $\text{Cr}^{3+} + 3\text{e}^- \rightarrow \text{Cr}(\text{s})$
B) $\text{Cr}^{3+} \rightarrow \text{Cr}(\text{s}) + 3\text{e}^-$
C) $\text{Cr}(\text{s}) \rightarrow \text{Cr}^{3+} + 3\text{e}^-$
D) $\text{Cr}(\text{s}) + 3\text{e}^- \rightarrow \text{Cr}^{3+}$

5. Which occurs in the half-reaction $\text{Na}(\text{s}) \rightarrow \text{Na}^+ + \text{e}^-$?

- A) $\text{Na}(\text{s})$ is reduced.
B) $\text{Na}(\text{s})$ is oxidized.
C) $\text{Na}(\text{s})$ gains electrons.
D) Na^+ is oxidized.

6. In the reaction:



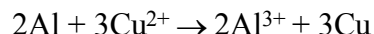
What is reduced?

- A) $\text{Fe}^{2+}(\text{aq})$ B) $\text{Fe}^{3+}(\text{aq})$
C) $\text{I}^-(\text{aq})$ D) $\text{I}_2(\text{s})$

7. Which half-reaction equation represents the reduction of an iron(II) ion?

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

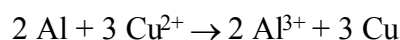
8. Given the balanced equation representing a redox reaction:



Which statement is true about this reaction?

- A) Each Al loses 2e^- and each Cu^{2+} gains 3e^- .
B) Each Al loses 3e^- and each Cu^{2+} gains 2e^- .
C) Each Al^{3+} gains 2e^- and each Cu loses 3e^- .
D) Each Al^{3+} gains 3e^- and each Cu loses 2e^- .

9. Given the equation:



The reduction half-reaction is

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

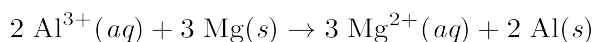
10. Which type of reaction involves the transfer of electrons?

- A) alpha decay
B) double replacement
C) neutralization
D) oxidation-reduction

11. In an oxidation-reduction reaction, the number of electrons lost is

- A) equal to the number of electrons gained
B) equal to the number of protons gained
C) less than the number of electrons gained
D) less than the number of protons gained

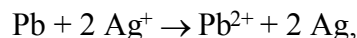
12. Given the balanced ionic equation representing a reaction:



In this reaction, electrons are transferred from

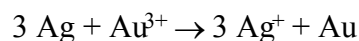
- A) Al to Mg^{2+} B) Al^{3+} to Mg
C) Mg to Al^{3+} D) Mg^{2+} to Al

13. In the reaction:



the Ag^+ is

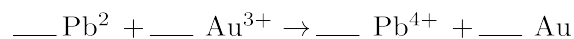
- A) reduced, and the oxidation number changes from +1 to 0
 - B) reduced, and the oxidation number changes from +2 to 0
 - C) oxidized, and the oxidation number changes from 0 to +1
 - D) oxidized, and the oxidation number changes from +1 to 0
14. For a redox reaction to occur, there must be a transfer of
- A) protons
 - B) neutrons
 - C) electrons
 - D) ions
15. Given the reaction:



Which equation correctly represents the oxidation half-reaction?

- A) $3\text{Ag} + 3\text{e}^- \rightarrow 3\text{Ag}^+$
 - B) $3\text{Ag} \rightarrow 3\text{Ag}^+ + 3\text{e}^-$
 - C) $\text{Au}^{3+} + 3\text{e}^- \rightarrow \text{Au}$
 - D) $\text{Au}^{3+} \rightarrow \text{Au} + 3\text{e}^-$
16. Which is true when an Sn^{2+} ion is reduced?
- A) Its oxidation number increases.
 - B) It gains electrons.
 - C) Its mass decreases.
 - D) It acts as a reducing agent.

17. 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
18. Given the reaction:
- $$__ \text{Mg} + __ \text{Cr}^{3+} \rightarrow __ \text{Mg}^{2+} + __ \text{Cr}$$
- 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
19. The chemical process in which electrons are gained by an atom or an ion is called
- A) addition
 - B) oxidation
 - C) reduction
 - D) substitution
20. In which type of chemical reaction are electrons transferred?
- A) organic addition
 - B) oxidation-reduction
 - C) double replacement
 - D) acid-base neutralization