

Grade 10 Unit 6 Quiz: Redox and Electrochemistry

Electron accounting, cells, electrolysis, and corrosion evidence

Name: _____

Date: _____

Time: 30 minutes. Calculator permitted. Cell diagrams and performance cards are fictional models; distinguish thermodynamic tendency from product claims.

1. In $\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$, which species is oxidized? [1 pts]

- A. Zn
- B. Cu^{2+}
- C. Cu
- D. both ions

2. Assign oxidation numbers to S in SO_4^{2-} and S^{2-} . Identify reduction or oxidation between them. [2 pts]

3. A galvanic cell has $E^\circ_{\text{cathode}} = +0.34 \text{ V}$ and $E^\circ_{\text{anode}} = -0.76 \text{ V}$. Calculate E°_{cell} . [2 pts]

4. State electron-flow direction in an external galvanic-cell circuit and explain why. [2 pts]

5. A cell diagram is $\text{Zn}|\text{Zn}^{2+}||\text{Cu}^{2+}|\text{Cu}$. Label anode and cathode, and name the role of the salt bridge. [3 pts]

6. An electrolytic cell is powered externally. What role does the power source play that differs from a galvanic cell? [2 pts]

-
7. A nail corrodes faster in a fictional saltwater comparison than in distilled water. State one supported comparison and one extra variable needed before claiming salt alone caused the difference. [2 pts]
-

-
8. A positive calculated cell potential proves a battery is safe and will last for years. Identify the error and state what the calculation supports instead. [2 pts]
-