Redox Reactions & Galvanic Cells

STUDENT PRACTICE WORKSHEET

Name: _____ Date: _____

Directions: Circle the best answer for 1–6. Show your full reasoning and units for 7–8. Compare with the separate key after completing the page.

Part A — Concept checks

1. **Oxidation means…**

   A. gain electrons B. lose electrons C. gain protons D. lose neutrons

2. **In a galvanic cell, oxidation occurs at the…**

   A. cathode B. salt bridge C. anode D. voltmeter

3. **Electrons travel through the external wire from…**

   A. cathode to anode B. anode to cathode C. salt bridge to cathode D. electrolyte to electrolyte only

4. **In the Zn/Cu galvanic cell, which species is oxidized?**

   A. Cu^{2+} B. Cu(s) C. Zn(s) D. Zn^{2+}

5. **E°cathode = 0.80 V and E°anode(reduction) = 0.20 V. E°cell = …**

   A. −1.00 V B. 0.60 V C. 1.00 V D. 0.16 V

6. **The salt bridge primarily allows…**

   A. electron travel in metal wire B. ion movement to maintain charge balance C. creation of new electrons D. the electrode metals to mix directly

Part B — Application and explanation

7. For Zn(s) | Zn^{2+}(aq) || Cu^{2+}(aq) | Cu(s), calculate E°cell.

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8. Explain why this guideline matters, with an example of what could go wrong if you ignore it: Electrons flow in the external wire from anode to cathode. In a galvanic cell, the anode is negative; sign conventions differ for electrolytic cells.

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REFERENCE RELATIONSHIP

E°cell = E°cathode(reduction) − E°anode(reduction)