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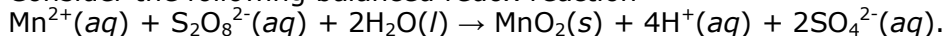
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1. 019 Chapter #011

Consider the following balanced redox reaction



Which of the following statements is true?

Student Response

- a. $\text{Mn}^{2+}(\text{aq})$ is the oxidizing agent and is reduced.
- b. $\text{Mn}^{2+}(\text{aq})$ is the oxidizing agent and is oxidized.
- c. $\text{Mn}^{2+}(\text{aq})$ is the reducing agent and is oxidized.
- d. $\text{Mn}^{2+}(\text{aq})$ is the reducing agent and is reduced.
- e. Manganese does not change its oxidation number in this reaction.

2. 019 Chapter #050

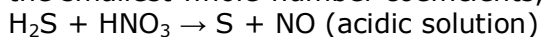
A voltaic cell consists of a Cd/Cd²⁺ electrode ($E^\circ = -0.40 \text{ V}$) and a Fe/Fe²⁺ electrode ($E^\circ = -0.44 \text{ V}$). If $E_{\text{cell}} = 0$ and the temperature is 25°C, what is the ratio $[\text{Fe}^{2+}]/[\text{Cd}^{2+}]$?

Student Response

- a. 2×10^1
- b. 1×10^1
- c. 1
- d. 1×10^{-1}
- e. 5×10^{-2}

3. 019 Chapter #001

Complete and balance the following redox equation. When properly balanced using the smallest whole-number coefficients, the coefficient of S is:



Student

Response

a. 1.

b. 2.

c. 3.

d. 5.

e. 6.

4. 019 Chapter #017

What is the name given to the apparatus where reduction occurs in a cell where electricity flows?

Student Response

a. cathode

b. electrode

c. galvanic cell

d. anode

e. voltaic cell

5. 019 Chapter #065

What product forms at the cathode during the electrolysis of molten lithium iodide?

Student Response

a. $\text{Li}^+(l)$

b. $\text{Li}(l)$

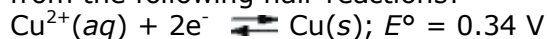
c. $\text{I}^-(l)$

d. $\text{I}_2(g)$

e. $\text{I}_3^-(l)$

6. 019 Chapter #026

A cell can be prepared from copper and tin. What is the E°_{cell} for the cell that forms from the following half-reactions?



Student
Response

a. 0.47 V

b. 0.21 V

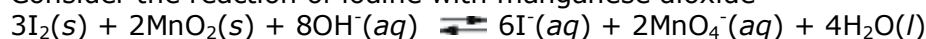
c. -0.21 V

d. -0.47 V

e. 0.42 V

7. **019 Chapter #042**

Consider the reaction of iodine with manganese dioxide



The equilibrium constant for the overall reaction is 8.30×10^{-7} . Calculate E°_{cell} for the reaction at 25°C.

Student Response

a. -0.36 V

b. -0.18 V

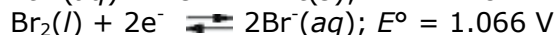
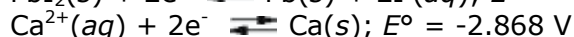
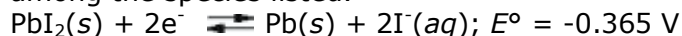
c. -0.12 V

d. -0.060 V

e. None of these choices is correct.

8. **019 Chapter #033**

Examine the following half-reactions and select the strongest reducing agent among the species listed.



Student
Response

- a. $\text{Pb}(s)$
- b. $\text{Ca}(s)$
- c. $\text{Pt}(s)$
- d. $\text{Br}^-(aq)$
- e. $\text{Pt}^{2+}(aq)$

9. 019 Chapter #061

Predict the *products* obtained from electrolysis of a 1 M AlBr_3 solution. Note that
 $2\text{H}_2\text{O}(l) + 2e^- \rightarrow \text{H}_2(g) + 2\text{OH}^-(aq)$, $E^\circ = -0.83 \text{ V}$, and
 $\text{O}_2(g) + 4\text{H}^+(aq) + 4e^- \rightarrow 2\text{H}_2\text{O}(l)$, $E^\circ = +1.23 \text{ V}$
 $\text{Br}_2(l) + 2e^- \rightarrow 2\text{Br}^-(aq)$ $E^\circ = 1.08\text{V}$
 $\text{Al}^{2+}(aq) + 3e^- \rightarrow \text{Al}(s)$ $E^\circ = -1.66$

Student Response

- a. Al and Br_2
- b. Al and O_2
- c. H_2 and O_2
- d. H_2 and Br_2
- e. Al and H_2

10. 019 Chapter #075

Given the following
 $\text{Cu}^{2+}(aq) + 2e^- \rightarrow \text{Cu}(s)$ $E^\circ = 0.337\text{V}$
 $\text{Al}^{3+}(aq) + 3e^- \rightarrow \text{Al}(s)$ $E^\circ = -1.66\text{V}$
 $\text{Na}^+(aq) + 1e^- \rightarrow \text{Na}(s)$ $E^\circ = -2.714\text{V}$
 Which of the following reactions will occur?

Student Response

- a. $2\text{Na}(aq) + \text{Cu}(s) \rightarrow \text{Cu}^{2+}(aq) + 2\text{Na}(s)$ $E^\circ_{\text{cell}} = -3.051\text{V}$
- b. $\text{Al}(s) + 3\text{Na}^+(aq) \rightarrow \text{Al}(aq) + 3\text{Na}(s)$ $E^\circ_{\text{cell}} = -1.054\text{V}$
- c. $2\text{Na}(s) + \text{Cu}^{2+}(aq) \rightarrow \text{Cu}(s) + 2\text{Na}(aq)$ $E^\circ_{\text{cell}} = 3.051\text{V}$
- d. $2\text{Al}(aq) + 3\text{Cu}(s) \rightarrow 3\text{Cu}^{2+}(aq) + 2\text{Al}(s)$ $E^\circ_{\text{cell}} = -1.991\text{V}$
- e. $2\text{Al}(aq) + 3\text{Cu}(s) \rightarrow 3\text{Cu}^{2+}(aq) + 2\text{Al}(s)$ $E^\circ_{\text{cell}} = 1.991\text{V}$