

For help with these problems

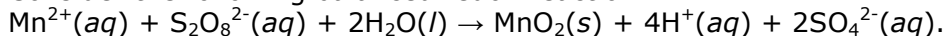
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Chemistry_Questions_0067

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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**

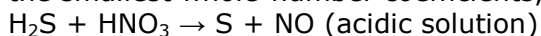
A voltaic cell consists of a Cd/Cd²⁺ electrode ($E^\circ = -0.40 \text{ V}$) and a Fe/Fe²⁺ electrode ($E^\circ = -0.44 \text{ V}$). If $E_{\text{cell}} = 0$ and the temperature is 25°C, what is the ratio $[\text{Fe}^{2+}]/[\text{Cd}^{2+}]$?

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. $\text{Li}(l)$

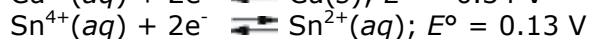
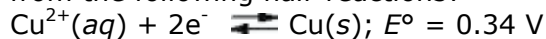
c. $\text{I}^-(l)$

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

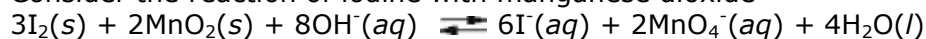
c. -0.21 V

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

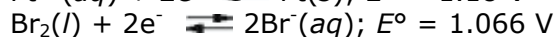
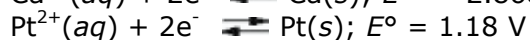
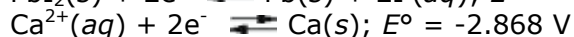
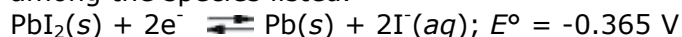
c. -0.12 V

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. Pb(s)
- b. Ca(s)
- c. Pt(s)
- d. Br⁻(aq)
- e. Pt²⁺(aq)

9. 019 Chapter #061

Predict the *products* obtained from electrolysis of a 1 M AlBr₃ solution. Note that
 $2\text{H}_2\text{O}(\text{l}) + 2\text{e}^- \rightarrow \text{H}_2(\text{g}) + 2\text{OH}^-(\text{aq}), E^\circ = -0.83 \text{ V}$, and
 $\text{O}_2(\text{g}) + 4\text{H}^+(\text{aq}) + 4\text{e}^- \rightarrow 2\text{H}_2\text{O}(\text{l}), E^\circ = +1.23 \text{ V}$
 $\text{Br}_2(\text{l}) + 2\text{e}^- \rightarrow 2\text{Br}^-(\text{aq}) E^\circ = 1.08\text{V}$
 $\text{Al}^{2+}(\text{aq}) + 3\text{e}^- \rightarrow \text{Al}(\text{s}) E^\circ = -1.66$

Student Response

- a. Al and Br₂
- b. Al and O₂
- c. H₂ and O₂
- d. H₂ and Br₂
- e. Al and H₂

10. 019 Chapter #075

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

Student Response

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

