

HW09 - REDOX and Electrochemical Cells

Started: Mar 22 at 11:16am

Quiz Instructions

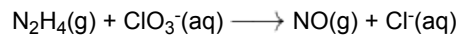
Homework 09

REDOX and Electrochemical Cells

Question 1

4 pts

Balance the skeletal equation of hydrazine with chlorate ions, shown below:



The reaction takes place in basic solution. What is the smallest possible integer coefficient of ClO_3^- in the balanced equation?

4

1

2

3

Question 2

3 pts

Identify the reducing agent in the reaction in question 1.

N_2H_4

NO

Cl^-

ClO_3^-

Question 3

3 pts

In the reaction of thiosulfate ion with chlorine gas in an acidic solution, what is the reducing agent?

 $\text{S}_2\text{O}_3^{2-}$ Cl_2 S^{2+} Cl **Question 4**

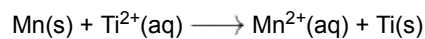
4 pts

Balance the reaction in question 3 using oxidation and reduction half-reactions. What is the smallest possible integer coefficient of SO_4^{2-} in the combined balanced equation?

 2 1 3 4**Question 5**

4 pts

Consider the cell reaction represented by the skeletal equation:



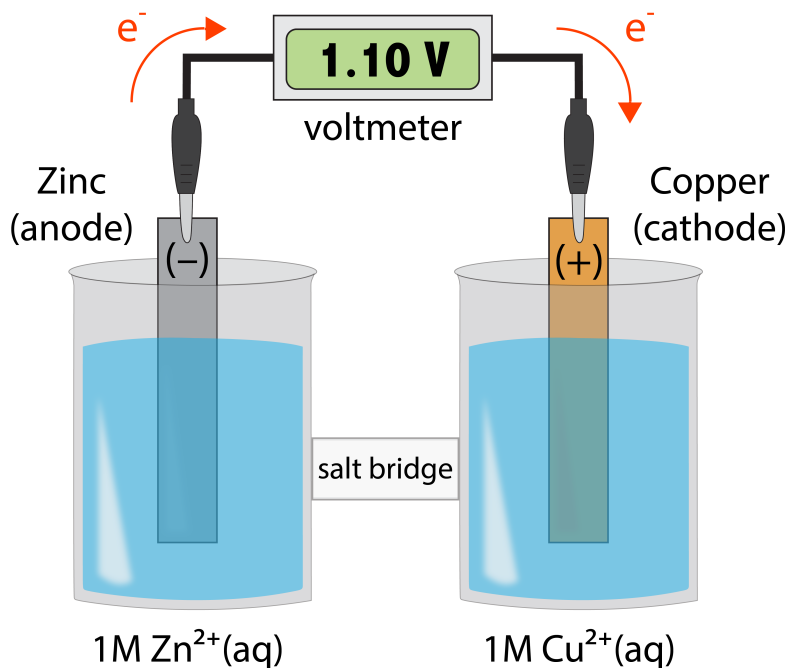
What is the proper cell diagram for this reaction?

 $\text{Mn}(\text{s}) \mid \text{Mn}^{2+}(\text{aq}) \parallel \text{Ti}^{2+}(\text{aq}) \mid \text{Ti}(\text{s})$ $\text{Mn}^{2+}(\text{aq}) \mid \text{Mn}(\text{s}) \parallel \text{Ti}(\text{s}) \mid \text{Ti}^{2+}(\text{aq})$ $\text{Ti}(\text{s}) \mid \text{Ti}^{2+}(\text{aq}) \parallel \text{Mn}^{2+}(\text{aq}) \mid \text{Mn}(\text{s})$

$\text{Ti}^{2+}(\text{aq}) \mid \text{Ti}(\text{s}) \parallel \text{Mn}(\text{s}) \mid \text{Mn}^{2+}(\text{aq})$

Question 6

4 pts



In this electrochemical cell, what is the reduction half reaction?

- $\text{Cu}^{2+}(\text{aq}) + 2\text{e}^{-} \longrightarrow \text{Cu}(\text{s})$
- $\text{Zn}(\text{s}) \longrightarrow \text{Zn}^{2+}(\text{aq}) + 2\text{e}^{-}$
- $\text{Cu}(\text{s}) \longrightarrow \text{Cu}^{2+}(\text{aq}) + 2\text{e}^{-}$
- $\text{Zn}^{2+}(\text{aq}) + 2\text{e}^{-} \longrightarrow \text{Zn}(\text{s})$

Question 7

4 pts

In a galvanic cell...

- oxidation and reduction take place at the same time, but at different electrodes
- electrical energy is used to reverse spontaneous chemical reactions

electrolytes are added to carry electrons between electrodes

oxidation takes place at the cathode

Question 8

4 pts

In a working electrochemical cell (a galvanic cell or a battery), the cations in the salt bridge move toward the cathode.

True

False

It depends on the charge of the cation.

It is impossible to tell unless we know if the cathode is "+" or "-".

Quiz saved at 11:17am

Submit Quiz