

Non Sibi High School

Andover's Chem 300: Accelerated/Honors Chemistry

Chapter 16, Review Quiz 1

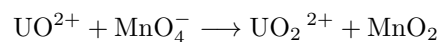
1

Determine all oxidation numbers in:

- As³⁻
- F₂
- HO₂⁻
- IO₄⁻
- KH

2

Determine all oxidation numbers, identify the reducing agent and oxidizing agent, and balance the following equation that occurs in aqueous acidic solution using the smallest possible whole-number coefficients:



3

Rank the solid alkali metals K, Li, and Na from weakest to strongest reducing agent under standard conditions. Justify your answer using a table of standard reduction potentials.

4

Rank the aqueous cations Ag⁺, Al³⁺, and Cd²⁺ from weakest to strongest oxidizing agent under standard conditions. Justify your answer using a table of standard reduction potentials.

5

For each spontaneous reaction below, calculate E_{cell}° and then balance the equation.

- chlorine gas + aqueous potassium bromide
- solid aluminum metal + aqueous hydrochloric acid
- solid gold metal + aqueous nitric acid
- solid zinc metal + aqueous cadmium(II) nitrate

6

A galvanic cell was constructed using a strip of nickel metal and a strip of aluminum metal, a 1 M solution of NiSO_4 and a 1 M solution of $\text{Al}(\text{NO}_3)_3$, and an aqueous solution of NaNO_3 in the salt bridge. For the spontaneous reaction that occurred, calculate E_{cell}° and ΔG° , then balance the equation. Also sketch the galvanic cell.

7

Calculate the minimum voltage required to bring about the reaction $\text{Cr}^{3+}(\text{aq}) + \text{Ag}(\text{s}) \longrightarrow \text{Cr}(\text{s}) + \text{Ag}^+(\text{aq})$ by electrolysis under standard conditions, then balance the equation.

8

For the electrolysis of molten NaI , write the half-reaction that occurs at the anode and the half-reaction that occurs at the cathode, then balance the equation.

9

For the electrolysis of molten NaI , if the electrolysis proceeds for 2.65 days using a current of 3.75 A, how many kilograms of I_2 will be produced?

10

For the electrolysis of molten KCl , using a current of 0.285 A, how many hours must the electrolysis proceed to produce 888 mL of Cl_2 gas, measured at 28°C and 724 torr?



This work is licensed under a
Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License

Contact: kcardozo@andover.edu