

This print-out should have 8 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering. V1:1, V2:1, V3:1, V4:1, V5:2.

Please make sure you write your version numbers on your scantron. Good luck!

Convert E to K

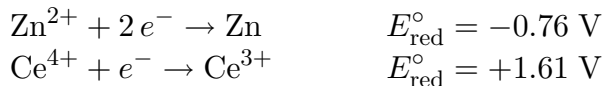
26:09, general, multiple choice, > 1 min, fixed.

001 (part 1 of 1) 5 points

What is the equilibrium constant for the reaction taking place at room temperature ($T = 25^\circ\text{C}$) in the battery



Assume that the number of electrons transferred in the reaction is $n = 2$.



1. 1.33×10^{80} **correct**

2. 2.37

3. 6.52×10^{79}

4. 1.84×10^2

5. 1.44×10^2

Explanation:

Cell Current

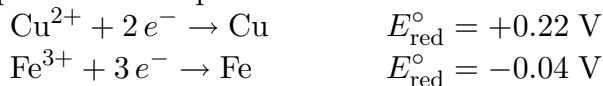
26:04, general, multiple choice, > 1 min, fixed.

002 (part 1 of 1) 5 points

What is the average current generated in the



electrochemical cell if 50 g of Cu(s) are used up in a 24 hour period?



1. 1.76 Amp **correct**

2. 42.17 Amp

3. 13.00 Amp

4. 111.85 Amp

5. 2.64 Amp

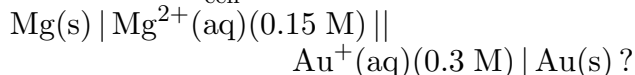
Explanation:

Nernst Calc

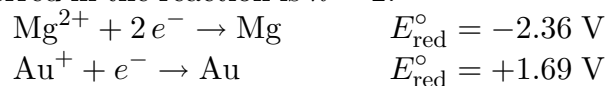
26:08, general, multiple choice, > 1 min, fixed.

003 (part 1 of 1) 5 points

What is the E_{cell} for



Assume that the number of electrons transferred in the reaction is $n = 2$.



1. 4.04 V **correct**

2. 4.08 V

3. 3.2×10^{-2} V

4. 4.03 V

5. 4.01 V

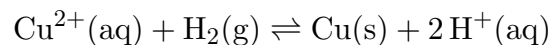
Explanation:

Rctn Rate

20:01, general, multiple choice, > 1 min, fixed.

004 (part 1 of 1) 5 points

What is the rate for the formation of Cu(s) in the reaction



if $\frac{\Delta[\text{H}^+]}{\Delta t} = 1.2 \times 10^{-3}$?

1. 6×10^{-4} **correct**

2. 2.4×10^{-3}

3. 1.2×10^{-3}

4. 3×10^{-4}

5. 2×10^{-4}

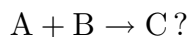
Explanation:

Rate Law 01

20:04, general, multiple choice, > 1 min, fixed.

005 (part 1 of 1) 5 points

What is the rate law for the reaction



The following data were collected.

Exp	[A] ₀	[B] ₀	Initial Rate
1	0.5	1.2	1.40×10^{-3}
2	1.7	1.2	1.40×10^{-3}
3	0.5	0.7	4.76×10^{-4}

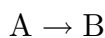
1. rate = $9.72 \times 10^{-4} [A]^0 [B]^2$ **correct**2. rate = $5.6 \times 10^{-3} [A]^2 [B]^0$ 3. rate = $1.94 \times 10^{-3} [A]^0 [B]^2$ 4. rate = $4.67 \times 10^{-3} [A]^2 [B]^1$ 5. rate = $2.33 \times 10^{-3} [A]^0 [B]^2$ **Explanation:**

Rate Law 02

20:02, general, multiple choice, > 1 min, fixed.

006 (part 1 of 1) 5 points

For the reaction

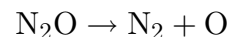
the initial concentration of [A] is 0.1 M. How much of compound [A] is left after 60 minutes if $k = 4.2 \times 10^{-6} \text{ s}^{-1}$?1. 9.8×10^{-2} **correct**2. 4.1×10^{-1} 3. 8.5×10^{-2} 4. 1.0×10^{-1} 5. 3.2×10^{-2} **Explanation:**

Arrhenius Calc

20:07, general, multiple choice, > 1 min, fixed.

007 (part 1 of 1) 5 points

What is the rate constant for the reaction

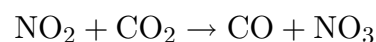
if the reaction occurs at room temperature ($T = 25^\circ\text{C}$) with a pre-exponential factor of $8.0 \times 10^{12} \text{ s}^{-1}$ and an activation energy of 250 kJ/mol.1. 1.27×10^{-31} **correct**2. 1.62×10^{-30} 3. 7.23×10^{10} 4. 9.07×10^9 5. 3.21×10^8 **Explanation:**

Rctn Mechanism

20:06, general, multiple choice, > 1 min, fixed.

008 (part 1 of 1) 5 points

The reaction

has a rate law that is second order in NO_2 . Which of these statements describes the mechanism that explains this unexpected rate law?1. A multi-step reaction mechanism in which a first bimolecular collision between NO_2 molecules is the rate determining step. **correct**2. A single-step reaction mechanism in which a bimolecular collision between NO_2 molecules is the rate determining step.3. A single-step reaction mechanism in which a bimolecular collision between NO_2 and CO_2 is the rate determining step.

4. A multi-step reaction mechanism in which

a first unimolecular decomposition of NO_2 is the rate determining step.

5. A single-step reaction mechanism in which a first unimolecular decomposition of NO_2 is the rate determining step.

Explanation: