B9 · Extra practice

Original diploma-style practice | Items 1-2

Extra practice for this lesson. Original questions, not released diploma items. Select one option for multiple choice; other tasks state the required response.

Use the givens and conditions in each prompt. Enter the requested count, coefficient, oxidation number or potential with the stated unit and precision.

B9-D01 · Multiple choice

In $NaNO_3(aq)$, why is water reduced at the cathode instead of Na^+?

A. Water has a higher table value than Na^+
B. Na^+ is a negative ion
C. Water is a solid
D. Na^+ has no charge

Response: _____

B9-D02 · Multiple choice

In NaI(aq) with inert electrodes, which is oxidized at the anode, I^- (+0.54 V) or water (+1.23 V)?

A. Water, because it has the higher value
B. I^-, because it has the lower value
C. Neither
D. Na^+

Response: _____

B9 · Extra practice

Original diploma-style practice | Items 3-4

B9-D03 · Numerical response

For the electrolysis of NaI(aq) with inert electrodes, what is E°cell in volts to two decimal places? Use water −0.83 V and I_2/I^- +0.54 V.

Response: _____

B9-D04 · Select all that apply

Select every correct statement about $CuSO_4$(aq) with inert electrodes.

A. Copper metal forms at the cathode
B. Oxygen gas forms at the anode
C. The pH near the anode rises
D. The blue colour fades

Response: _____

B9 · Extra practice

Original diploma-style practice | Items 5-6

B9-D05 · Numerical response

In $2Cu^{2+} + 2H_2O \rightarrow 2Cu + O_2 + __H^+$, what coefficient of H^+ balances the equation? Enter an integer.

Response: _____

B9-D06 · Matching

Match each solution (inert electrodes) to the product at the cathode.

Items to match:

1. $NaNO_3(aq)$
2. $CuSO_4(aq)$
3. $AgNO_3(aq)$

Targets:

A. H_2 gas
B. Cu metal
C. Ag metal

Response: _____

B9 · Extra practice

Original diploma-style practice | Items 7-8

B9-D07 · Multiple choice

What is the chloride anomaly?

A. Chloride is reduced at the cathode
B. Chlorine forms at the anode of NaCl(aq) even though the table predicts oxygen
C. Chloride ions have no charge
D. Chlorine is never made

Response: _____

B9-D08 · Numerical response

For the electrolysis of NaBr(aq) with inert electrodes, what is E°cell in volts to two decimal places? Use water −0.83 V and Br_2/Br^- +1.07 V.

Response: _____

B9 · Extra practice

Original diploma-style practice | Items 9-10

B9-D09 · Ordering / ranking

Arrange the steps for predicting an aqueous electrolysis.

First to last

1. Write the halves and match the electrons
2. List what is present, including water and the electrodes
3. Calculate E°cell and predict observations
4. Choose the cathode reaction from the highest value
5. Choose the anode reaction from the lowest value

Response: _____

B9-D10 · Numerical response

In the electrolysis of $Na_2SO_4(aq)$, how many moles of H_2 form for each 1 mol of O_2? Enter an integer.

Response: _____

B9 · Extra practice

Original diploma-style practice | Items 11-12

B9-D11 · Multiple choice

In $CuSO_4(aq)$ with inert electrodes, what happens to the pH near the anode?

A. It rises
B. It falls
C. It stays the same
D. It becomes 14

Response: _____

B9-D12 · Written response

A student says the minimum voltage given by the table guarantees the predicted product. Use aqueous NaCl to explain what is wrong.

Response: _____