

Name: _____

Date: _____

Lab Section: _____

Prelab Assignment: Electrolytic Determination of Equivalent Mass

Consider the following observations and data obtained during an electrolysis experiment similar to the one you will be performing in lab.

A student weighed an unknown metal and obtained an initial mass of 7.466 g. After completing the first electrolysis, he collected 49.48 mL of hydrogen gas. After completing the second electrolysis, he collected 45.02 mL of hydrogen gas. The student then weighed the metal again and obtained a final mass of 7.233 g.

The student also measured the temperature of the electrolyte solution as 25.0 °C, and the barometric pressure as 741.2 torr. Note that the vapor pressure of water at 25.0 °C is 23.8 torr.

Complete the following:

1. Partial Pressure of H₂ gas collected = _____ torr = _____ atm

Hint: Review the concept of "collection of gases over water" which is covered in Chem 11 in the Gases chapter.

2. Total volume of H₂ gas collected = _____ L

3. T = _____ K

4. Number of moles of H₂ gas collected = _____ moles

5. Use the stoichiometry of the reduction reaction to calculate the number of moles of electrons required to produce the H₂ gas in this experiment.

Number of moles of electrons = _____ moles

6. Mass of metal lost = _____ g

7. Equivalent mass of metal = _____ (*provide correct units*)