SPH4U Task – Electric Cells Name:

The following questions are about chemical cells.

1. Explain why a chemical cell would use two different types of metal for its terminals, rather than one type.

2. What is a primary cell?

3. What is a secondary cell?

4. A 225 μC of charge is brought from an electric potential of 2.75 V to an electric potential of 15.75 V through use of a battery. What is the change in potential energy of the charge?

5. Explain what emf stands for, and in words, what in general is the emf of a cell?

6. *Suppose you measure the unloaded p.d. of one of the cells of your calculator to be 1.50 V. Then, while a 3000. Ω resistor is connected across the terminals of the same cell, you measure the loaded p.d. of the cell to be 1.47 V.*

   What is the emf of the cell?

   What is the terminal voltage of the cell under the load?

   What is the internal resistance of the cell under this load?

7. *A cell has an unloaded potential difference of 1.38 V. A 1250 Ω resistor is connected as a load as shown in the picture. The meter shows the new p.d.*

   What is the emf of the cell?

   What is the current through the resistor?

   What is the internal resistance of the battery?

   What is the rate at which heat is being produced in the in the 1250 Ω resistor?

   What is the rate at which heat is being produced in the battery?

   What is the rate at which chemical energy is being converted to electrical energy in the cell?

   What is the terminal potential difference of this cell under load?