

Q2.

One cell that has been used to provide electrical energy is the Daniell cell. This cell uses copper and zinc.

- (a) The conventional representation for the Daniell cell is



The e.m.f. of this cell under standard conditions is +1.10 V.

Deduce the half-equations for the reactions occurring at the electrodes.

At Zn electrode _____

At Cu electrode _____

(2)

- (b) A Daniell cell was set up using 100 cm³ of a 1.0 mol dm⁻³ copper(II) sulfate solution. The cell was allowed to produce electricity until the concentration of the copper(II) ions had decreased to 0.50 mol dm⁻³.

Calculate the decrease in mass of the zinc electrode. Show your working.

(3)

- (c) You are provided with the Daniell cell referred to in part (b), including a zinc electrode of known mass.

Briefly outline how you would carry out an experiment to confirm your answer to part (b).

(3)

(Total 8 marks)