



A2 5.3/A

ELECTROCHEMICAL CELLS



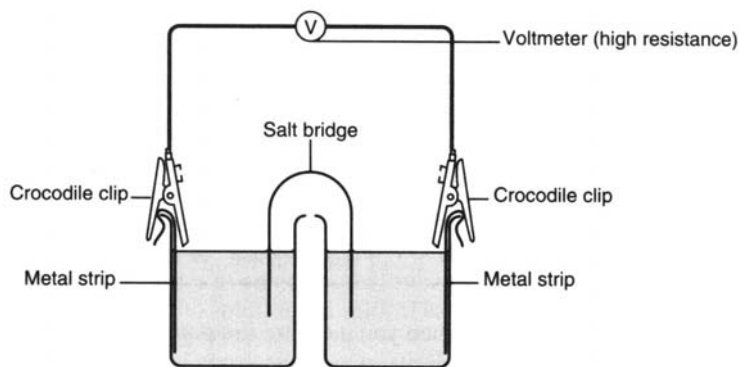
Aim You are going to measure the emf of two cells and then use them to predict the emf of another cell.

Safety

	copper sulphate iron (II) sulphate zinc sulphate		zinc
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Experiment

- 1) Construct a cell like the one below consisting of a zinc electrode (zinc metal in 20 cm³ of 1 M zinc sulphate) and a copper electrode (copper metal in 20 cm³ of 1 M copper sulphate). Clean each metal with emery paper first. Connect the half cells with a salt bridge made by soaking filter paper in saturated potassium nitrate solution (allow excess to drain).



- 2) For this cell:
 - a) record the measured voltage
 - b) state which electrode is the positive electrode
 - c) give the cell notation
 - d) write the equation for the redox reaction that takes place
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- 3) Set up another cell using new solutions and a new salt bridge. This time use a zinc electrode with an iron electrode (iron metal in 20 cm³ of 1 M iron (II) sulphate). For this cell:
 - a) record the measured voltage
 - b) state which electrode is the positive electrode
 - c) give the cell notation
 - d) write the equation for the redox reaction that takes place
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4) Use the results from the first two experiments to predict the reaction that would take place and calculate the emf when a copper electrode is joined to an iron electrode. Justify your predictions.

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5) Now set up the cell with fresh solutions and salt bridge and:

a) record the measured voltage

b) state which electrode is the positive electrode

c) give the cell notation

d) write the equation for the redox reaction that takes place

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