

# Chem!stry

Name: ..... ( )

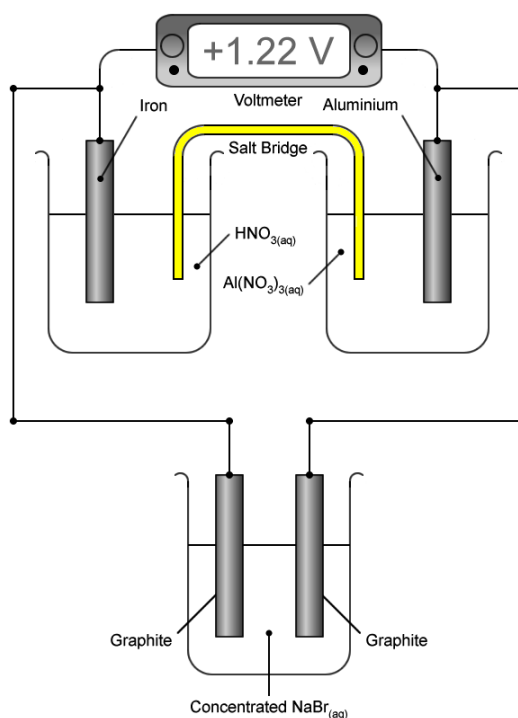
Class: .....

Date: ..... / ..... / .....

## Electrochemical Cells and Electrolytic Cells – Combined Systems

### Question 1.

The system below is composed of an electrochemical cell (top) and an electrolytic cell (bottom).



a) Write ionic half-equations for the reactions that take place in the electrochemical cell (top).

Anode: .....

Cathode: .....

b) Write ionic half-equations for the reactions that take place in the electrolytic cell (bottom).

Anode: .....

Cathode: .....

c) In the both the electrochemical cell (top) and the electrolytic cell (bottom), label:

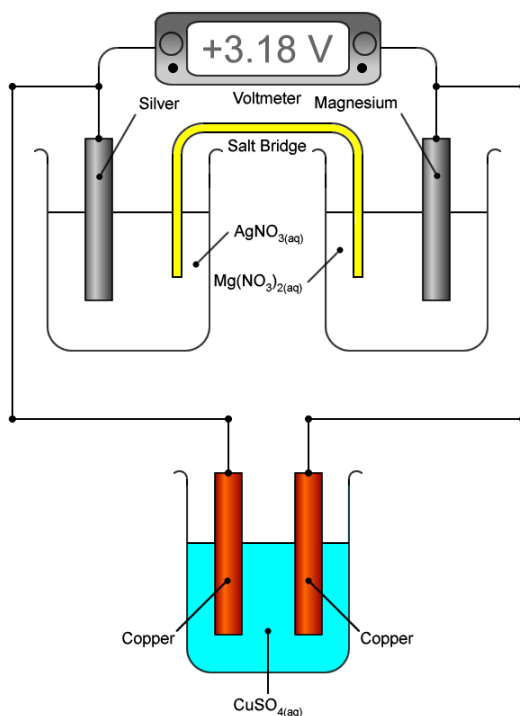
i) The positive (+) electrode and negative (–) electrode.

ii) The anode and the cathode.

d) Draw arrows on the diagram to clearly show the direction in which electrons flow through the wires of the external circuit.

**Question 2.**

The system below is composed of an electrochemical cell (top) and an electrolytic cell (bottom).



**a)** Write ionic half-equations for the reactions that take place in the electrochemical cell (top).

Anode: .....

Cathode: .....

**b)** Write ionic half-equations for the reactions that take place in the electrolytic cell (bottom).

Anode: .....

Cathode: .....

**c)** In the both the electrochemical cell (top) and the electrolytic cell (bottom), label:

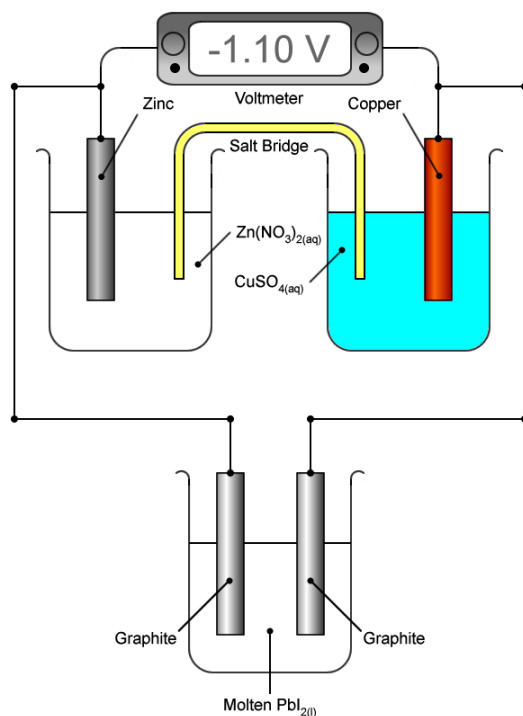
**i)** The positive (+) electrode and negative (-) electrode.

**ii)** The anode and the cathode.

**d)** Draw arrows on the diagram to clearly show the direction in which electrons flow through the wires of the external circuit.

**Question 3.**

The system below is composed of an electrochemical cell (top) and an electrolytic cell (bottom).



**a)** Write ionic half-equations for the reactions that take place in the electrochemical cell (top).

Anode: .....

Cathode: .....

**b)** Write ionic half-equations for the reactions that take place in the electrolytic cell (bottom).

Anode: .....

Cathode: .....

**c)** In the both the electrochemical cell (top) and the electrolytic cell (bottom), label:

**i)** The positive (+) electrode and negative (-) electrode.

**ii)** The anode and the cathode.

**d)** Draw arrows on the diagram to clearly show the direction in which electrons flow through the wires of the external circuit.

**e)** Briefly explain why the potential difference displayed by the voltmeter is negative.

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- Scan the QR Code below for the answers to this assignment.



[http://www.chemist.sg/electro\\_chem/electrochem\\_system\\_ans.pdf](http://www.chemist.sg/electro_chem/electrochem_system_ans.pdf)