

7. Simple cells:

Energy is produced from simple cells by using electrodes of two different metals during electrolysis. Remember, the further the position (of the elements used as the electrodes) in the periodic table, the greater is the voltage generated by the cell.

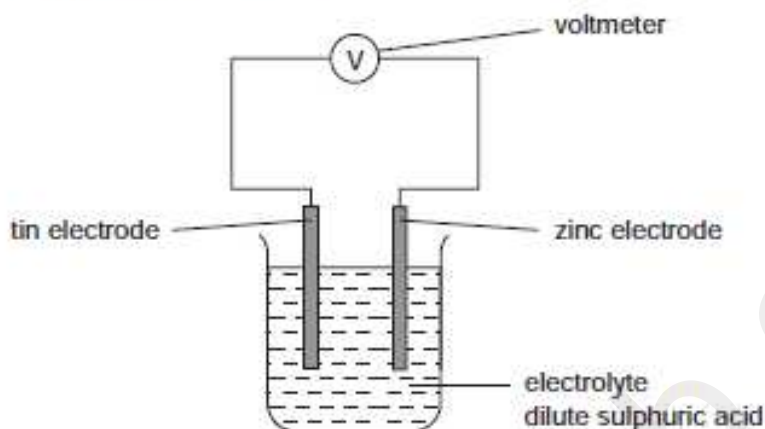
Important:

- The more reactive metal is always the one that loses the electrons.
 - You should be able to compare voltages of 2 /3 experiments and build a reactivity series for the metals used as electrodes.
 - You should know to mark the direction of electron flow on the given diagram.
 - You should be able to calculate the missing voltage values if any from the given info.
 - The more reactive metal becomes the anode and develops a negative polarity.
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SOLVED EXAMPLE FOR SIMPLE CELLS

(b) The following diagram shows a simple cell.

Q4



- (i) Predict how the voltage of the cell would change if the tin electrode was replaced with a silver one.

increase

[1]

- (ii) Which electrode would go into the solution as positive ions? Give a reason for your choice.

Zinc as it is more reactive

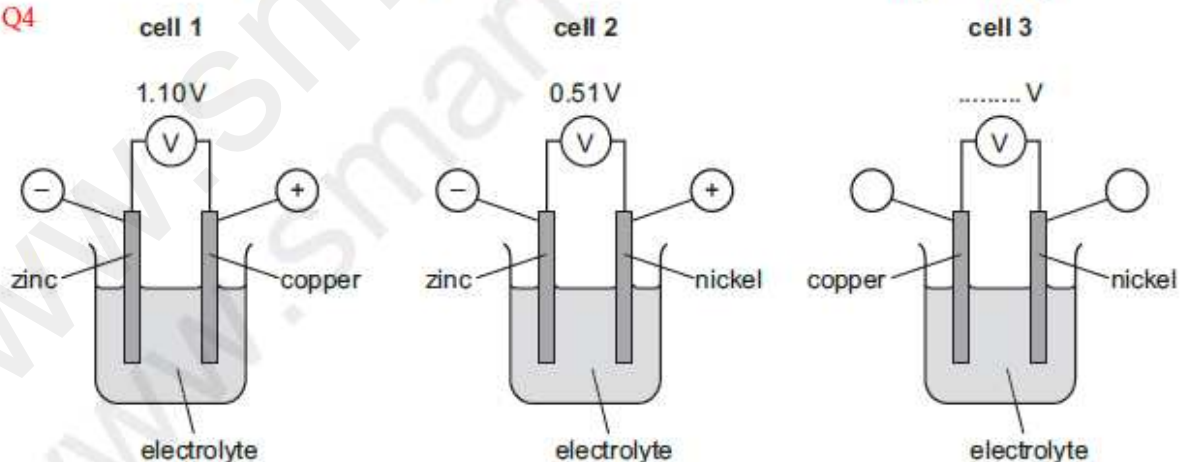
[1]

- (iii) State how you can predict the direction of the electron flow in cells of this type.

from the more reactive metal to the less reactive metal

(c) Three cells are set up each using two metals.

Q4



- (i) Write the ionic half-equation for the reaction occurring at the zinc electrode in cell 1.



[2]

(II) Put the three metals, copper, nickel and zinc, in order of reactivity.

most reactive Zn.....
↓ Ni.....
Cu.....
least reactive

[1]

(III) Complete the labelling in cell 3 by writing the polarity (+/-) of each electrode in the circles and calculating the reading on the voltmeter.

[2]

Copper ----> +

Nickle----> -

[Total: 11]

Pd= 0.59 V

