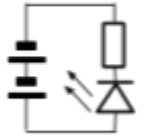
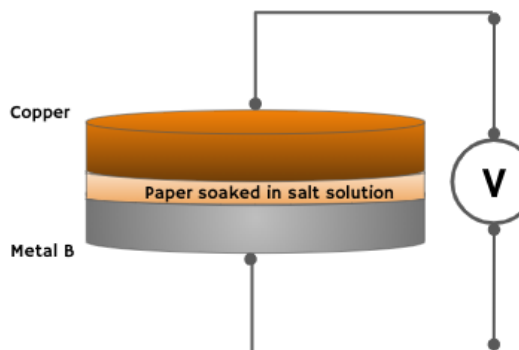


AC and DC Electricity Space School



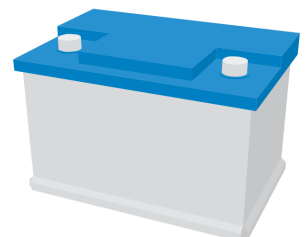
1. Electricity can be made from two sources: AC and DC. Explain what AC and DC means?
2. State the difference on how AC and DC electricity is made?
3. What did Luigi Galvani discover that led to the manufacture of the first electric cell?
4. Alessandro Volta explained Galvani's observations. How did he demonstrate his thinking was better than Galvani's?
5. A physics student sets up a simple electric cell as shown. When a voltmeter is connected across the cell it reads 1.0 V.
 - a. From the table data which metal could be metal B?
 - b. Metal B is changed to magnesium. How many cells would have to be connected in series to give a total voltage of 10 V?
 - c. What is the name given to the paper soaked in the salt solution?

A simple voltaic cell.

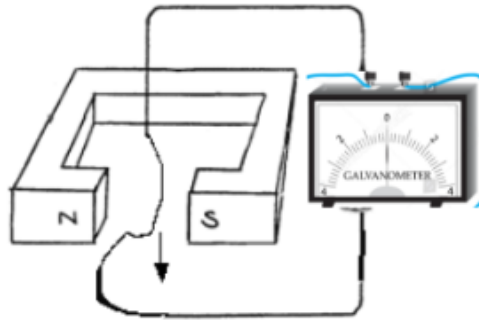


Metal B	Voltage produced /V
magnesium	2.0
zinc	1.0
iron	0.7

6. In all electric cells two chemical processes take place on the metals . These processes are called reduction and oxidation.
Explain what is meant by oxidation and reduction of a metal.
7. A car battery consists of 6 individual cells connected in series.
The total voltage between the terminals is 12 V.
 - a. State the voltage given by one of these individual cells.
 - b. What are the positive and negative plates of the car battery made of?
 - c. What is the electrolyte in the car battery?
 - d. Why is the car battery called a secondary cell



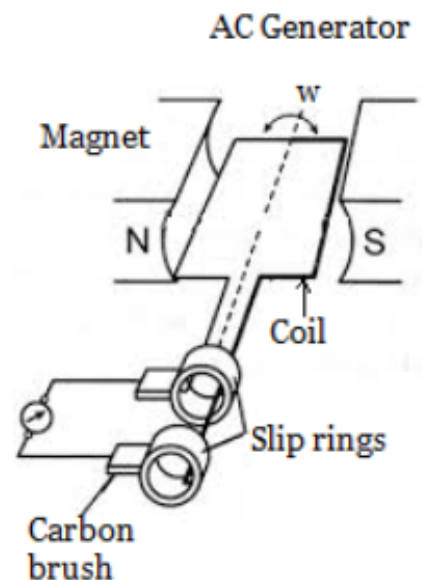
8. What did Hans Christien Oersted observe in 1820 when investigating electric circuits?
9. Michael Faraday discovered a way to generate electricity using a magnet and a coil of wire. Describe what he discovered?
10. In another experiment Faraday moved a wire between the poles of a magnet.



- a. When the wire was moved downwards the galvanometer pointer moved to the right. State what happened when the wire was moved upwards.
- b. When the wire was held stationary between the poles of the magnet what was the reading on the galvanometer?

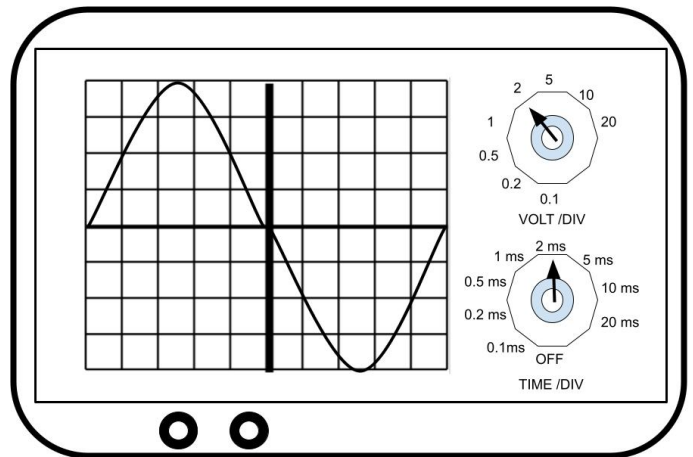
11. The diagram shows the components of a simple ac generator.

- a. Name two changes to the setup that would increase the size of the ac voltage generated.
- b. Sketch a graph of the ac voltage produced.
- c. Describe why carbon brushes are touching the slip rings.
- d. When the left hand side of the loop is travelling upwards a current flows into the page. What direction will the current be flowing in the right hand side of the loop?
- e. What position is the loop in when no current is made to flow in the loop of wire?
- f. State an application for an ac generator.

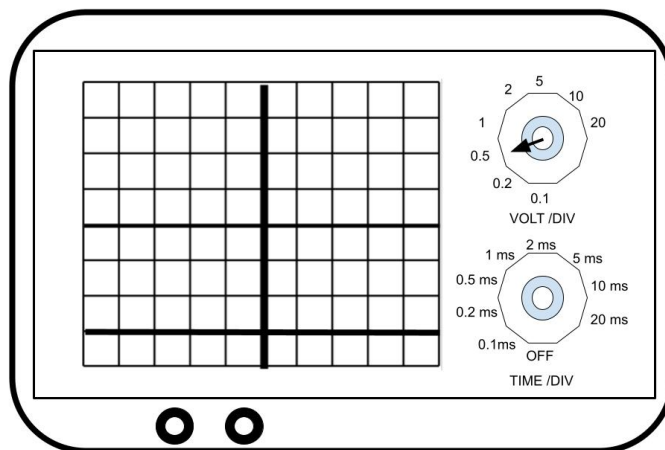


12. A physics student is given a black box to connect to an oscilloscope to determine its output voltage.

- State if the output voltage is ac or dc.
- The student disconnects the black box and then connects a 9 volt battery. Copy and draw the oscilloscope screen when this battery is connected.
- What would be the change on the oscilloscope screen if the battery was disconnected and connected again this time with the opposite terminals.



13. A student connects a battery to the input terminals of an oscilloscope. The oscilloscope screen is shown below.



- Why does the oscilloscope display the voltage of the battery below the centre line?
- What changes to the battery could you make the oscilloscope display the voltage above the centre line?
- The oscilloscope volt/div dial is set to display the amount of volts represented by one vertical square. Determine the voltage of the battery connected to the oscilloscope.

Information.

To get information about this worksheet use the QR code below.



Alternatively use the website address:

<https://mallonphysics.com/space-school/electricity/>

The information and resources are found in the AC DC section.