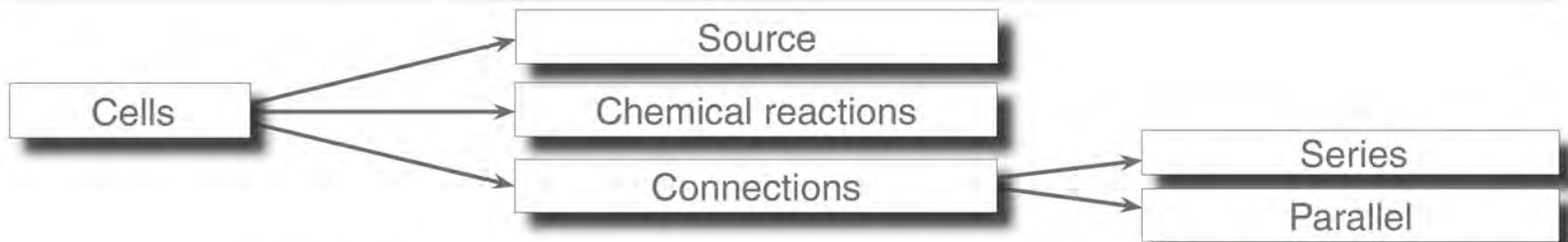




TERM 3: ENERGY AND CHANGE

UNIT 2

CELLS



2.1 Source

Cells are a source of electrical energy.

2.2 Chemical reactions

Schematic representation:

Chemical potential energy (ions before they are separated).



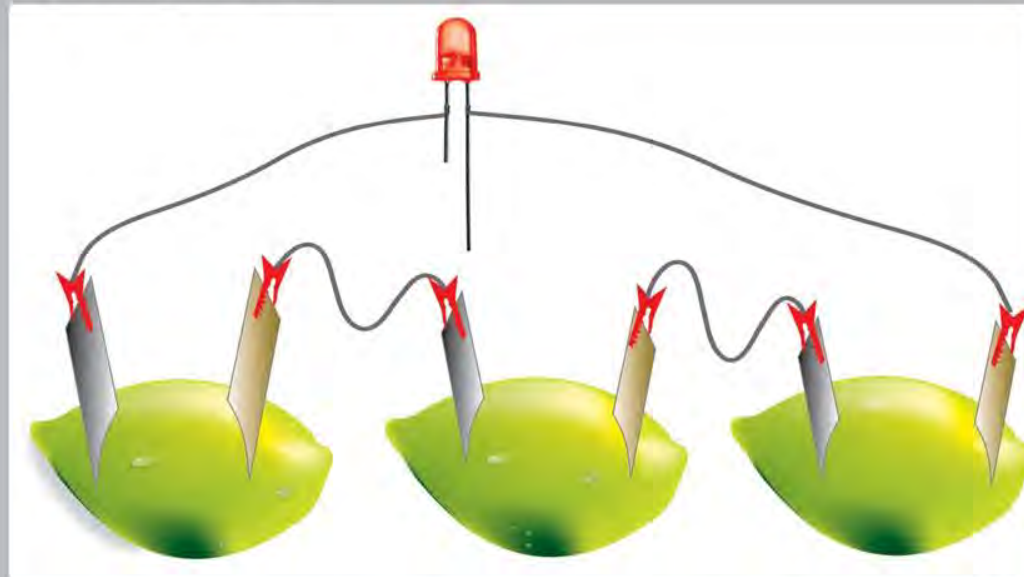
Kinetic (movement) energy of charges (electrical energy)





Practical investigation 15: Page 226

Aim: To create a cell/battery using lemons.



Observations:
The lightbulb glows.

Conclusions:
LED that burns or the reading on a sensitive meter, is an indication that an electrical current flowed.



2.3 Connections

2.3.1 Series

Practical investigation 16: Page 226

Aim: To investigate the brightness of a light bulb when more cells are connected in series.

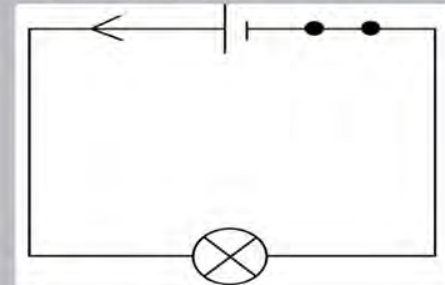
Observations:

Number of cells in series	Brightness of light bulb
1	Light bulb glows.
2	Light bulb glows brighter than with one cell.
3	Light bulb glows brighter than with two cells.

Draw the circuit with three cells in series.

Conclusions:

The more cells there are in series, the brighter the light bulb glows.





2.3.2 Parallel

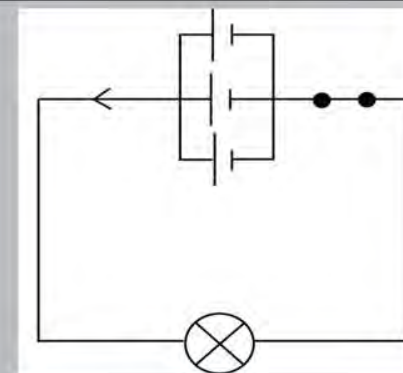
Practical investigation 17: Page 227

Aim: To investigate the brightness of a light bulb when more cells are connected in parallel.

Observations:

Number of cells in parallel	Brightness of light bulb
2	Light bulb glows.
3	Remains the same.
4	Remains the same.

Draw the circuit with three cells in parallel.



Conclusions:

The brightness of the light bulb does not change whether two or four cells are connected in parallel.

Exercise 18: Page 228

1. What are two or more cells in series called?

Battery

2. What does a cell consist of?

Electrolyte

Metal pieces that serve as electrodes.

3. What is an electrolyte?

It is a solution which can conduct electricity.

It has positive and negative ions.

4. What type of energy does the electrolyte contain?

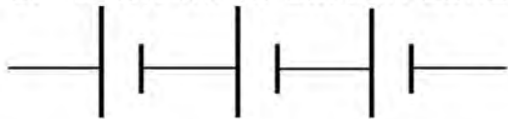
Chemical potential energy



5. Describe the series connection of cells.

In series, the positive pole of the one cell is attached to the negative pole of the following cell.

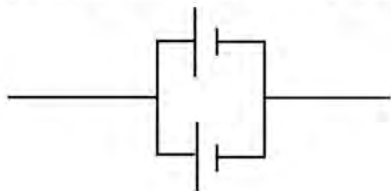
6. Draw three cells in series.



7. Describe a parallel connection of cells.

In parallel, all the negative poles are connected at one end and all the positive poles are connected on the other end.

8. Draw two cells that are connected in parallel.





9 What happens to the brightness of a light bulb in a circuit when one cell is replaced with

9.1 two cells connected in series?

Glow brighter than with one cell.

9.2 four cells connected in series?

Glow much brighter than with one or two cells.

10 What happens to the brightness of a light bulb in a circuit when the two cells in parallel are replaced with:

10.1 five cells in parallel?

Glow just as bright as with the two cells in parallel.

10.2 six cells in parallel?

Glow just as bright as with the two cells in parallel.

