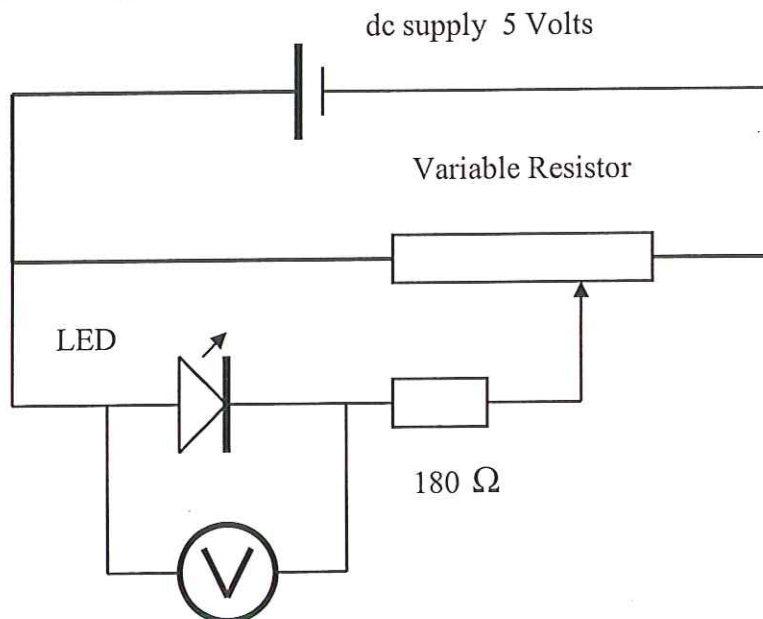


An experiment to estimate the value of the Planck constant.

Experimental arrangement.



The 180 Ω resistor is there to protect the diode from damage.
The variable enables you to adjust the voltage across the diode.

Theory.

The electric input is converted into light energy as follows:

$$eV_s = hf + A$$

where hf is the photon energy.
 A is an unknown constant.

Procedure.

Adjust the pd across the diode by using the variable resistor until the diode emits light. If it does not light up, it is probably connected the wrong way round.
(the long lead is the anode and should be connected to the positive of the supply)

Construct a table to accept “colour wavelength” – the independent variable and voltmeter reading – the dependant variable.

For a given diode, find the voltage which when the diode “just” switches off.

Record the “wavelength” and the “voltage” in the table.
Repeat for ALL available diodes.

Draw a suitable graph and hence determine the value of h .