

# Activity 5 – Physics

Paper 1P, Q6a

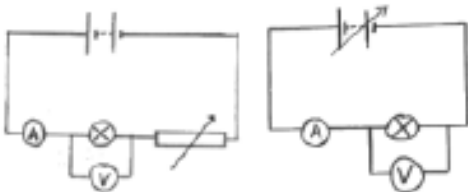
- 6 (a) (i) A student investigates how current varies with voltage for a metal filament lamp.

Draw a diagram of the circuit that a student could use for this investigation.

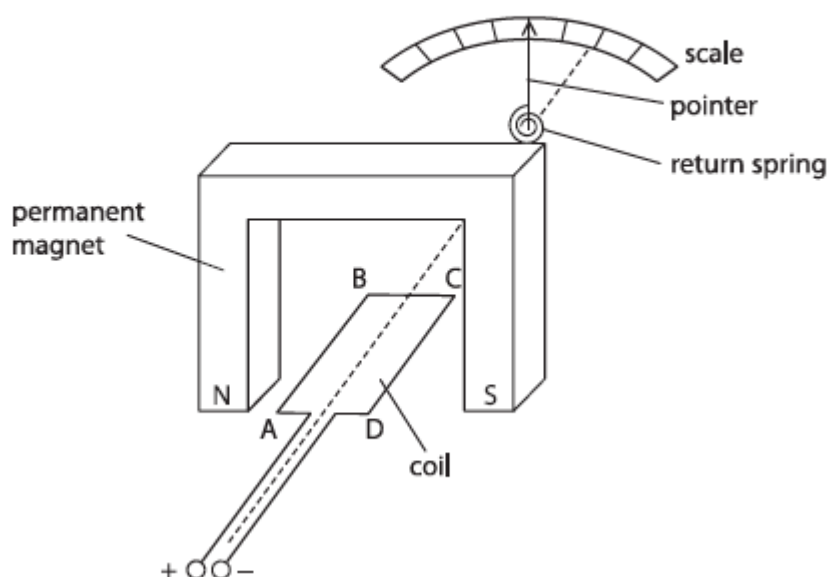
(4)

- (ii) Describe a method the student could use for their investigation.

(4)

6	(a)	(i)	<p>circuit with symbols for ammeter, voltmeter, lamp, any power supply all correct;</p> <p>voltmeter in parallel with lamp; ammeter in series with lamp;</p> <p>correct means of varying voltage of lamp i.e. variable power supply/rheostat/potentiometer;</p> <p>e.g.</p> 	<p>variable power supplies or variable number of cells can be shown using labelled standard symbols</p> <p>if no lamp in circuit, allow ammeter drawn in series with power supply allow variable resistor in series with lamp</p>	4
		(ii)	<p>any four from:</p> <p>MP1. record ammeter and voltmeter reading;</p> <p>MP2. repeat readings (for each voltage) and find average;</p> <p>MP3. idea of changing the voltage / current;</p> <p>MP4. plot a graph of voltage and current;</p> <p>MP5. switch off current/circuit between readings;</p>	<p>allow 'measure voltage and current'</p> <p>allow repeating experiment to find average</p> <p>allow described method that would change voltage or current e.g. adding more cells, changing circuit resistance etc.</p> <p>ignore "let lamp cool between readings"</p>	4

- (b) The diagram shows the parts of an ammeter.  
The pointer is connected to the coil so they can move together.



- (iii) Explain how the ammeter could be changed so that it could measure smaller currents.  
(3)

(iii)	<p>any three from:</p> <p>MP1. more turns on the coil;</p> <p>MP2. stronger (permanent) magnet;</p> <p>MP3. add an iron core;</p> <p>MP4. producing a larger force (for the same current);</p> <p>MP5. use of a longer pointer;</p> <p>MP6. use of a weaker return spring;</p> <p>MP7. producing a greater movement at the end of the pointer (for the same current);</p>	<p>allow "more coils"</p> <p>allow method to increase field strength e.g. moving magnets closer together</p> <p>allow producing the same force for a smaller current</p> <p>allow same movement for a smaller current</p>	3
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