

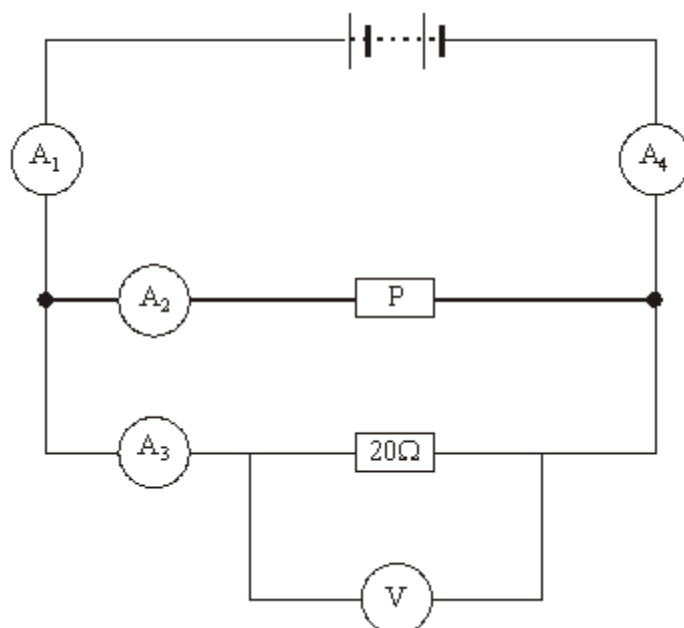
Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Q1.

The circuit shown has four identical ammeters.



(a) The table gives the current through two of the ammeters.

(i) Complete the table to show the current through the other two ammeters.

Ammeter	Reading on ammeter in amps
A_1	
A_2	0.2
A_3	0.3
A_4	

(2)

(ii) Which **one** of the following statements is correct. Tick (✓) the box next to your choice.The resistance of **P** is more than $20\ \Omega$.
☐
The resistance of **P** is equal to $20\ \Omega$.
☐

The resistance of **P** is less than $20\ \Omega$. □

Give a reason for your choice.

(2)

- (b) (i) Write down the equation that links current, potential difference and resistance.

(1)

- (ii) Calculate the reading on the voltmeter. Show clearly how you work out your answer.

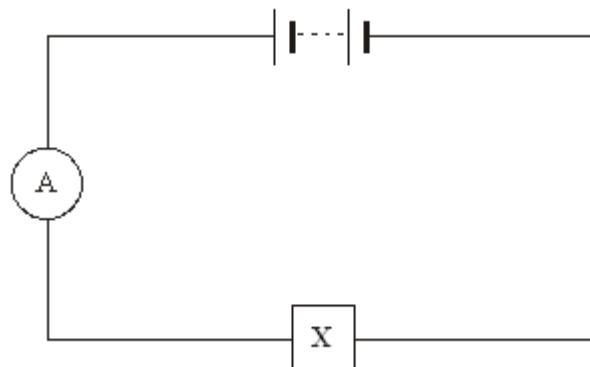
Voltmeter reading = _____ volts.

(2)

- (iii) State the potential difference of the power supply.

(1)

- (c) A second circuit contains an unknown component labelled **X**.



As component **X** is heated, the reading on the ammeter goes up.

What is component **X**?

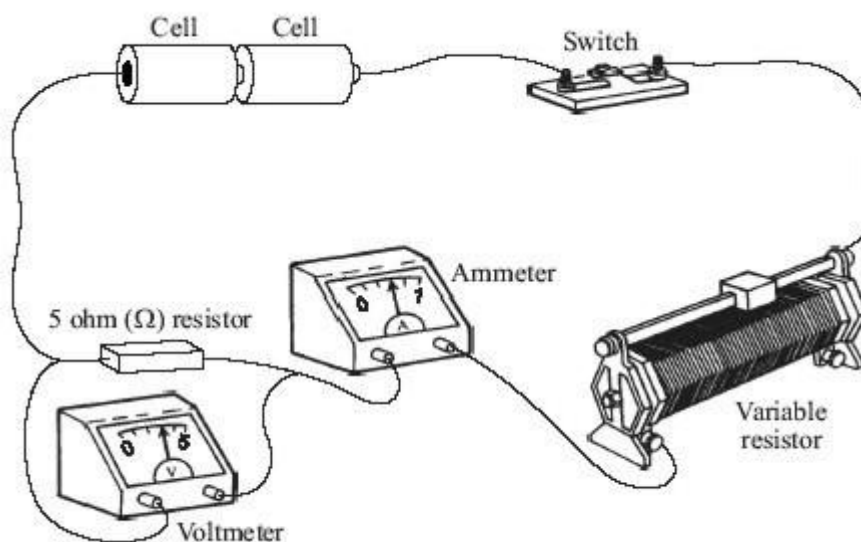
Give a reason for your answer.

(2)

(Total 10 marks)

Q2.

The drawing shows the circuit used to investigate how the current through a 5 ohm (Ω) resistor changes as the potential difference (voltage) across the resistor changes.



- (a) Draw, in the space below, a circuit diagram of this circuit. Use the correct symbols for each part of the circuit.

(2)

- (b) (i) Write down the equation that links current, potential difference and resistance.

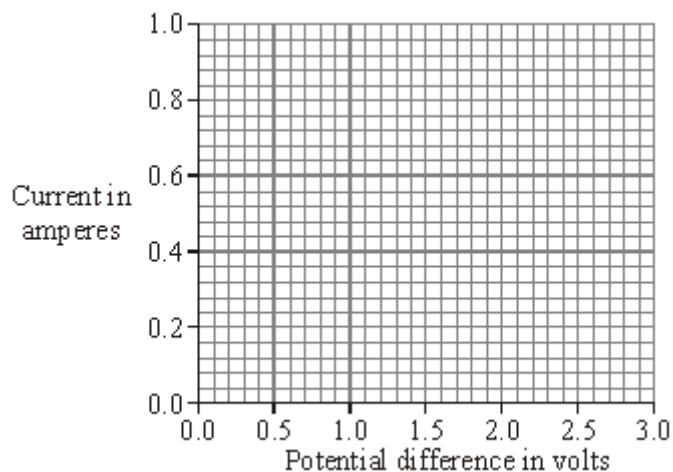
(1)

- (ii) Calculate the potential difference across the 5 ohm (Ω) resistor when the current through the resistor equals 0.4 A. Show clearly how you work out your final answer.

potential difference = _____ volts

(2)

- (iii) Complete the graph to show how the current through the resistor changes as the potential difference across the resistor increases from 0 V to 3 V. Assume the resistor stays at a constant temperature.



(2)

- (c) The resistor is replaced by a 3 V filament lamp. The resistance of the lamp increases as the potential difference across it increases. Why?

(1)

(Total 8 marks)