

3 This question is about electric circuits.

(a) Which quantity is defined as the rate of flow of charge?

(1)

- ☐ A current
- ☐ B power
- ☐ C resistance
- ☐ D voltage

(b) Which quantity is defined as the energy transferred per unit charge passed?

(1)

- ☐ A current
- ☐ B power
- ☐ C resistance
- ☐ D voltage

(c) Diagram 1 shows an electric circuit with two resistors, R and S.

Some of the values of the current are also shown.

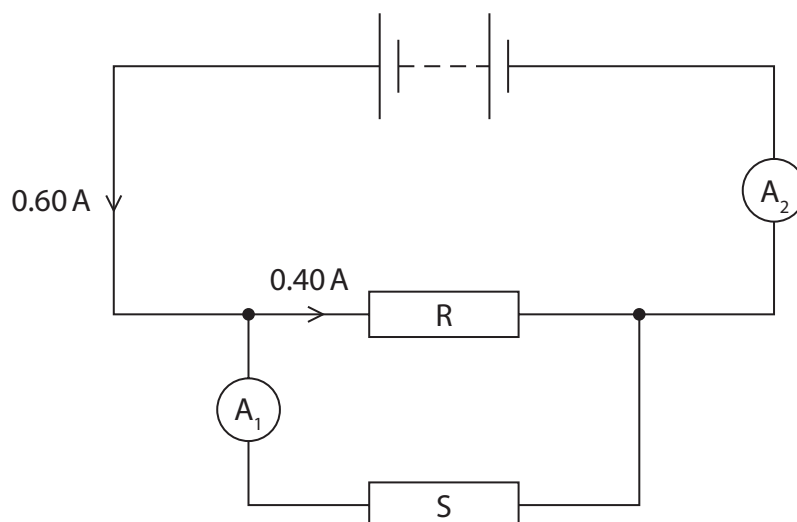


Diagram 1

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(i) On Diagram 1, draw a voltmeter to measure the voltage of resistor S.

(2)

(ii) Deduce the readings on the ammeters.

(2)

current measured by A_1 = A

current measured by A_2 = A

(iii) Resistor R has a resistance of $11\ \Omega$.

Calculate the voltage across resistor R.

(3)

voltage = V

(iv) Explain how the voltage across resistor R compares with the voltage across the battery.

(2)

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(d) Diagram 2 shows a different circuit containing a battery, an ammeter and a thermistor.

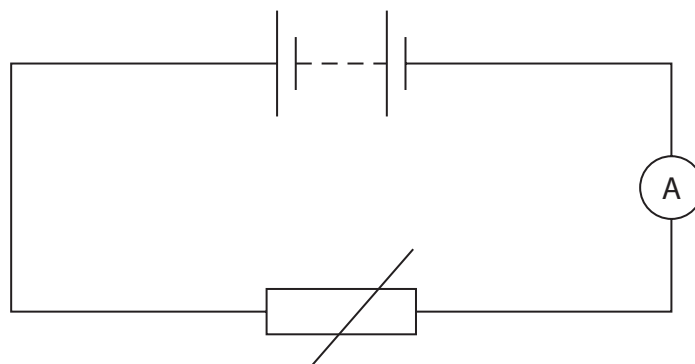


Diagram 2

Explain how the thermistor can be used to vary the current in this circuit.

(3)

(Total for Question 3 = 14 marks)

