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.

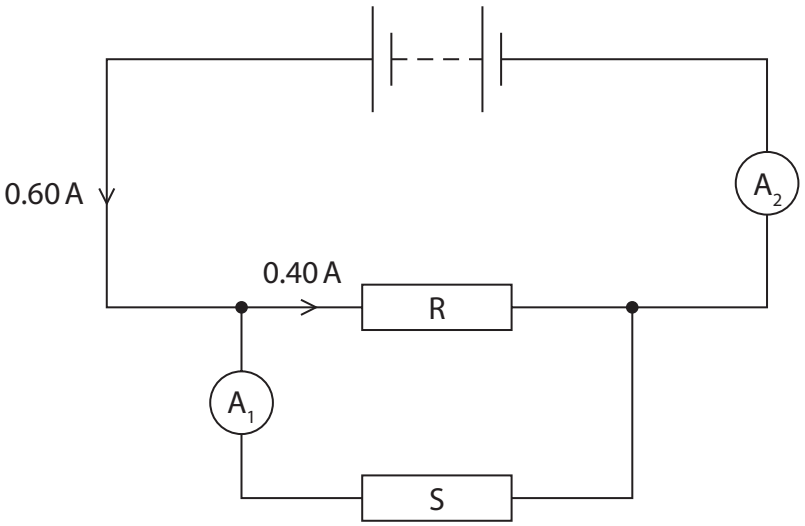

Diagram 1

(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 Ω.

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.

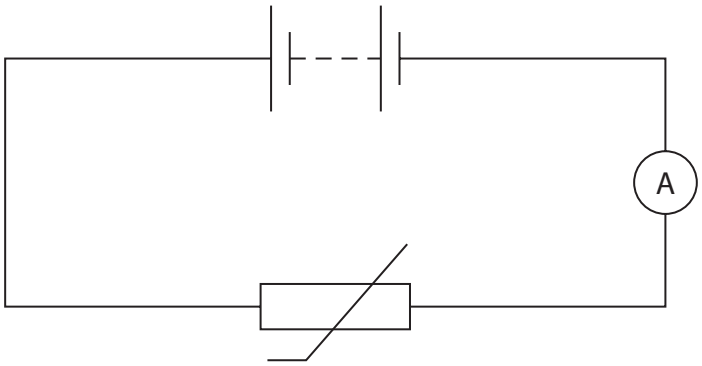

Diagram 2

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

(3)

(Total for Question 3 = 14 marks)