

(c) (i) State the equation linking wave speed, frequency and wavelength.

(1)

(ii) The speed of radio waves is 300 000 000 m/s.

A radio wave has a frequency of 31 MHz.

Calculate the wavelength of this radio wave.

(3)

wavelength = m

(d) A sound wave and a radio wave have the same wavelength.

State why they have different frequencies.

(1)

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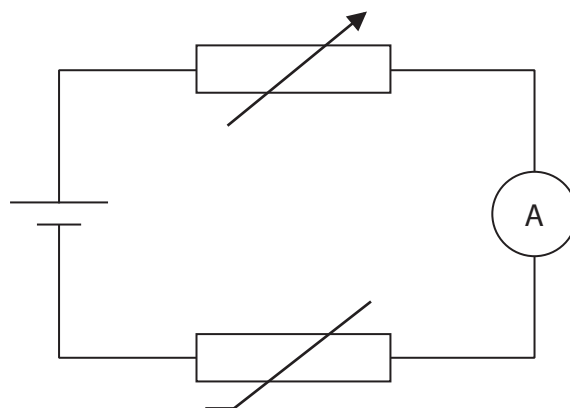
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(Total for Question 13 = 13 marks)



- 14** A student investigates the current in a thermistor at different temperatures, using the circuit shown in the diagram.



- (a) The student uses a voltmeter to check that the voltage across the thermistor stays constant throughout the investigation.

(i) Add this voltmeter to the circuit diagram.

(2)

(ii) Give a reason for keeping the voltage across the thermistor constant.

(1)

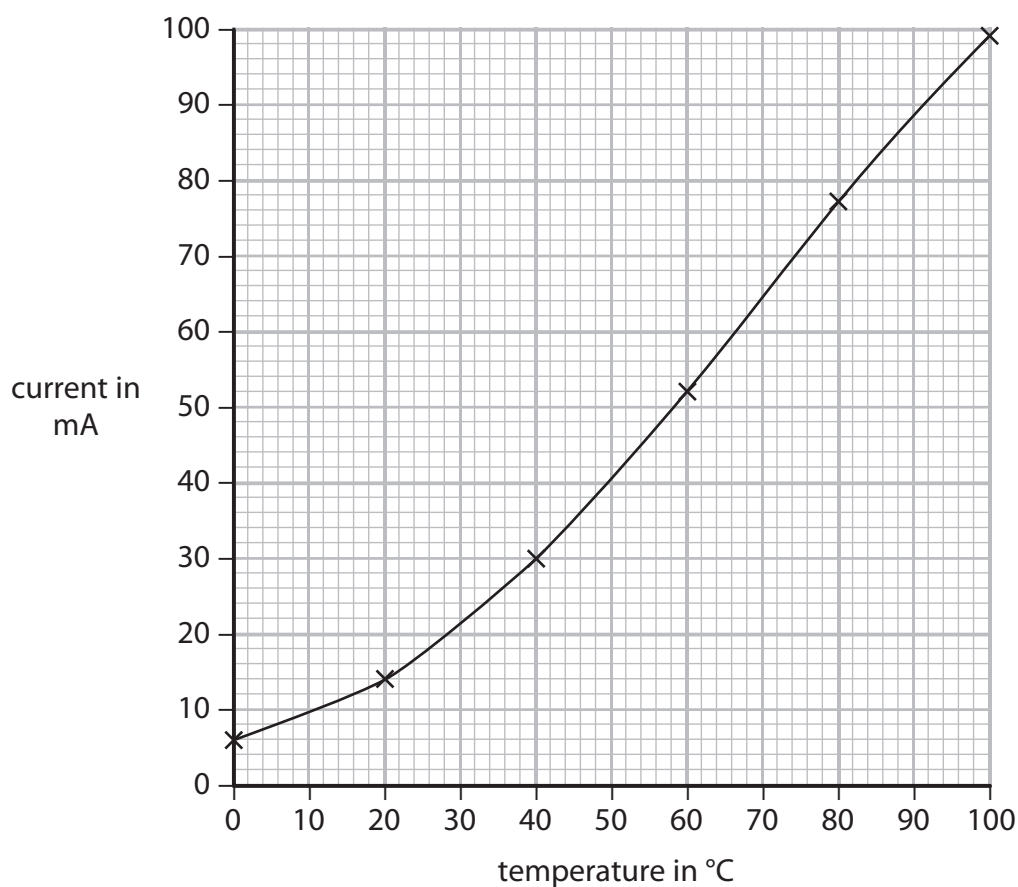
(iii) Give a reason for including the variable resistor in the circuit.

(1)



- (b) The student increases the temperature of the thermistor and records the current and temperature readings.

The graph shows the student's results.



The student plans to use his circuit to make an electronic thermometer.

He notices that both the scales on the graph go up to 100.

He thinks that the current reading, measured in mA, gives a direct indication of the temperature measured in °C.

He labels the ammeter's scale 'temperature in °C'.



Give three reasons why the student's electronic thermometer is unlikely to show the correct temperature.

You may use information from the circuit and the graph to support your answer.

(3)

1

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2

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3

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(Total for Question 14 = 7 marks)

TOTAL FOR PAPER = 120 MARKS



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