

Q1.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box and then mark your new answer with a cross .

Which row in the table describes the way that ammeters and voltmeters should be connected with a component in a circuit?

(1)

	ammeter	voltmeter
<input checked="" type="checkbox"/> A	in parallel	in parallel
<input checked="" type="checkbox"/> B	in parallel	in series
<input type="checkbox"/> C	in series	in parallel
<input type="checkbox"/> D	in series	in series

(Total for question = 1 mark)

Q2.

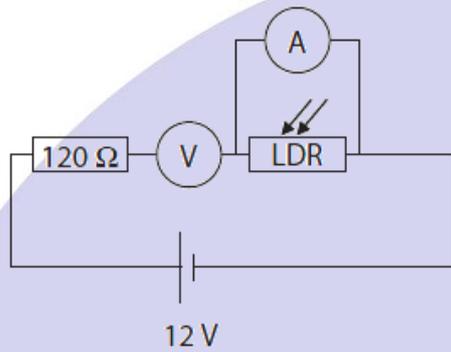
A technician investigates a light-dependent resistor (LDR) connected in series with a $120\ \Omega$ resistor and a voltage source.

The technician measures the voltage across the LDR and also the current in the LDR.

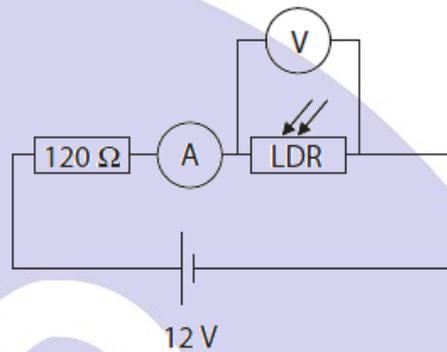
Which **one** of these circuits should the technician use?

Put a cross (☒) in the box next to your answer.

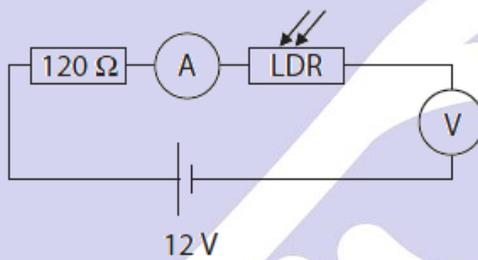
(1)



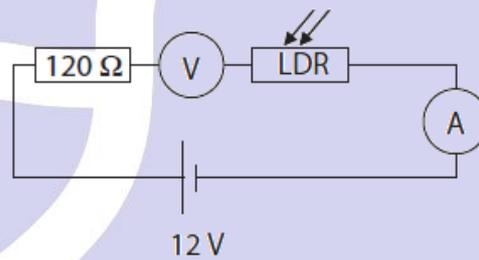
A



B



C



D

(Total for question = 1 mark)

Q3.

A student investigates how the resistance of a thermistor varies with temperature.

- (a) The student sets up the circuit shown in Figure 5 to measure current and voltage.
He finds that it does not work.

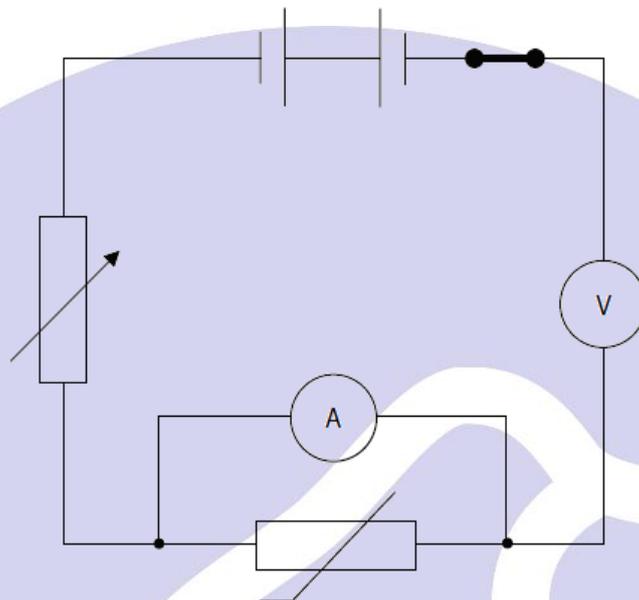


Figure 5

Give **three** modifications the student should make to the circuit so that the circuit works correctly.

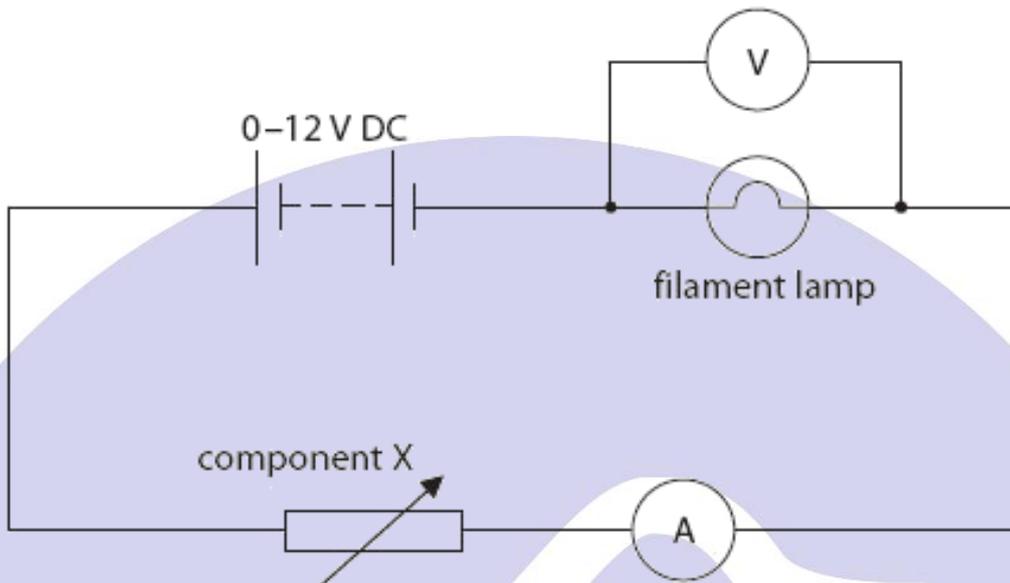
(3)

- 1
- 2
- 3

(Total for question = 3 marks)

Q4.

A student sets up an experiment to measure the potential difference (voltage) across a filament lamp. She changes the current through the lamp. The diagram shows the circuit she used.



(c) Complete the sentence by putting a cross () in the box next to your answer.

(i) The component X in the circuit diagram is a

- A diode
- B fixed resistor
- C thermistor
- D variable resistor

(1)

(ii) The meter that measures potential difference is

- A in parallel with the power supply
- B in parallel with the lamp
- C in series with the lamp
- D in series with the component X

(1)

(Total for Question is 2 marks)

Q5.

A student investigates resistors connected in series in an electrical circuit.

The student has

- a 3.0 V battery
- a 22 Ω resistor
- a resistor marked X.

The student does not know the value of the resistor marked X.

The student decides to measure the potential difference (voltage) across resistor X.

Figure 8 shows the circuit that the student connected.

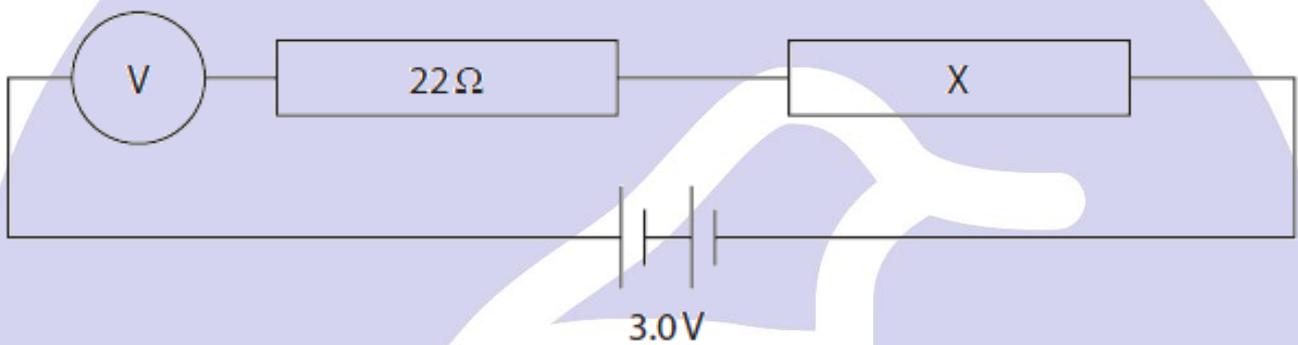


Figure 8

The circuit is connected incorrectly.

Describe how the student should correct the mistake.

(2)

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.....

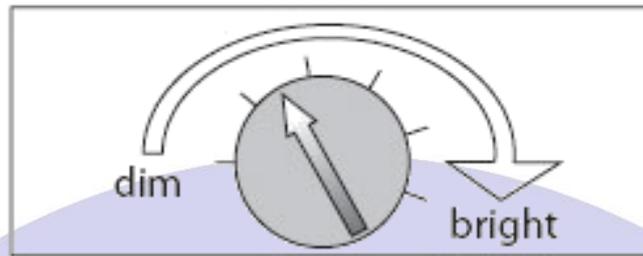
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(Total for question = 2 marks)

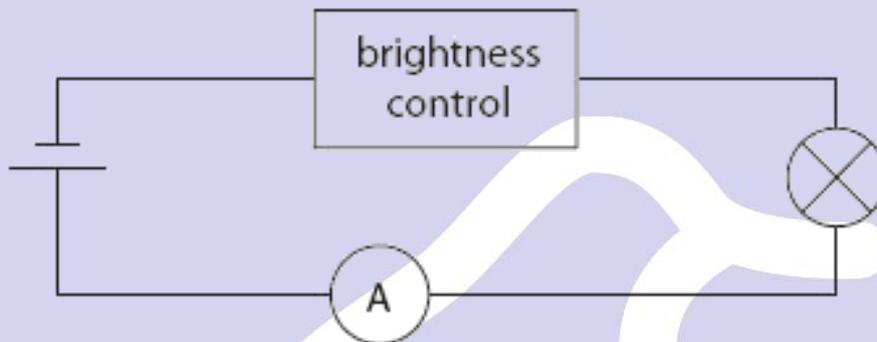
Q6.

An inventor is designing a battery-powered torch.
She wants the torch to have a brightness control.



brightness control

She builds this circuit to test the lamp in the torch.



Add a voltmeter to the circuit which will measure the potential difference (voltage) across the lamp.

(1)

(Total for question = 1 mark)

Q7.

A student investigates resistors connected in parallel using a number of resistors. Each resistor has the same resistance.

Figure 10 shows a circuit diagram with one resistor, R.

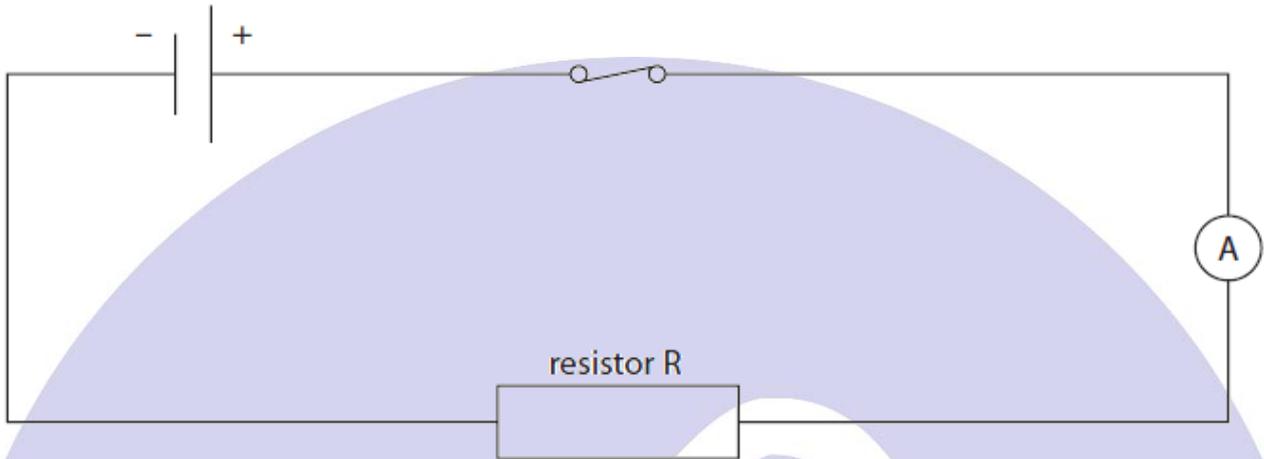


Figure 10

Add to Figure 10:

- a voltmeter to find the potential difference across resistor R
- another resistor in parallel with resistor R.

(2)

(Total for question = 2 marks)

Q8.

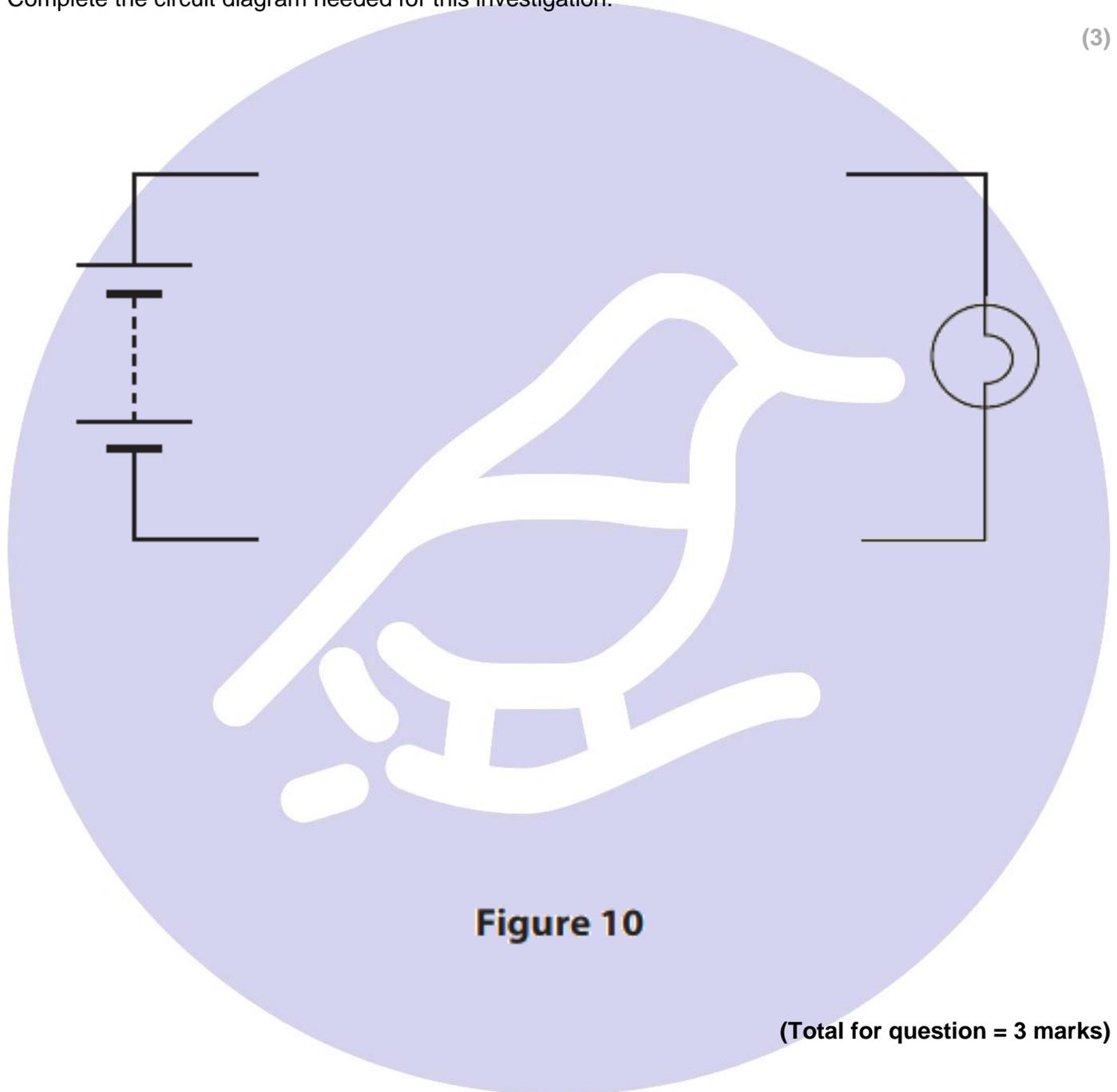
A student investigates how current varies with potential difference across a filament lamp.

The student uses a power supply, a variable resistor, the filament lamp and two meters.

Part of the circuit diagram is shown in Figure 10.

Complete the circuit diagram needed for this investigation.

(3)



Q9.

Figure 12 shows some of the apparatus that students use to determine the resistance of a piece of iron wire.

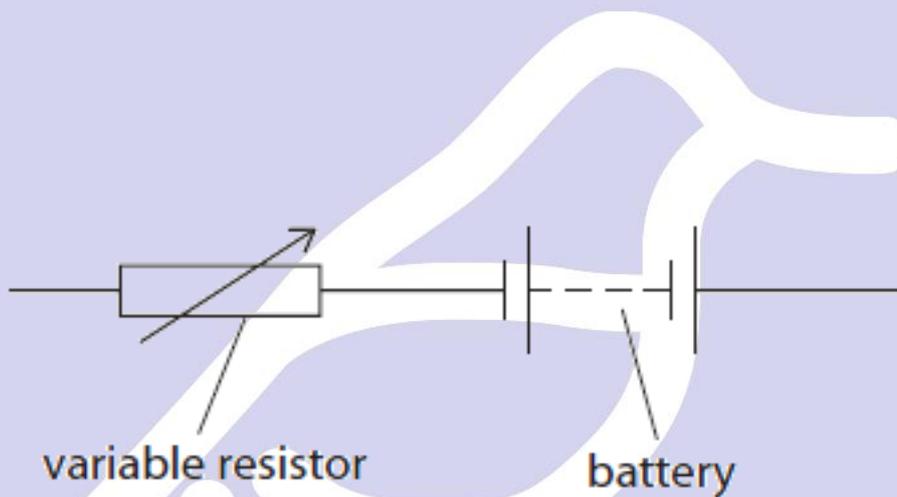
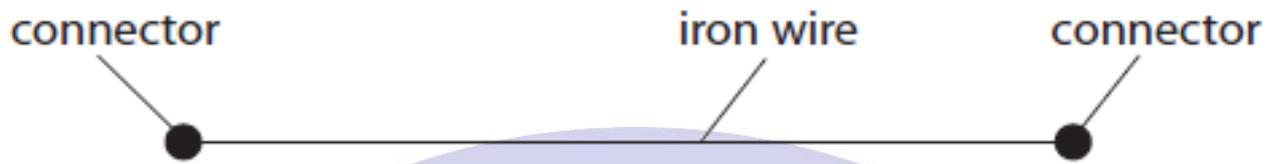


Figure 12

Add connecting wires, a voltmeter and an ammeter to complete the circuit in Figure 12 so that the students can determine the resistance of the piece of iron wire.

(2)

(Total for question = 2 marks)

Q10.

A student is given a low voltage power supply and 1 m of resistance wire.

The student uses these and other pieces of equipment to measure the resistance of just 50 cm of the resistance wire.

Draw a diagram of the circuit that the student should use.

Your circuit diagram should identify the pieces of equipment that the student uses.

(3)

(Total for question = 3 marks)

