

Q1. (2021)

0 3

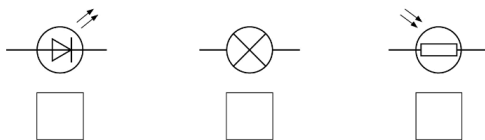
A filament lamp breaks if the electric current in the filament becomes too big.

a)

0 3 . 1

What is the correct symbol for a filament lamp?

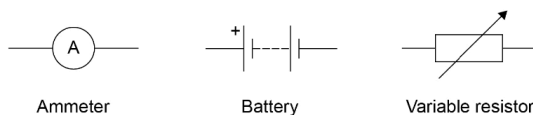
[1 mark]

Tick (✓) **one** box.

b)

A manufacturer investigated the maximum current value of some filament lamps.

0 3 . 3

Figure 6 shows the symbols for an ammeter, a battery and a variable resistor.**Figure 6**

Ammeter

Battery

Variable resistor

The manufacturer connected an ammeter, battery, filament lamp and variable resistor in series.

Draw a circuit diagram to show the manufacturer's circuit.

Include the symbol for a filament lamp from Question 03.1

[1 mark]

Q2. (2023)

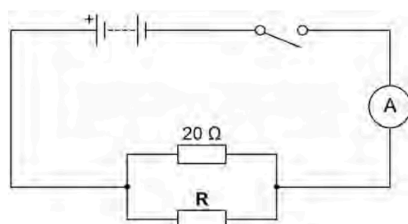
0 6

Body analysis scales use the electrical resistance of a person's legs to estimate the percentage of water in the person's body.

Figure 8 shows body analysis scales.**Figure 8**

The person's legs contain both solid tissue and water.

A student used resistors to model the solid tissue and water.

The student connected a $20\ \Omega$ resistor in parallel with a resistor, **R**.**Figure 9** shows the circuit diagram.**Figure 9**

a)

- 0 6 . 1 To determine the total resistance of both resistors, a voltmeter must be connected into the circuit.

Complete **Figure 9** to show where the voltmeter should be connected.

[1 mark]

b)

- 0 6 . 2 The student calculated the total resistance of the two resistors.

The student's answer was $26\ \Omega$.

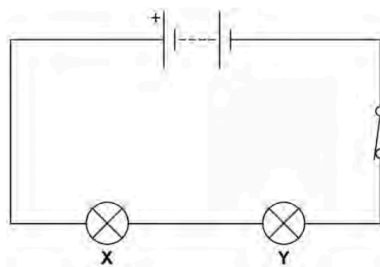
Explain why the student's answer **cannot** be correct.

[2 marks]

Q3. (2024)

- 0 1 **Figure 1** shows a circuit diagram. The circuit contains a battery and two lamps, **X** and **Y**.

Figure 1



a)

- 0 1 . 1 How does the current in lamp **X** compare with the current in lamp **Y**?

Tick (✓) **one** box.

[1 mark]

The current in lamp **X** is smaller.

☐

The current in both lamps is the same.

☐

The current in lamp **X** is greater.

☐

b)

0 1 . 7 Lamp Y breaks.

What happens to lamp X?

Give a reason for your answer.

[2 marks]

Tick (✓) **one** box.

Lamp X gets brighter.

☐

Lamp X stays the same brightness.

☐

Lamp X no longer emits light.

☐

Reason _____
