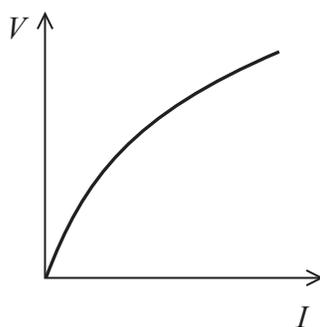


1 Select the row of the table that shows the correct SI base units for force and work done.

	<b>Force</b>	<b>Work done</b>
<input type="checkbox"/> <b>A</b>	$\text{kg m}^2 \text{s}^{-2}$	$\text{kg m}^3 \text{s}^{-2}$
<input type="checkbox"/> <b>B</b>	$\text{kg m s}^{-2}$	$\text{kg m}^2 \text{s}^{-2}$
<input type="checkbox"/> <b>C</b>	$\text{kg m}^2 \text{s}^{-2}$	$\text{kg m s}^{-2}$
<input type="checkbox"/> <b>D</b>	$\text{kg m s}^{-2}$	$\text{kg m}^3 \text{s}^{-2}$

(Total for Question = 1 mark)

2 The graph shows how potential difference  $V$  varies with current  $I$  for a circuit component.



Which of the following could be the circuit component?

- A** copper wire
- B** filament lamp
- C** fixed resistor
- D** thermistor

(Total for Question = 1 mark)

3 An electric torch uses two 1.5 V cells. The torch bulb is marked 2.4 V, 270 mA.

What is the resistance of the torch bulb?

- A 0.81  $\Omega$
- B 0.65  $\Omega$
- C 8.9  $\Omega$
- D 11  $\Omega$

**(Total for Question = 1 mark)**

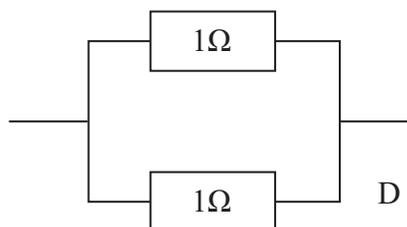
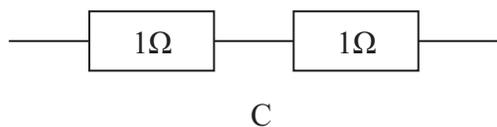
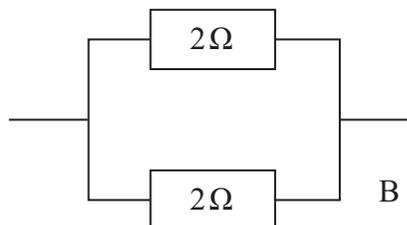
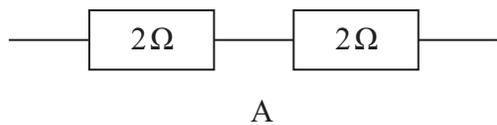
4 All electrical components have resistance.

In which of the following situations would the resistance of the stated component **not** increase?

- A Increasing the current through a filament lamp.
- B Increasing the temperature of a metal wire.
- C Increasing the temperature of a negative temperature coefficient thermistor.
- D Reversing the direction of a diode in forward bias in a circuit.

**(Total for Question = 1 mark)**

5 Which combination of resistors has the smallest total resistance?



- A
- B
- C
- D

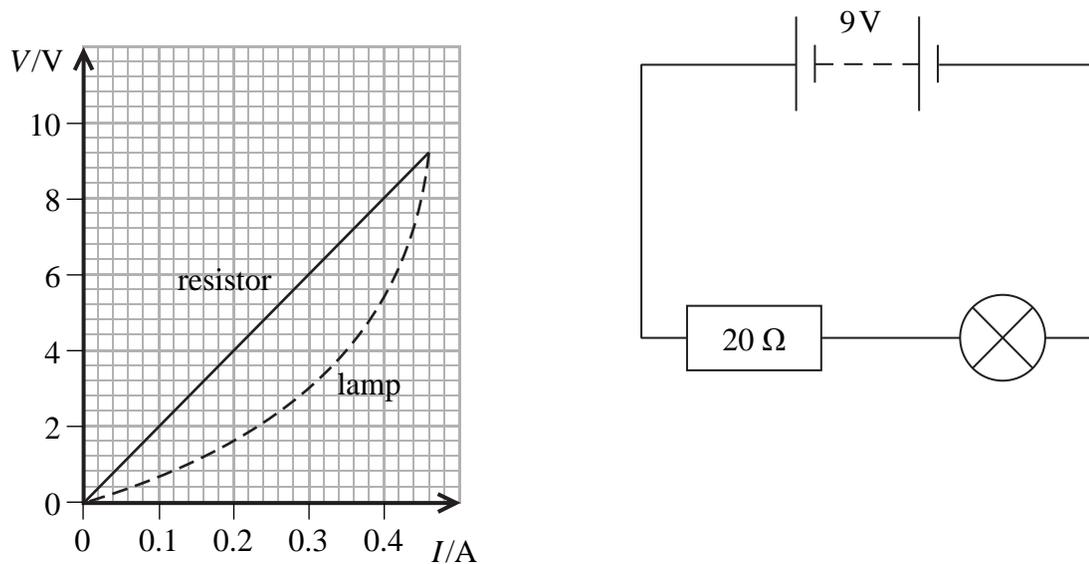
(Total for Question 1 mark)

6 The current in a wire

- A depends only on the potential difference applied.
- B depends only on the resistance of the wire.
- C depends on both the potential difference and the resistance of the wire.
- D does not depend on the potential difference or the resistance of the wire.

(Total for Question = 1 mark)

7 The graph shows the relationship between potential difference  $V$  and current  $I$  for a fixed  $20\ \Omega$  resistor and a filament lamp.



The resistor and lamp are placed in series with a 9 V battery of negligible internal resistance. The current in the circuit is

- A 0.1 A
- B 0.2 A
- C 0.3 A
- D 0.4 A

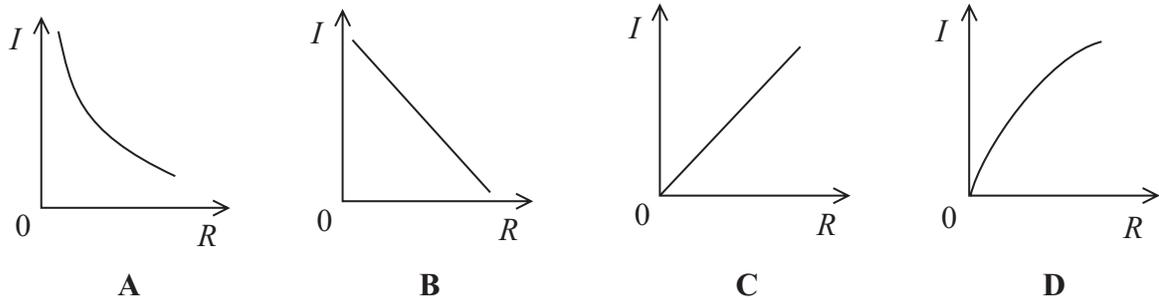
(Total for Question = 1 mark)

- 8 Two identical resistors connected in series have a total resistance of  $8\Omega$ .  
The same two resistors when connected in parallel have a total resistance of

- A  $0.5\ \Omega$   
 B  $2\ \Omega$   
 C  $4\ \Omega$   
 D  $8\ \Omega$

(Total for Question = 1 mark)

- 9 A steady potential difference is applied across a variable resistor that is kept at a constant temperature.

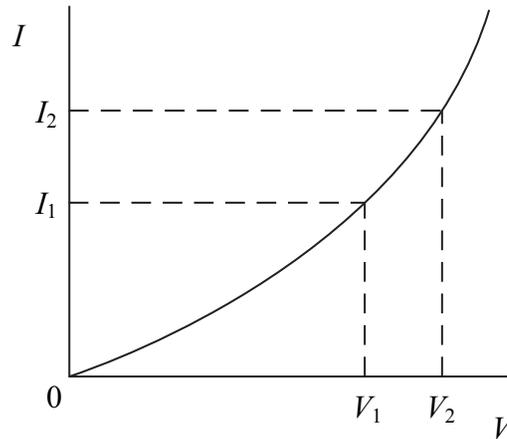


The graph which represents the relationship between the resistance  $R$  of the variable resistor and the current  $I$  through it is

- A  
 B  
 C  
 D

(Total for Question 1 mark)

10 The graph shows how the current  $I$  varies with potential difference  $V$  for an electrical component.

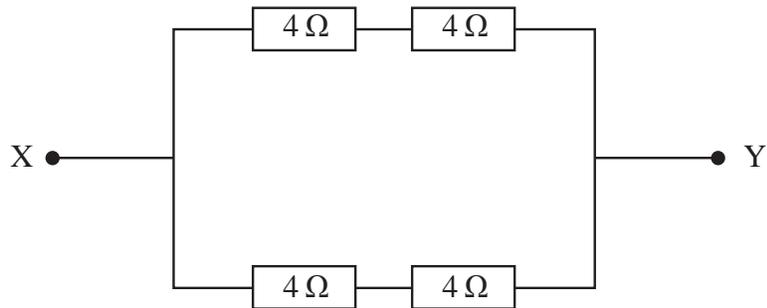


Which row of the table gives the resistance of the component at  $V_2$  and describes how the resistance changes from  $V_1$  to  $V_2$ ?

		Resistance at $V_2$	Change in resistance from $V_1$ to $V_2$
<input type="checkbox"/>	<b>A</b>	$\frac{V_2}{I_2} \frac{V_1}{I_1}$	increases
<input type="checkbox"/>	<b>B</b>	$\frac{V_2}{I_2} \frac{V_1}{I_1}$	decreases
<input type="checkbox"/>	<b>C</b>	$\frac{V_2}{I_2}$	increases
<input type="checkbox"/>	<b>D</b>	$\frac{V_2}{I_2}$	decreases

(Total for Question 1 mark)

11 The diagram shows a resistor network.

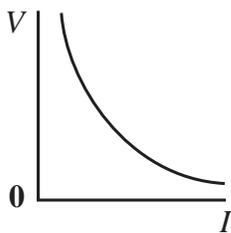


The total resistance between points X and Y is

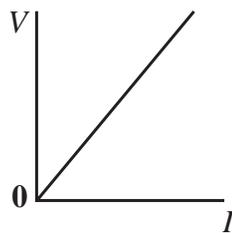
- A 0.25  $\Omega$
- B 1.0  $\Omega$
- C 4.0  $\Omega$
- D 16  $\Omega$

(Total for Question = 1 mark)

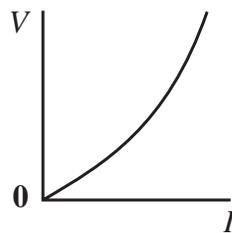
12 Which one of the following graphs correctly shows the relationship between potential difference ( $V$ ) and current ( $I$ ) for a filament lamp?



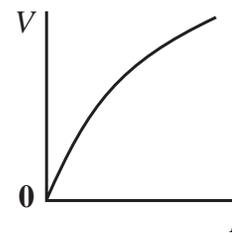
A



B



C

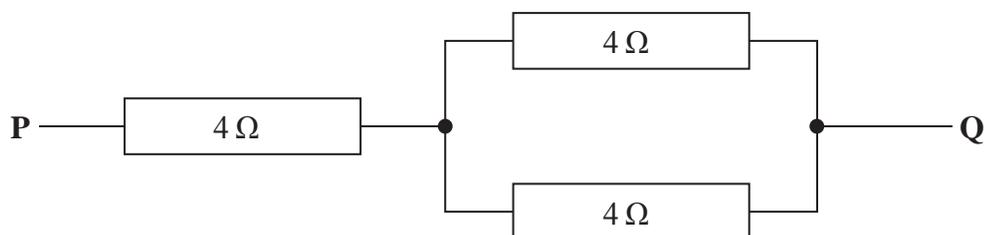


D

- A
- B
- C
- D

(Total for Question = 1 mark)

13 The diagram shows a combination of three identical resistors.



What is the combined resistance between P and Q?

- A  $4\ \Omega$
- B  $6\ \Omega$
- C  $8\ \Omega$
- D  $12\ \Omega$

(Total for Question = 1 mark)

14 When a semiconductor has its temperature increased from room temperature, its resistance usually decreases because

- A the electrons are moving faster.
- B the lattice atoms vibrate with greater amplitude.
- C the lattice atoms vibrate with smaller amplitude.
- D the number of charge carriers per unit volume increases.

(Total for Question = 1 mark)

15 The resistance of a negative temperature coefficient thermistor

- A becomes zero above a certain temperature.
- B decreases as the temperature decreases.
- C increases as the temperature decreases.
- D is constant at temperatures below  $0\ ^\circ\text{C}$ .

(Total for Question = 1 mark)