

Resistance

Question Paper

Level	A Level
Subject	Physics
Exam Board	Edexcel
Topic	Electric Circuit
Sub Topic	Resistance
Booklet	Question Paper
Paper Type	Multiple Choice

Time Allowed: 18 minutes

Score: /15

Percentage: /100

Grade Boundaries:

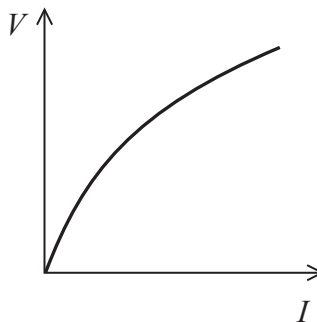
A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

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

	Force	Work done
<input type="checkbox"/> A	$\text{kg m}^2 \text{s}^{-2}$	$\text{kg m}^3 \text{s}^{-2}$
<input type="checkbox"/> B	kg m s^{-2}	$\text{kg m}^2 \text{s}^{-2}$
<input type="checkbox"/> C	$\text{kg m}^2 \text{s}^{-2}$	kg m s^{-2}
<input type="checkbox"/> D	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 Ω
- B 0.65 Ω
- C 8.9 Ω
- D 11 Ω

(Total for Question = 1 mark)

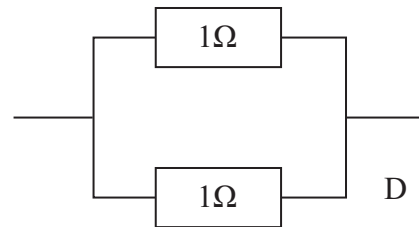
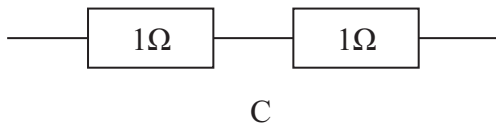
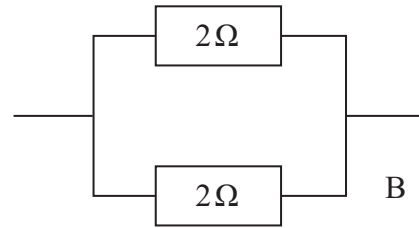
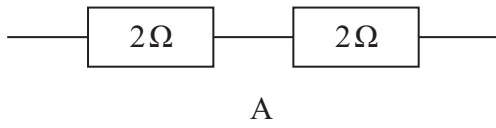
- 4 All electrical components have resistance.

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

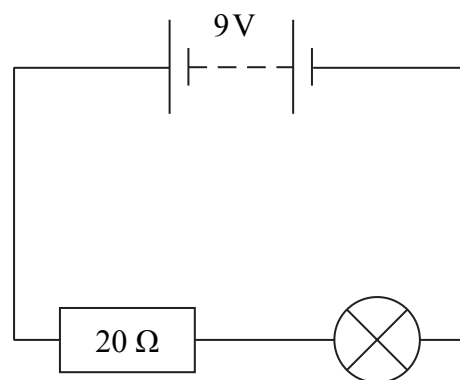
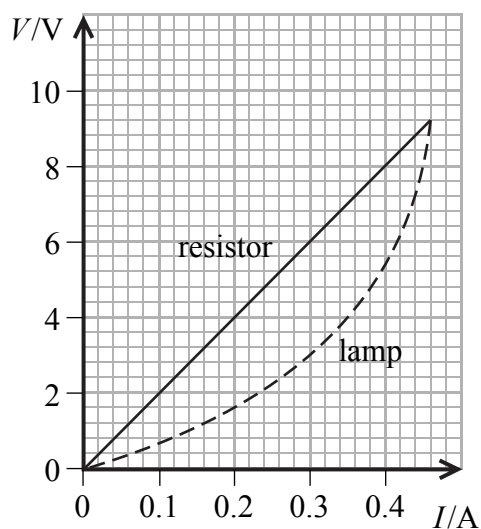
(Total for Question = 1 mark)

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

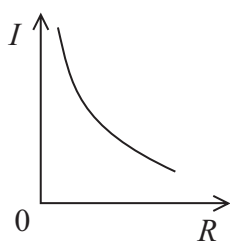
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- 8 Two identical resistors connected in series have a total resistance of 8Ω .
The same two resistors when connected in parallel have a total resistance of

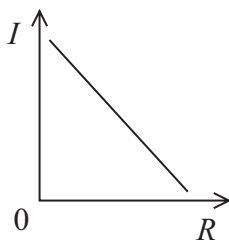
- A $0.5\ \Omega$
 B $2\ \Omega$
 C $4\ \Omega$
 D $8\ \Omega$

(Total for Question = 1 mark)

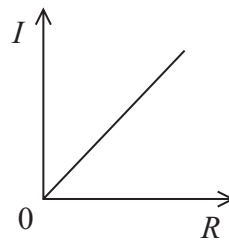
- 9 A steady potential difference is applied across a variable resistor that is kept at a constant temperature.



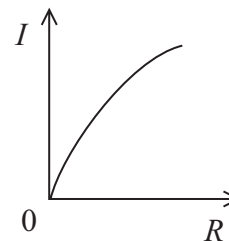
A



B



C



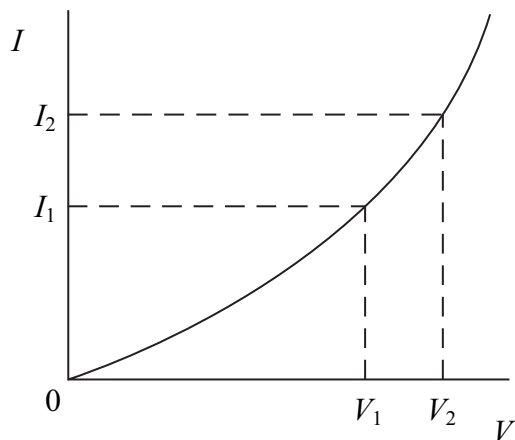
D

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.

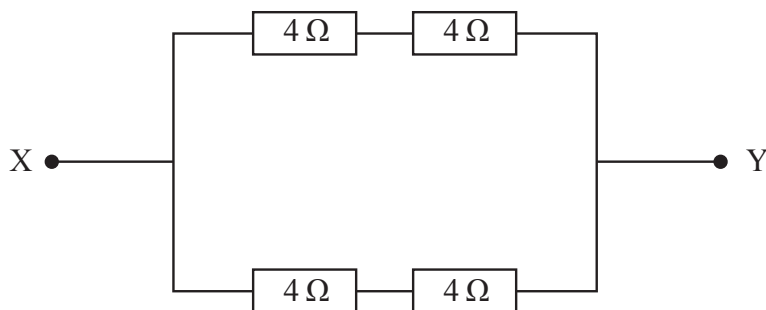


Which row of the table gives the resistance of the component at V_2 and describes how the resistance changes from V_1 to V_2 ?

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

(Total for Question = 1 mark)

11 The diagram shows a resistor network.

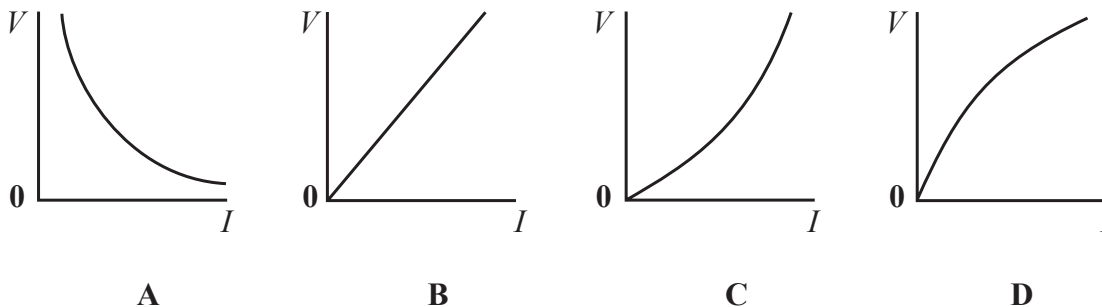


The total resistance between points X and Y is

- A 0.25 Ω
- B 1.0 Ω
- C 4.0 Ω
- D 16 Ω

(Total for Question = 1 mark)

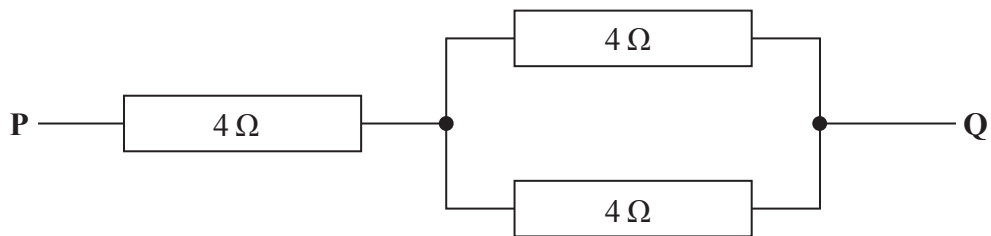
12 Which one of the following graphs correctly shows the relationship between potential difference (V) and current (I) for a filament lamp?



- A
- B
- C
- D

(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)