

A Level Physics Taster Questions – Electricity.

Q1. When the temperature of a copper wire increases, its ability to conduct electricity

- A remains the same.
- B increases.
- C decreases.
- D remains the same at first and then increases.

(Total 1 mark)

Q2. A mobile phone operates at a constant power of 200 mW (milliwatts). It has a 3.7 V lithium-ion battery that has a charge capacity of 9400 C.

What is the time taken for the battery to discharge completely?

- A 2 hours
- B 48 hours
- C 120 hours
- D 140 hours

(Total 1 mark)

Q3. The current in a wire is 20 mA (milliamps).

How many electrons pass a point in the wire in 2 minutes?

- A 2.5×10^{17}
- B 1.5×10^{19}
- C 2.5×10^{20}
- D 1.5×10^{22}

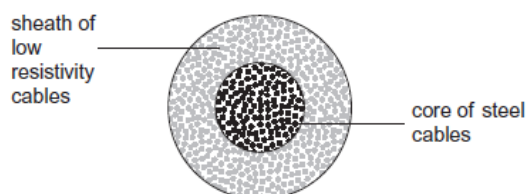
(Total 1 mark)

Q4. In a cathode ray tube 7.5×10^{15} electrons strike the screen in 40 s. What current does this represent? (The charge of a single electron is 1.6×10^{-19} C.)

- A 1.3×10^{-16} A
- B 5.3×10^{-15} A
- C 3.0×10^{-5} A
- D 1.2×10^{-3} A

(Total 1 mark)

Q5. The overhead cables used to transmit electrical power by the National Grid usually consist of a central core of steel cables surrounded by a sheath of cables of low resistivity material, such as aluminium.

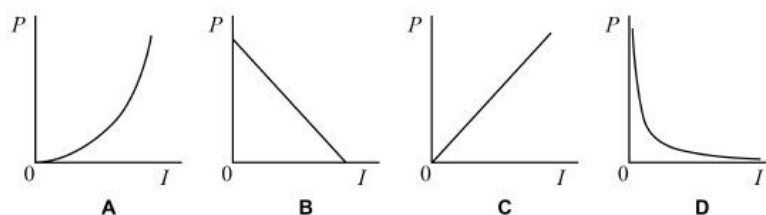


What is the main purpose of the steel core?

- A To force more current into the outer sheath.
- B To provide additional current paths through the cables.
- C To reduce the power lost from the cables.
- D To increase the mechanical strength of the cables.

(Total 1 mark)

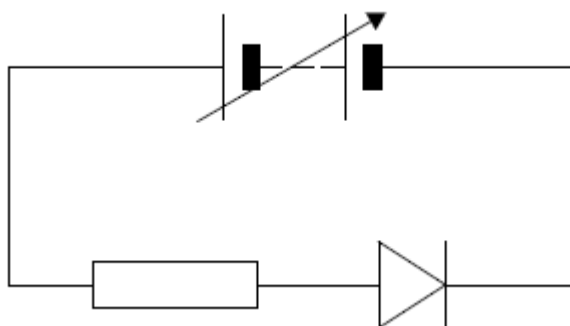
Q6. Which graph shows how power P varies with current I in a component that obeys Ohm's law?



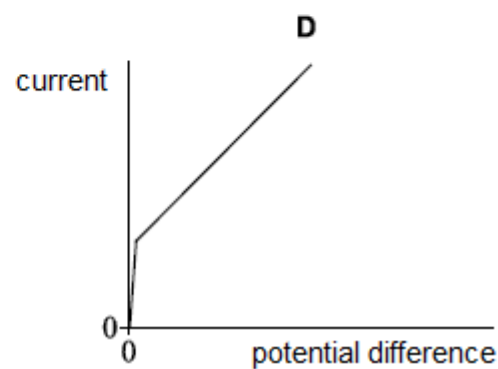
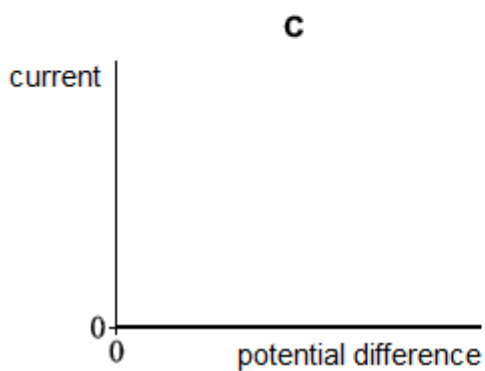
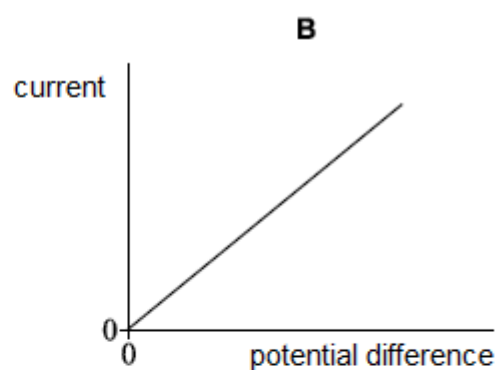
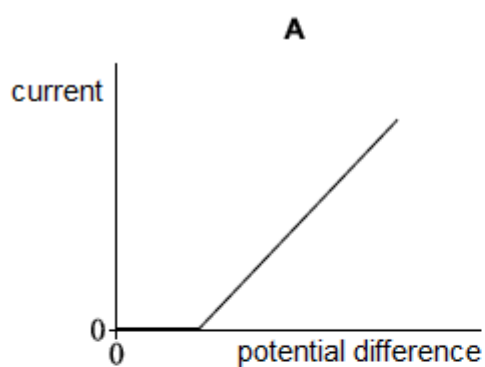
- A
- B
- C
- D

(Total 1 mark)

Q7. A resistor and diode are connected in series with a variable power supply as shown in the diagram.



Which best shows the current-p.d. characteristic for the combination of the resistor and diode?



A

B

C

D

(Total 1 mark)

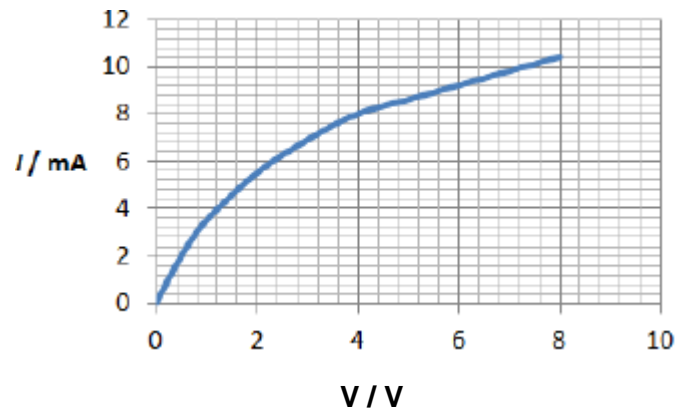
Q8. A voltmeter is used to measure potential difference for a component **X**.

Which row gives the position and ideal resistance for the voltmeter?

	Position	Ideal resistance	
A	in series with X	infinite	<input type="checkbox"/>
B	in series with X	zero	<input type="checkbox"/>
C	in parallel with X	infinite	<input type="checkbox"/>
D	in parallel with X	zero	<input type="checkbox"/>

(Total 1 mark)

Q9. The graph shows the current–p.d. (I – V) characteristics of a filament lamp.

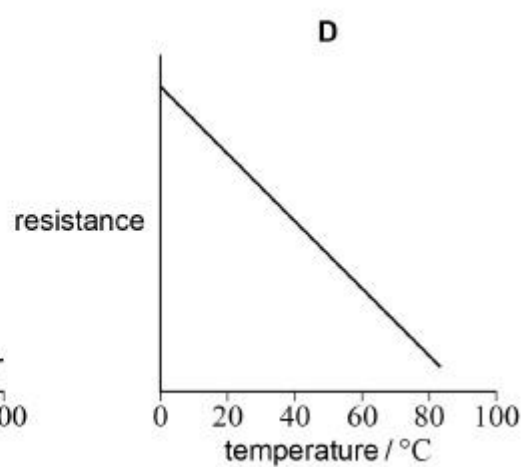
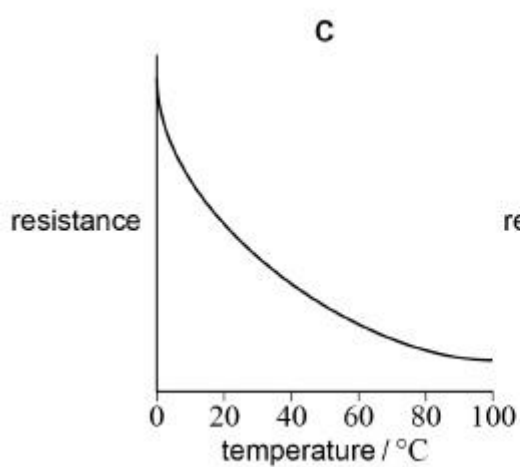
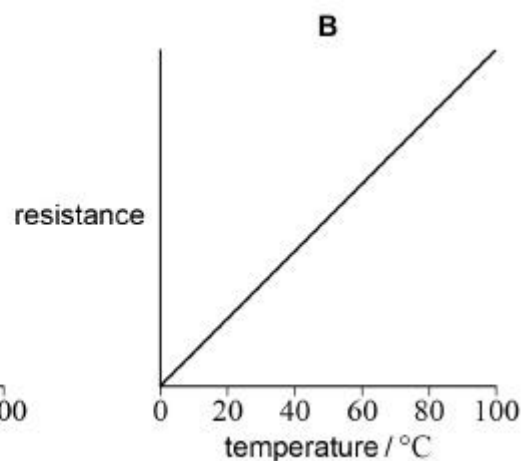
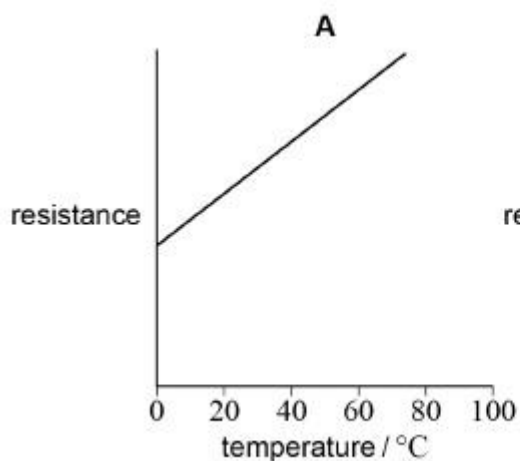


What is the resistance of the filament when the potential difference (pd) across it is 4.0 V?

- A** 500 Ω
- B** 1700 Ω
- C** 2000 Ω
- D** 6000 Ω

(Total 1 mark)

Q10. Which graph shows the variation of the resistance with temperature for an NTC thermistor?



A

B

C

D

(Total 1 mark)

Mark schemes

- Q1.
C [1]
- Q2.
B [1]
- Q3.
B [1]
- Q4.
C [1]
- Q5.
D [1]
- Q6.
A [1]
- Q7.
A [1]
- Q8.
C [1]
- Q9.
A [1]
- Q10.
C [1]