GET BETTER AT PHYSICS · MARK SCHEME

Resistance & I–V Characteristics: tiered multiple choice

Edexcel IAL Physics · Unit 2 (WPH12) · Specification points 66, 70 · 5 questions · 5 marks

1 mark per correct letter

Worked reasoning for every question

How students did = from Pearson examiner reports, where available

Answer key

Q1	Q2	Q3	Q4	Q5
C	B	D	A	C

Easy

Questions 1–5

1 **C**

Identifying a straight-line I–V graph · Edexcel IAL January 2023 · Unit 2 · Q1

A straight line through the origin means I ∝ V, so the resistance is constant: this is an ohmic conductor, such as a resistor kept at constant temperature. A filament lamp curves over, a diode conducts only one way and a thermistor's graph curves upwards.

How students did: Examiners reported that more than 70% of students got this right in January 2023.

2 **B**

Identifying a filament bulb from its I–V graph · Edexcel IAL October 2025 · Unit 2 · Q1

The graph passes through the origin and is symmetrical, but it gets less steep as the p.d. increases in either direction: the resistance rises as the filament heats up. That is a filament bulb.

3 **D**

Heating a metal wire · Edexcel IAL October 2024 · Unit 2 · Q5

In a metal the number of conduction electrons stays about the same. As the temperature rises the lattice ions vibrate with larger amplitude, so electrons collide with them more often and the resistance increases.

4 **A**

Why a cooling filament's resistance changes · Edexcel IAL June 2023 · Unit 2 · Q10

As the filament cools, the lattice ions vibrate less, so the electrons collide with them less often and the resistance decreases. In a metal the number of conduction electrons does not change significantly with temperature.

5 **C**

Reading a diode's I–V graph · Edexcel IAL October 2023 · Unit 2 · Q2

Above about 0.7 V the current rises steeply for small increases in p.d., so the resistance (V/I) decreases. The graph shows a tiny reverse current, so the diode does conduct a little in reverse and its reverse resistance is very large but not infinite.

How students did: 56% of students got this right in October 2023.

End of mark scheme. Answers from Pearson's published mark schemes; explanations written for this pack. Pearson Edexcel material is © Pearson Education Ltd. More free packs and 1-to-1 tuition: **www.getbetteratphysics.co.uk**

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