GET BETTER AT PHYSICS · MARK SCHEME

Potential Dividers: tiered multiple choice

Edexcel IAL Physics · Unit 2 (WPH12) · Specification points 74–76 · 6 questions · 6 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	Q6
C	D	C	D	C	B

Easy

Questions 1–3

1 **C**

p.d. along a uniform wire · Edexcel IAL January 2024 · Unit 2 · Q6

The wire is uniform, so equal lengths have equal resistance and the p.d. across a length d is proportional to d. The graph is a straight line through the origin with a positive gradient.

How students did: 66% of students got this right in January 2024.

2 **D**

Thermistor and fixed resistor as the temperature rises · Edexcel IAL October 2022 · Unit 2 · Q3

As the thermistor warms up its resistance falls, so the total resistance falls and the current (ammeter reading) increases. The fixed resistor then has a larger current through it, so the p.d. across it (the voltmeter reading) increases.

How students did: Examiners reported that more than half of students got this right in October 2022. Most wrong answers were C (expecting the current to rise).

3 **C**

p.d. across one resistor in a potential divider · Edexcel IAL January 2025 · Unit 2 · Q6

The two parallel resistors have a combined resistance of R/2. In series with the third resistor R, the total is 3R/2. The p.d. shares in proportion to resistance, so the single resistor gets R ÷ (3R/2) = 2/3 of ε.

Medium

Questions 4–6

4 **D**

p.d. across a resistor in a parallel pair · Edexcel IAL June 2024 · Unit 2 · Q2

The battery's 10 V is shared between the resistor with the voltmeter (3.3 V) and the parallel pair R_1/R_2. Components in parallel have the same p.d., so the p.d. across R_1 is the whole of the rest: 10 − 3.3 V.

> **Watch out:** R_1 and R_2 are in parallel, so they do not share the remaining p.d.: each has all of it.

How students did: Examiners reported that fewer than half of students got this right in June 2024.

5 **C**

LDR in brighter light: what does not happen · Edexcel IAL January 2022 · Unit 2 · Q10

Brighter light lowers the LDR's resistance (D happens), so the total resistance falls and the current rises (A happens). The fixed resistor then has a larger p.d. across it (B happens). With the same supply p.d. and a larger current, the total power P = VI increases, so C does not happen.

> **Watch out:** Read the question carefully: it asks which change does not take place.

How students did: Examiners listed this among the least successful multiple-choice questions on the January 2022 paper. Most wrong answers were A or B: many probably missed the word 'not'.

6 **B**

Voltmeter between two potential dividers · Edexcel IAL June 2022 · Unit 2 · Q8

Each 1.00 m wire has 4.0 V across it, so the potential falls by 4.0 V per metre along each. The point 0.25 m from P is 1.0 V below the top potential (at 3.0 V); the point 0.75 m from R is 3.0 V below (at 1.0 V). The voltmeter reads the difference: 2.0 V.

> **Watch out:** Treat each wire as a separate potential divider and find the potential at each connection point.

How students did: In June 2022, about a third of students got this right. The circuit diagram was drawn in an unfamiliar style.

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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