GET BETTER AT PHYSICS · MARK SCHEME

Electric Potential: tiered multiple choice

Edexcel IAL Physics · Unit 4 (WPH14) · Specification points 96, 98–99 · 4 questions · 4 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
A	B	B	B

Easy

Questions 1–3

1 **A**

Field lines from equipotentials · Edexcel IAL January 2020 · Unit 4 · Q4

The potential increases towards the charge (2 V, 4 V, 6 V), so the charge is positive. Field lines point away from a positive charge, at right angles to the equipotentials: radial lines pointing outwards, as in A.

How students did: 81% of students got this right in January 2020.

2 **B**

Potential from a point charge · Edexcel IAL January 2020 · Unit 4 · Q2

$V = q/(4\pi\varepsilon_0 r)$, so $V \propto q/r$. Doubling the charge doubles V; making the distance 4 times larger divides V by 4. Overall $V \times 2/4 = V/2$.

How students did: 75% of students got this right in January 2020.

3 **B**

Potential from an E–r graph · Edexcel IAL January 2025 · Unit 4 · Q9

Electric field strength is the potential gradient ($E = -dV/dr$), so the potential at a point is found from the area under the E–r graph from that point out to infinity, where V = 0.

Medium

Question 4

4 **B**

Where the field is strongest on a V–r graph · Edexcel IAL October 2021 · Unit 4 · Q6

Electric field strength is the (negative) gradient of the potential–distance graph. Inside the charged object (up to A) the graph is flat, so E = 0. Just outside the surface, at B, the curve is steepest, so E is a maximum; further out at C and D it is less steep.

How students did: 34% of students got this right in October 2021.

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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