GET BETTER AT PHYSICS · MARK SCHEME

Uniform Electric Fields: tiered multiple choice

Edexcel IAL Physics · Unit 4 (WPH14) · Specification points 97 · 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
B	C	B	B	A

Easy

Questions 1–3

1 **B**

Field strength in a uniform field · Edexcel IAL January 2020 · Unit 4 · Q5

Between parallel plates the field is uniform: $E = V/d = 10/0.20 = 50$ V m^{-1}. The field points from the positive (+10 V) plate towards the 0 V plate, so downwards. It is the same at every point between the plates, including X.

> **Watch out:** Use the full plate separation, not the distance from X to a plate.

How students did: 78% of students got this right in January 2020.

2 **C**

Charge on a stationary oil drop · Edexcel IAL October 2020 · Unit 4 · Q6

The drop is stationary, so the electric force balances its weight: $qE = mg$, with $E = V/d$. So $qV/d = mg$ and $q = mgd/V$.

How students did: 76% of students got this right in October 2020.

3 **B**

Reducing the deflection in a cathode ray tube · Edexcel IAL January 2022 · Unit 4 · Q6

The field between the plates is $E = V/d$. Increasing the plate separation d reduces E, so the force on each electron is smaller and the deflection decreases. Longer plates or a larger p.d. would increase the deflection.

How students did: 73% of students got this right in January 2022.

Medium

Question 4

4 **B**

Accelerating a helium nucleus in the same field · Edexcel IAL January 2023 · Unit 4 · Q10

Acceleration $a = qE/m$. A helium nucleus has 2 × the proton's charge and 4 × its mass, so its acceleration is half the proton's. To gain the same Δv it needs twice the time: $2t$.

How students did: 49% of students got this right in January 2023.

Hard

Question 5

5 **A**

Field strength between parallel plates · Edexcel IAL January 2024 · Unit 4 · Q5

The field between parallel plates is uniform (away from the edges), so E is the same at every distance from the positive plate: a horizontal line.

How students did: 28% of students got this right in January 2024.

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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