FREE REVISION PACK

Electric Potential

Pearson Edexcel International Advanced Level Physics · Unit 4 (WPH14) · Specification points 96, 98–99

Easy | Medium | Multiple choice · past-paper questions

4	4	≈ 5 min
QUESTIONS	TOTAL MARKS	SUGGESTED TIME*

Contents

Q	LEVEL	FOCUS	SOURCE	MARKS
1	Easy	Field lines from equipotentials	Edexcel IAL January 2020 · Unit 4 · Q4	1 mark
2	Easy	Potential from a point charge	Edexcel IAL January 2020 · Unit 4 · Q2	1 mark
3	Easy	Potential from an E–r graph	Edexcel IAL January 2025 · Unit 4 · Q9	1 mark
4	Medium	Where the field is strongest on a V–r graph	Edexcel IAL October 2021 · Unit 4 · Q6	1 mark

Key ideas to have ready

- Potential of a point charge $V = kQ/r$ ($\propto 1/r$, not $1/r^2$).
- E is the potential gradient; potential = area under an E–r graph from r to infinity.
- Equipotentials are perpendicular to field lines.
- Potential rises towards a positive charge.

How to use this pack

1. The questions are grouped into levels (Easy and Medium). Work through them in order, and check your answers at the end of each level before moving on.
2. Every question is multiple choice with one correct answer. Write down your working anyway; that is how you find mistakes.
3. The separate mark scheme uses the same numbers and explains every answer.

Levels are based on how students did in Pearson's examiner reports where that information exists, plus our own difficulty rating. *About 1.5 minutes per question.

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Easy

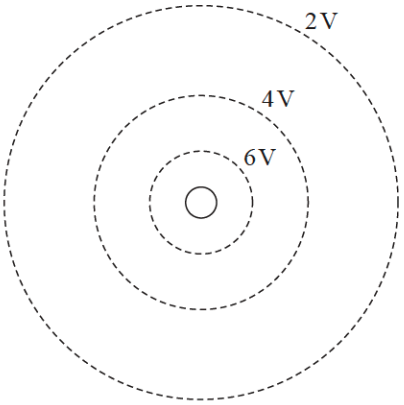
Definitions and one-step ideas. Most students get these right.

Questions 1–3

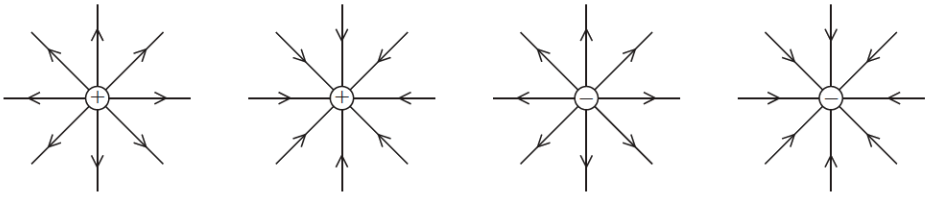
Choose **one** answer for each question and put a cross in the box next to it.

Edexcel IAL January 2020 · Unit 4 · Q4

1 The diagram shows equipotential lines about a point charge.



Which of the following diagrams shows a possible combination of electric field lines and polarity of point charge to produce this pattern?



☒ **A** ☒ **B** ☒ **C** ☒ **D**

Edexcel IAL January 2020 · Unit 4 · Q2

2 At distance d from a point charge of magnitude q the potential is V.

Which of the following is the potential at a distance $4d$ from a point charge of magnitude $2q$?

☒ **A** $\frac{V}{4}$

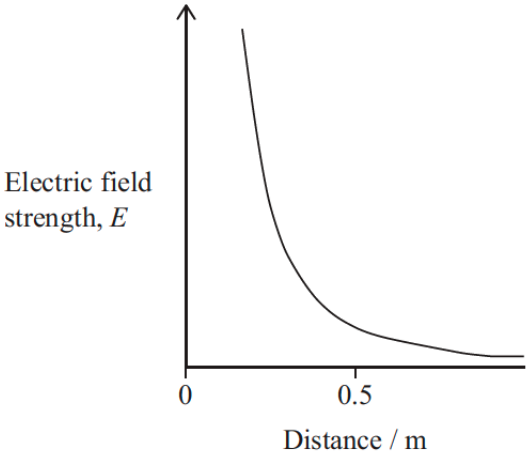
☒ **B** $\frac{V}{2}$

☒ **C** V

☒ **D** $2V$

Edexcel IAL January 2025 · Unit 4 · Q9

3 The graph shows how electric field strength varies with distance from a charged conducting sphere.



Which of the following gives the electric potential at a distance of 0.5 m from the sphere?

☒ **A** The area under the graph from 0 to 0.5 m.

☒ **B** The area under the graph from 0.5 m to infinity.

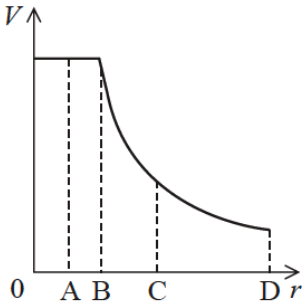
☒ **C** The gradient of the tangent to the graph at 0.5 m.

☒ **D** The value of E at 0.5 m divided by 0.5 m.

Medium Two or three steps. Roughly a third to a half of students get these right. **Question 4**

Edexcel IAL October 2021 · Unit 4 · Q6

4 The electric potential V varies with the distance r from a charged object as shown.



At which distance, A, B, C or D, does the electric field strength have its maximum value?

☒ **A**

☒ **B**

☒ **C**

☒ **D**

End of questions. Check your answers with the matching mark scheme. More free packs and 1-to-1 tuition:
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