FREE REVISION PACK

Capacitance & Energy Stored

Pearson Edexcel International Advanced Level Physics · Unit 4 (WPH14) · Specification points 100–101

Easy | Medium | Multiple choice · past-paper questions

5	5	≈ 10 min
QUESTIONS	TOTAL MARKS	SUGGESTED TIME*

Contents

Q	LEVEL	FOCUS	SOURCE	MARKS
1	Easy	Energy stored from a Q–V graph	Edexcel IAL October 2022 · Unit 4 · Q5	1 mark
2	Easy	Charge stored by two capacitors in parallel	Edexcel IAL January 2024 · Unit 4 · Q7	1 mark
3	Easy	Work done by a battery charging a capacitor	Edexcel IAL October 2021 · Unit 4 · Q7	1 mark
4	Easy	Ratio of energies stored by two capacitors	Edexcel IAL January 2025 · Unit 4 · Q10	1 mark
5	Medium	Energy stored when the p.d. doubles	Edexcel IAL June 2022 · Unit 4 · Q3	1 mark

Key ideas to have ready

- C = Q/V (farad, F).
- Energy stored $W = \frac{1}{2}QV = \frac{1}{2}CV^2 = \frac{1}{2}Q^2/C$: the area under a Q–V graph.
- A battery does work QV charging a capacitor; half is stored.
- Capacitors in parallel add: each has the full p.d.

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

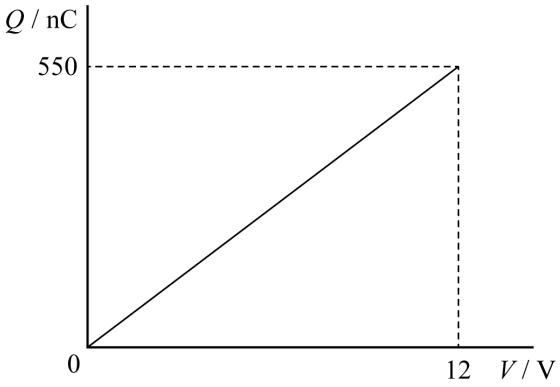
Definitions and one-step ideas. Most students get these right.

Questions 1–4

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

Edexcel IAL October 2022 · Unit 4 · Q5

1 The graph shows how the charge Q stored on the plates of a capacitor varies with the potential difference V across the plates.



Which of the following expressions gives the energy, in J, stored by the capacitor when V is 12 V?

☒ **A** $\frac{550}{12}$

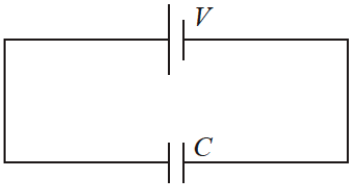
☒ **B** $\frac{12}{550 \times 10^{-9}}$

☒ **C** $\frac{550 \times 12}{2}$

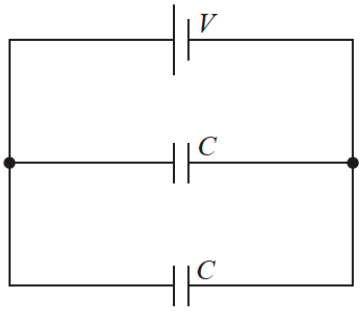
☒ **D** $\frac{550 \times 10^{-9} \times 12}{2}$

Edexcel IAL January 2024 · Unit 4 · Q7

2 A potential difference V is connected across a capacitor of capacitance C. The charge stored on the capacitor is Q.



The capacitor is replaced with two capacitors, each of capacitance C, connected in parallel.



What is the total charge stored in the parallel circuit?

☒ **A** $\frac{Q}{4}$

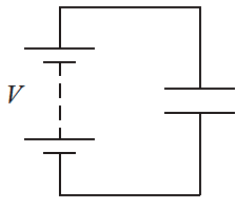
☒ **B** $\frac{Q}{2}$

☒ **C** Q

☒ **D** $2Q$

Edexcel IAL October 2021 · Unit 4 · Q7

3 A battery of e.m.f. V is connected to a capacitor as shown. The capacitor is initially uncharged.



Work is done by the battery to transfer a charge Q from one plate of the capacitor to the other plate. The final potential difference across the capacitor is V.

Which row of the table gives the work done by the battery, and the energy stored by the capacitor, at the end of this process?

	Work done by battery	Energy stored by capacitor
☒ **A**	$\frac{QV}{2}$	$\frac{QV}{2}$
☒ **B**	$\frac{QV}{2}$	QV
☒ **C**	QV	$\frac{QV}{2}$
☒ **D**	QV	QV

Edexcel IAL January 2025 · Unit 4 · Q10

4 A charged capacitor C_1 stores energy W_1. A charged capacitor C_2 stores energy W_2.

C_1 has half the capacitance of C_2.

C_1 is charged to half the potential difference of C_2.

Which of the following shows the ratio $\frac{W_1}{W_2}$?

☒ **A** $\frac{1}{8}$

☒ **B** $\frac{1}{4}$

☒ **C** 4

☒ **D** 8

Medium Two or three steps. Roughly a third to a half of students get these right. **Question 5**

Edexcel IAL June 2022 · Unit 4 · Q3

5 When the potential difference across a capacitor is V, the energy stored by the capacitor is W.

Which of the following gives the energy stored by the capacitor when the potential difference across the capacitor is $2V$?

☒ **A** W

☒ **B** $2W$

☒ **C** $3W$

☒ **D** $4W$

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