FREE REVISION PACK

Power & Efficiency

Pearson Edexcel International Advanced Level Physics · Unit 1 (WPH11) · Specification points 21–22

Easy | Medium | Multiple choice · past-paper questions

5	5	≈ 10 min
QUESTIONS	TOTAL MARKS	SUGGESTED TIME*

Contents

Q	LEVEL	FOCUS	SOURCE	MARKS
1	Easy	Constant power over time	Edexcel IAL October 2025 · Unit 1 · Q2	1 mark
2	Easy	Minimum power of a water pump	Edexcel IAL June 2019 · Unit 1 · Q7	1 mark
3	Easy	Braking force from power	Edexcel IAL June 2025 · Unit 1 · Q9	1 mark
4	Easy	Power of a cyclist going uphill	Edexcel IAL January 2024 · Unit 1 · Q4	1 mark
5	Medium	Power of a pump that lifts and accelerates water	Edexcel IAL October 2019 · Unit 1 · Q8	1 mark

Key ideas to have ready

- Power = energy transferred ÷ time = work done ÷ time; also P = Fv.
- Efficiency = useful output ÷ total input (energy or power).
- Wasted power = total input − useful output = (1 − efficiency) × input.
- Units: 1 W = 1 J s^{-1}; convert kW, MW and kJ before calculating.

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 2025 · Unit 1 · Q2

1 A lamp has a constant power input and a constant efficiency.

Which row of the table describes how the useful power output and total energy output vary with time?

	Useful power output	Total energy output
☒ **A**	constant	constant
☒ **B**	constant	increases
☒ **C**	increases	constant
☒ **D**	increases	increases

Edexcel IAL June 2019 · Unit 1 · Q7

2 A water pump causes 200 g of water to be ejected from the nozzle of a garden hose each second at a velocity of $3\,\text{m s}^{-1}$.

Which of the following expressions could be used to determine the minimum output power in watts required from the pump?

☒ **A** $\dfrac{200 \times 3^2}{2}$

☒ **B** $\dfrac{0.2 \times 3^2}{2}$

☒ **C** $\dfrac{200 \times 3}{2}$

☒ **D** $\dfrac{0.2 \times 3}{2}$

Edexcel IAL June 2025 · Unit 1 · Q9

3 The driver of a car applies the brakes. The frictional force F between the tyres and the road is constant. The average power dissipated by F is 50 kW.

The car moves a distance of 13 m in a time of 2.3 s before coming to rest.

Which of the following expressions gives F in newtons?

☒ **A** $\dfrac{50 \times 10^3 \times 2.3}{13}$

☒ **B** $\dfrac{50 \times 10^3 \times 13}{2.3}$

☒ **C** $\dfrac{13}{50 \times 10^3 \times 2.3}$

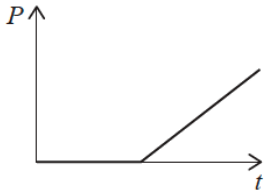
☒ **D** $\dfrac{2.3}{50 \times 10^3 \times 13}$

Edexcel IAL January 2024 · Unit 1 · Q4

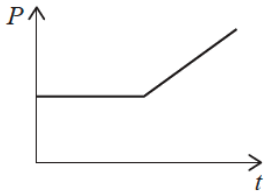
4 A cyclist moves along a horizontal road at a constant speed. She then moves at the same speed up a hill with a constant gradient.

Which of the following graphs shows how the power output P of the cyclist varies with time t?

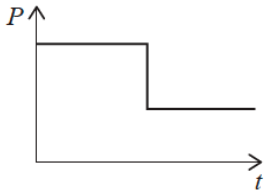
☒ **A**



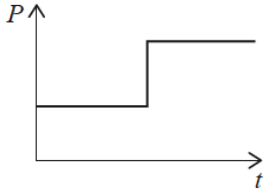
☒ **B**



☒ **C**



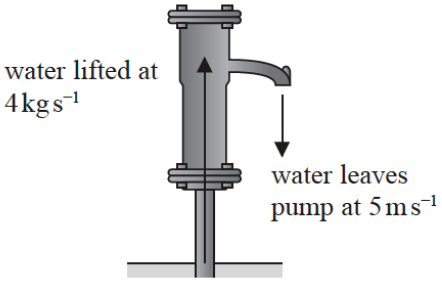
☒ **D**



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

Edexcel IAL October 2019 · Unit 1 · Q8

5 An electric pump lifts water from a well through a height of 10 m at a rate of $4\,kg\,s^{-1}$. The water leaves the pump with a velocity of $5\,m\,s^{-1}$ as shown.



Which of the following expressions could be used to determine the minimum power output of the pump in watts?

☒ **A** $\frac{1}{2}(4 \times 5^2)$

☒ **B** $(4 \times 9.81 \times 10)$

☒ **C** $(4 \times 9.81 \times 10) + \frac{1}{2}(4 \times 5^2)$

☒ **D** $(4 \times 9.81 \times 10) - \frac{1}{2}(4 \times 5^2)$

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