GET BETTER AT PHYSICS · MARK SCHEME

Power & Efficiency: tiered multiple choice

Edexcel IAL Physics · Unit 1 (WPH11) · Specification points 21–22 · 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	B	A	D	C

Easy

Questions 1–4

1 **B**

Constant power over time · Edexcel IAL October 2025 · Unit 1 · Q2

With constant input power and constant efficiency, the useful power output is constant. Energy = power × time, so the total energy output keeps increasing with time.

2 **B**

Minimum power of a water pump · Edexcel IAL June 2019 · Unit 1 · Q7

Each second, 200 g = 0.2 kg of water is given a speed of 3 m s^{-1}. Kinetic energy given per second = ½ × 0.2 × 3^2, so the minimum power is 0.2 × 3^2 ÷ 2 watts.

> **Watch out:** Convert grams to kilograms before using ½mv^2.

How students did: 66% of students got this right in June 2019. The most common wrong answer was D.

3 **A**

Braking force from power · Edexcel IAL June 2025 · Unit 1 · Q9

Power = work done ÷ time = Fs/t, so F = Pt/s = (50 × 10^3 × 2.3) ÷ 13.

4 **D**

Power of a cyclist going uphill · Edexcel IAL January 2024 · Unit 1 · Q4

On the level at constant speed her power is constant. Going up the hill at the same speed she must also gain GPE at a steady rate, so the power is greater but still constant. The graph steps up to a new constant value: D.

Medium

Question 5

5 **C**

Power of a pump that lifts and accelerates water · Edexcel IAL October 2019 · Unit 1 · Q8

Each second the pump lifts 4 kg through 10 m (GPE gain 4 × 9.81 × 10 J) and gives it a speed of 5 m s^{-1} (KE gain ½ × 4 × 5^2 J). The minimum power is the total energy given per second, so the two terms are added.

How students did: 36% of students got this right in October 2019. All three wrong options were chosen about equally.

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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