GET BETTER AT PHYSICS · MARK SCHEME

Equilibrium & Free-Body Diagrams: tiered multiple choice

Edexcel IAL Physics · Unit 1 (WPH11) · Specification points 6, 8 · 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	D	B	C

Easy

Questions 1–5

1 **B**

Forces on a hanging picture · Edexcel IAL June 2025 · Unit 1 · Q5

The picture is in equilibrium, so the vector sum of all the forces on it is zero: $W + T_1 + T_2 = 0$ (as vectors).

> **Watch out:** Equilibrium means the vectors add to zero, not that one force equals the sum of the others in magnitude.

2 **C**

Box sliding at constant speed · Edexcel IAL June 2025 · Unit 1 · Q8

At constant speed the resultant force along the slope is zero. The component of weight down the slope is $W \sin\theta$, and friction F acts up the slope. So $F = W \sin\theta$.

> **Watch out:** $W \cos\theta$ is the component perpendicular to the slope; it balances the normal reaction, not friction.

3 **D**

Equilibrium of a plank on two supports · Edexcel IAL October 2025 · Unit 1 · Q6

The plank is in equilibrium, so the vector sum of the forces on it is zero: $F_A + F_B + W = 0$. As W acts downwards, adding it as a vector is enough; no minus sign is needed.

4 **B**

Tension in a wire holding a weight · Edexcel IAL January 2025 · Unit 1 · Q10

The lights are in equilibrium. Each side of the wire pulls with tension T at angle θ to the horizontal, so each has a vertical component $T \sin\theta$. Two of these support the weight: $2T \sin\theta = W$, so $T = W/(2 \sin\theta)$.

5 **C**

Tension in a string holding a bird · Edexcel IAL January 2024 · Unit 1 · Q6

Each part of the string makes 80° with the vertical post, so the vertical component of each tension is $T \cos 80°$. In equilibrium $2T \cos 80° = W$, so $T = W/(2 \cos 80°)$.

> **Watch out:** The angle is measured from the vertical here, so the vertical component uses cosine, not sine.

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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