GET BETTER AT PHYSICS · MARK SCHEME

Moments & Centre of Gravity: tiered multiple choice

Edexcel IAL Physics · Unit 1 (WPH11) · Specification points 15–16 · 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
D	C	A	A	C

Easy

Questions 1–5

1 **D**

Definition of centre of gravity · Edexcel IAL June 2024 · Unit 1 · Q7

The centre of gravity is the single point at which the whole weight of the object may be considered to act. The weight actually acts on every part of the object; the centre of gravity is a modelling idea.

2 **C**

Where forces act on a free-body diagram · Edexcel IAL October 2019 · Unit 1 · Q6

Each force must be drawn from the point where it acts. The weight of the cube W_c acts at the cube's centre of gravity, at its centre, but it has been drawn starting at the table top. So W_c is in the wrong position.

Watch out: Contact forces start at the surface of contact; weight starts at the centre of gravity.

How students did: 72% of students got this right in October 2019.

3 **A**

See-saw in balance · Edexcel IAL June 2025 · Unit 1 · Q2

The children have equal weights at equal distances, so their moments about the support cancel: the resultant moment is zero. The beam is in equilibrium (it does not accelerate), so the resultant force is also zero: the support pushes up with a force equal to the total weight.

Watch out: Equal and opposite moments do not mean there is no force from the support.

4 **A**

Principle of moments on a plank · Edexcel IAL October 2024 · Unit 1 · Q10

Take moments about the point where the wood touches the cylinder. Anticlockwise moment $F \times x$ equals clockwise moment $(W - F) \times y$. So $W - F = Fx/y$, and $W = Fx/y + F$.

5 **C**

Comparing support forces on a beam · Edexcel IAL January 2022 · Unit 1 · Q9

The beam's weight W acts nearer to support Q than to support P. Taking moments about P shows Q must provide the larger share of the upward force, so $Q > P$. Vertically, $P + Q = W$, so neither support force on its own can exceed W.

Watch out: In equilibrium $P + Q = W$ exactly, so D cannot be right.

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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