GET BETTER AT PHYSICS · MARK SCHEME

Longitudinal & Transverse Waves: tiered multiple choice

Edexcel IAL Physics · Unit 2 (WPH12) · Specification points 35–38 · 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
A	D	A	D	C

Easy

Questions 1–5

1 **A**

Wavelength of a longitudinal wave · Edexcel IAL October 2025 · Unit 2 · Q2

The wavelength is the distance between the centres of two neighbouring compressions. The diagram shows 3 complete compressions-and-rarefactions in 6 m, so $\lambda = 6 \div 3 = 2$ m.

2 **D**

Pressure in compressions and rarefactions · Edexcel IAL January 2023 · Unit 2 · Q8

In a compression particles are pushed close together, so pressure is a maximum; in a rarefaction they are spread out, so pressure is a minimum. Particle displacement is zero at the centre of both.

3 **A**

Displacement at compressions and rarefactions · Edexcel IAL October 2022 · Unit 2 · Q4

In a longitudinal wave, the particles at the centre of a compression and at the centre of a rarefaction are at their undisturbed positions: their displacement is zero. Particles on either side are displaced towards (compression) or away from (rarefaction) that point. So both students are correct.

> **Watch out:** Many students think zero displacement happens only at compressions; it happens at rarefactions too.

How students did: Examiners reported that more than half of students got this right in October 2022. Most wrong answers assumed zero displacement only at the centre of a compression; it also happens at rarefactions.

4 **D**

Finding compressions on a displacement–distance graph · Edexcel IAL October 2021 · Unit 2 · Q10

Compressions and rarefactions occur where the displacement is zero. They alternate every half wavelength. V is a compression, X (half a wavelength away) is a rarefaction, and Z (one wavelength away) is the next compression.

How students did: Examiners named this among the best-answered multiple-choice questions on the October 2021 paper.

5 **C**

Where displacement is a minimum in a longitudinal wave · Edexcel IAL June 2021 · Unit 2 · Q7

At the centre of both compressions and rarefactions, the particles are at their equilibrium positions, so their displacement is zero (a minimum). The largest displacements are midway between them.

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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