GET BETTER AT PHYSICS · MARK SCHEME

Polarisation: tiered multiple choice

Edexcel IAL Physics · Unit 2 (WPH12) · Specification points 49 · 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	D	C	D	D

Easy

Questions 1–3

1 **B**

Which wave effect sound cannot show · Edexcel IAL October 2019 · Unit 2 · Q6

Sound is a longitudinal wave: the oscillations are along the direction of travel, so there is no other direction to filter out. Sound cannot be polarised. It can be diffracted, refracted and superposed.

How students did: Examiners named this among the best-answered multiple-choice questions on the October 2019 paper.

2 **D**

Which waves can be polarised · Edexcel IAL October 2020 · Unit 2 · Q8

Polarisation restricts the oscillations to one plane perpendicular to the direction of travel. Only transverse waves have oscillations perpendicular to their travel, so only transverse waves can be polarised.

3 **C**

Lining up two polarising filters again · Edexcel IAL January 2024 · Unit 2 · Q9

Maximum intensity needs the two filters' transmission axes to be parallel. Rotating a filter by 180° leaves its axis in the same line. X turned 270° has the same axis as X turned 90°, and Y turned 90° matches it, so the axes are parallel again. In A, B and D the axes end up 90° apart.

> **Watch out:** Rotations that differ by 180° give the same filter alignment.

How students did: 64% of students got this right in January 2024.

Medium

Question 4

4 **D**

Rotating a filter in unpolarised light · Edexcel IAL June 2022 · Unit 2 · Q4

Unpolarised light has oscillations in all planes perpendicular to its direction of travel. Whatever angle the filter is turned to, it lets through the same fraction of the light. So the transmitted intensity stays I.

> **Watch out:** The intensity changes on rotation only when the incident light is already polarised.

How students did: In June 2022, about a third of students got this right. Examiners noted a common difficulty with polarisation questions.

Hard

Question 5

5 **D**

What polarised oscillations look like · Edexcel IAL January 2020 · Unit 2 · Q2

In a polarised transverse wave the oscillations are in one direction only, perpendicular to the direction of travel. (The plane of polarisation contains this oscillation direction and the direction of travel.)

> **Watch out:** A plane ‘perpendicular to the direction of wave travel’ would allow oscillations in every direction across the wave: that describes unpolarised light.

How students did: In January 2020, just over a quarter of students got this right. Most wrong answers were A.

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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