GET BETTER AT PHYSICS · MARK SCHEME

Polarisation: tiered multiple choice

AQA A-level Physics · 7407 / 7408 · Specification 3.3.1.2 · 5 questions · 5 marks

1 mark per correct letter | Worked reasoning for every question | **How students did** = from AQA examiner reports, where available

Answer key

Q1	Q2	Q3	Q4	Q5
A	D	C	A	C

Easy

Questions 1–2

1 **A**

Telling polarised from unpolarised light · AQA June 2024 · A-level Paper 1 · Q14

Rotating the Polaroid does not change the intensity from S_1, so S_1 is unpolarised (it has oscillations in every plane). The intensity from S_2 changes, so S_2 is polarised: row A.

How students did: Over 70% of students got this right in June 2024.

2 **D**

Unpolarised light through a polariser · AQA June 2017 · AS Paper 2 · Q11

The polariser removes every oscillation that is not in its transmission plane, so the wave that passes through is polarised and its intensity is reduced.

Watch out: An EM wave's electric field always oscillates at right angles to the direction of travel (C is wrong).

How students did: In June 2017 almost 35% of students chose C.

Medium

Questions 3–5

3 **C**

Intensity falls to zero after a 90° turn · AQA June 2022 · AS Paper 2 · Q11

The intensity can only fall to zero if the incident beam is already polarised. When the Polaroid is turned 90°, its transmission plane is at right angles to the beam's plane of oscillation, so it absorbs all of the beam: row C.

Watch out: With an unpolarised beam the intensity would not change as the sheet is rotated.

4 **A**

Aligning a receiving aerial · AQA June 2025 · AS Paper 2 · Q12

A vertical aerial transmits radio waves polarised in the vertical plane. To detect the maximum signal, the receiving aerial must also be vertical: row A.

How students did: In June 2025 the correct answer was the most popular choice.

5 **C**

Angles for maximum intensity through two filters · AQA November 2020 · A-level Paper 1 · Q17

Maximum intensity occurs when the transmission planes of X and Y are parallel. That happens at $\theta = 0$ and then every half turn: π, 2π, 3π rad.

Watch out: At $\pi/2$ and $3\pi/2$ the filters are crossed, which gives zero intensity.

End of mark scheme. Answers from AQA's published keys; explanations written for this pack. AQA material is © AQA. More free packs and 1-to-1 tuition: **www.getbetteratphysics.co.uk**

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