WJEC (Eduqas) Physics A Level

SP3.1 - Measurement of Intensity Variations for Polarisation

Practical Flashcards

What is polarisation?

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Polarisation is the process of preventing all but one oscillation orientation of a transverse wave from passing through a polarising filter.

What types of waves can be polarised?

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All transverse waves can be polarised. This includes all waves in the EM spectrum.

Why can sound not be polarised?

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Sound is a form of longitudinal wave. Longitudinal waves cannot be polarised, since in longitudinal waves all oscillations occur parallel to the direction of energy transfer.

What is observed when light is shone through two polarising filters whose planes are perpendicular to each other?

What is observed when light is shone through two polarising filters whose planes are perpendicular to each other?

The first filter blocks all oscillations except those in one plane. This plane is perpendicular to the polarising plane of the second filter, and so cannot pass through it. This means no light is visible through the two filters.

How can microwaves be polarised?

How can microwaves be polarised?

Microwaves can be polarised using a metal grid.

Describe the nature of waves emitted from a microwave transmitter.

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A microwave transmitter will emit polarised waves, with a wavelength of the order of a few centimetres (~3cm).

How can microwaves be detected?

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Microwaves can be detected using a microwave receiver. This can then be connected to an analogue or a digital meter, or to a sound outputter.

How will the sound output of the microwave receiver change as the microwave intensity increases?

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As the intensity of the microwaves increases, the amplitude of the sound will increase. This will result in a louder sound.

What safety precautions should be taken when working with microwaves?

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You must ensure that the microwave intensity does not exceed the maximum safe level. Microwaves with too high a frequency or intensity can cause burning.

Suggest an application for a polarising filter.

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Polarising sunglasses use lenses that polarise light. This helps to protect our eyes from retina damage in bright sunlight. It can also help to reduce glare from road surfaces when driving in the sun.

What safety precautions should be taken when using a lamp?

What safety precautions should be taken when using a lamp?

Avoid looking directly at the lamp, as this could cause eye damage. The bulb and surrounding areas may become very hot. Allow to cool after use, avoid touching the bulb and metal areas of the lamp, and switch it off when not in use.