

16 When unpolarised light passes through a polarising filter, the light becomes plane polarised.

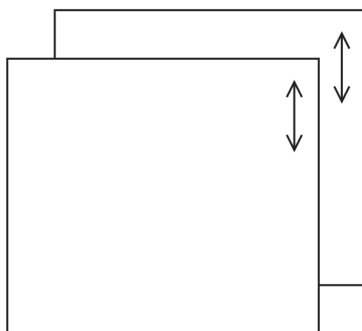
(a) Explain the difference between unpolarised and plane polarised light.

(3)

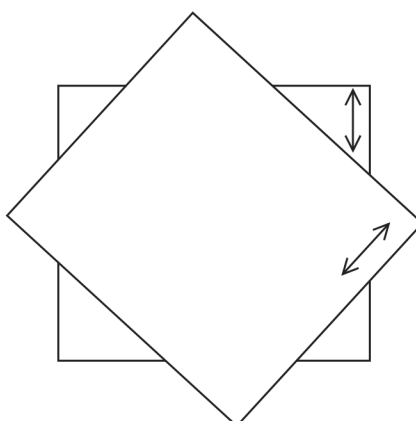
(b) An unpolarised light source is directed towards a screen. The intensity of radiation measured at the screen is 1.00 W m^{-2} .

Two polarising filters are placed between the light source and the screen.

Initially there is an angle of 0° between their planes of polarisation, as shown.



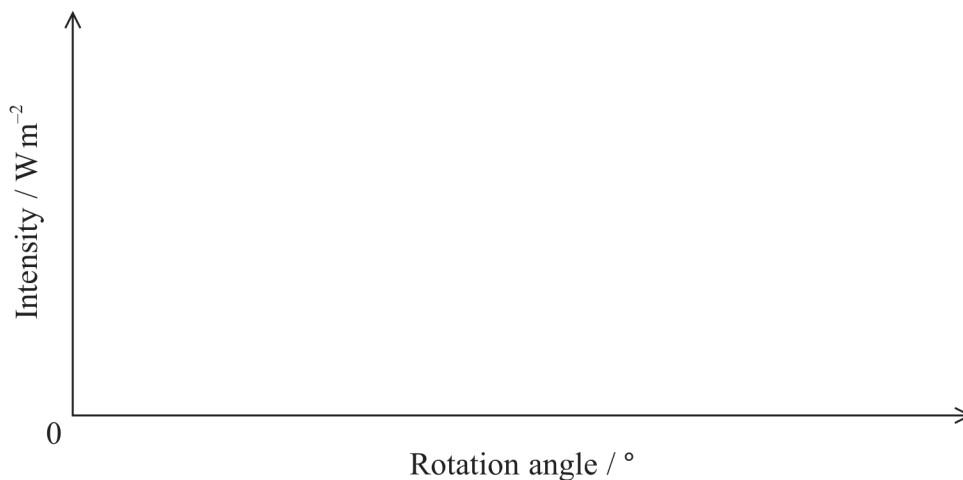
One of the polarising filters is then rotated, as shown.



Sketch a graph to show how the intensity of light measured at the screen varies as the filter is rotated from 0° to 90° .

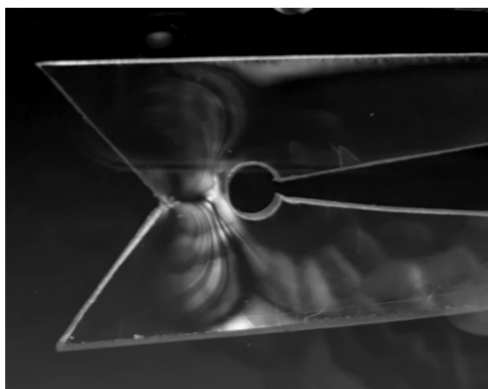
(3)





- (c) Polarisation can be used to identify when some materials are under stress. Placing the material under stress causes the plane of polarisation of the light passing through the material to be rotated. The greater the stress, the greater the rotation of the plane of polarisation of the light.

A piece of transparent material under stress is positioned between two polarising filters. There is an angle of 90° between the planes of polarisation of the two polarising filters.



Explain how this photograph can be used to identify areas of the material with different amounts of stress.

(3)