Oxford Cambridge and RSA

# A Level Physics A

**H556/02** Exploring physics

# Question Set 15

**1** A narrow beam of unpolarised light is incident at the boundary between air and glass.

Fig. 18 shows the incident ray, the reflected ray and the refracted ray at the air-glass boundary.

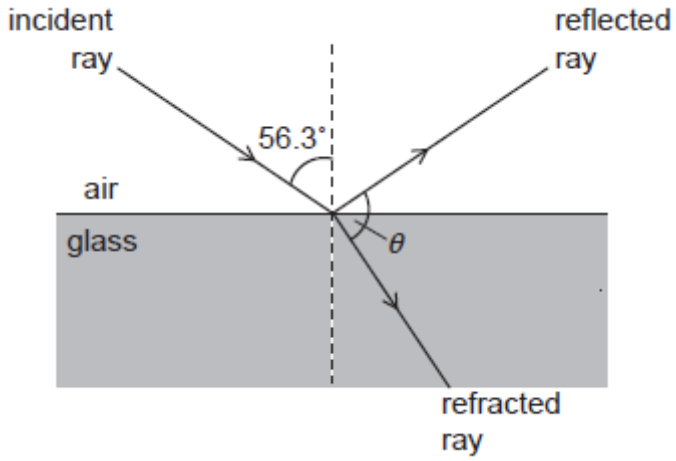


**Fig. 18 (not to scale)**

The refractive index of air is 1.00 and the refractive index of the glass is 1.50.
The angle of incidence of the light is 56.3°.

**(a)** Show that the angle $\theta$ between the refracted ray in the glass and the reflected ray in the air is 90.0°.

**[3]**

**(b)** Describe how you can demonstrate in the laboratory that the reflected light is plane polarised.

**[2]**

**(c)** Calculate the time $t$ taken for the refracted light to travel a **depth** of 6.0 cm of glass.

$t$ = ..... s **[2]**

## Total Marks for Question Set 15: 7

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