5 **(a)** State one differences between *progressive* waves and *stationary* waves.

……..

……..

…….. [1]

(b) Define *transverse* waves and *longitudinal* waves.

1. Transverse wave: ……...

……..

…….. [1]

2. Longitudinal wave: ……...

……...

…….. [1]

(c) **(i)** Explain why it would not be possible to polarise sound waves.

……

……

……

……

…….. [2]

(ii) Unpolarised light of intensity I_0 is incident on two polarising filters P and Q, as shown in Fig. 5.1 below. The transmission axis of filter P is aligned vertically. The intensity of the unpolarised light is halved after passing P.

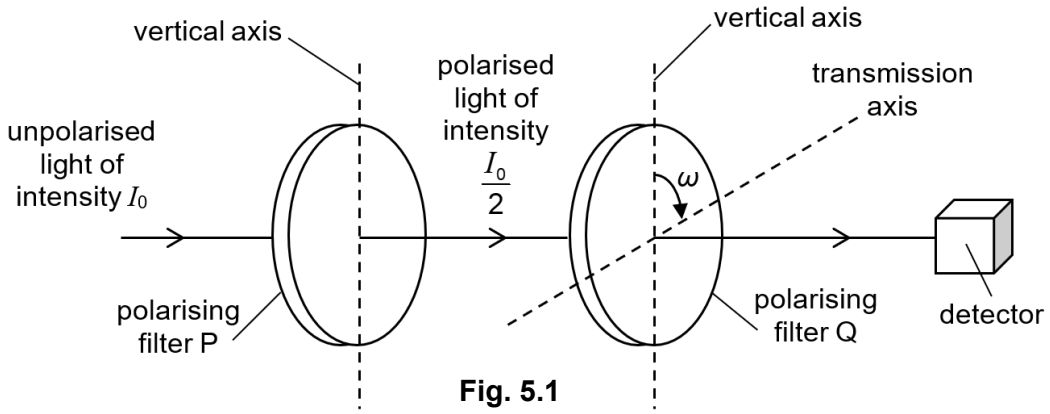

Fig. 5.1

The light is then passed through filter Q, which has the transmission axis initially aligned vertically and spun at a constant angular velocity of 2.0 rad s^{-1}.

Determine the ratio $\frac{\text{intensity reaching detector}}{\text{initial intensity } I_0}$ after 9.0 s.

ratio = ... [3]

[Total: 8]