

**Name of the Student:** \_\_\_\_\_

**Max. Marks : 17 Marks**

**Time : 17 Minutes**

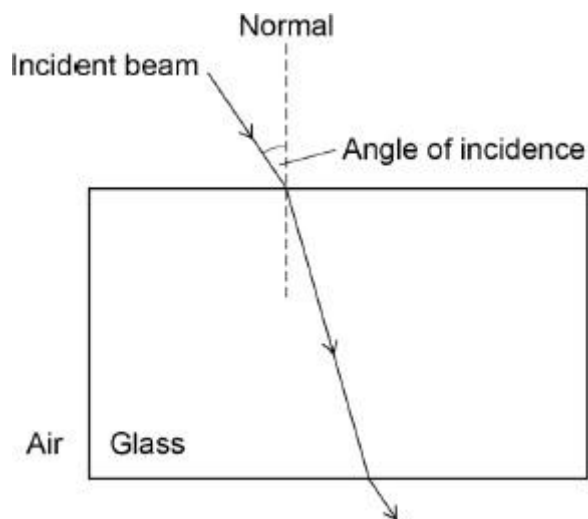
Mark Schemes

**Q1.**

- |   |            |
|---|------------|
| (a) wavelength = $\lambda$  | 1          |
| (b) amplitude = $\frac{R}{2}$   | 1          |
| (c) radio waves   | 1          |
| (d) $s = 300\,000\,000 \times 0.000009$   | 1          |
| $s = 2700 \text{ (m)}$  | 1          |
| (e) <u>satellite</u> communications<br>or<br>cooking /heating food<br><i>allow WiFi</i> | 1          |
|   | <b>[6]</b> |

**Q2.**

- |   |   |
|---|---|
| (a) it is harder to judge where the centre of the beam is   | 1 |
| (b) ray shown refracted to the right of the normal as it enters the glass block   | 1 |
| refraction towards the normal   | 1 |
| emergent ray parallel to incident ray<br><i>do <b>not</b> accept a continuation of the incident ray through the glass block</i><br><i>ignore arrows</i> |   |



1

(c) 1 degree

1

(d) 33 (°)

1

(e) absorbed

1

(f) wave speed = frequency  $\times$  wavelength  
*allow correct re-arrangement*

**or**

$$v = f \lambda$$

1

(g)  $3.0 \times 10^8 = 4.0 \times 10^{14} \times \lambda$

1

$$\lambda = \frac{3.0 \times 10^8}{4.0 \times 10^{14}}$$

1

$$\lambda = 7.5 \times 10^{-7} \text{ (m)}$$

*allow 0.000 000 75 (m)*

1

[11]