SCHOOL: BA SANGAM COLLEGE   YEAR 12

SUBJECT: PHYSICS   NAME OF STUDENT: _____

STRAND	***GEOMETRICAL OPTICS AND WAVE MOTION***
SUB-STRAND	*Waves*
Content Learning Outcome	➢ *Investigate the behavior of light and other waves under various conditions, with reference to the properties of waves*

Total Internal Reflection

Critical angle: angle of incidence which gives an angle of refraction of 90°. This only occurs when the light is traveling from more dense substance to less dense substance.
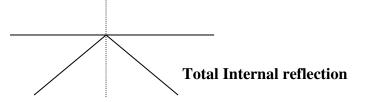
$$\text{Symbol } = \theta_c$$

From Snell's Law:

$$n_1 \sin \theta_1 = n_2 \sin \theta_2$$

$$\sin \theta_c = \frac{n_2 \sin \theta_2}{n_1} = \frac{n_2 \sin 90}{n_1} = \frac{n_2}{n_1}$$

$$\sin \theta_c = \frac{n_2}{n_1}$$

If the angle of incidence is greater than the critical angle then all light reaching the boundary is reflected (no light is refracted into the less dense substance) we have total internal reflection.

Total Internal reflection

<u>ACTIVITY</u>

1. Find the critical angle for material of refractive index 2.42 with an air surface.

(2 MARKS)

2. The critical angle for a particular kind of glass is 42°. What is the refractive index of this glass?

(2 MARKS)

3. The refractive index for diamond is n = 2.42. What is the critical angle for light passing from diamond to air?

(2 MARKS)

THE END