HW
28/06/21

Light: Reflection & Refraction

Home Assignment

Q1. What are the two conditions required for total internal reflection?

Ans- The two conditions for total internal reflection are given below:

(i) The light must propagate from optically denser medium of optical rarer medium.

(ii) The angle of incidence ~~incidence~~ in the denser medium must be greater than the critical angle for the pair of media.

Q2. A fish in the pond of water appears at a depth of 6 cm. What is the actual depth of the fish if the refractive index of air w.r.t water is $\frac{3}{4}$?

Ans- $\mu = \frac{\text{Apparent depth}}{\text{real depth}} \Rightarrow \frac{3}{4} = \frac{6}{\text{real depth}}$

$$\Rightarrow \text{real depth} = \frac{3}{4} \times \frac{1}{6_2} = \frac{1}{8}\ m.$$

3. A rectangular ~~slab~~ glass slab of thickness 8cm is placed on a figure. The eye is kept exactly above this slab. If the refractive index of glass is 1.6, then by what distance the figure will appear to raised?

Ans- Real depth = 8 cm

$\mu = 1.6$

apparent depth $= \frac{8}{1.6}$ cm $= 5$ cm.

Hence, the figure will appear to raised by -

normal shift = real depth - apparent depth

$= 8 - 5 = 3$ cm.

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