

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

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 $\frac{3}{4}$?

Q3. A rectangular glass slab of thickness 8 cm 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 be raised?

(Ans) Two conditions for total internal reflection

- i) Light must travel to a denser medium to a rarer medium.
- ii) The angle of i_c inside the denser medium must be greater than the critical angle.

② - any refractive index = $\frac{3}{4}$
water = 6 cm

So

$$\mu_{wa} = \frac{n}{6} = \frac{3}{4}$$

$$4n = 18$$

$$n = 4.5$$

Q. A rectangular glass slab :-

$$\text{Real depth} = 8 \text{ cm}$$

$$\mu = 1.6$$

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

hence the figure will appear to raised by
normal shift = real depth - apparent depth
a) $8 - 5 = 3 \text{ cm}$.