

Q1 Ans. Two important conditions for total internal reflection are -

Area of incidence should be greater than critical angle.

Ray should travel from denser to rarer medium.

Q2 Ans. Apparent depth = 6 cm; let the real depth be 'x'.

Alg,

$$\frac{x}{6} = \frac{1}{\frac{3}{4}} \quad \left[ \mu_{\text{air}} = \frac{3}{4} \therefore \mu_{\text{water}} = \frac{4}{3} \right]$$

$$\Rightarrow \frac{x}{6} = \frac{4}{3} \quad \Rightarrow x = \frac{4}{3} \times 6 = 8 \text{ cm}$$

Q3 Ans  $\frac{\text{Real depth}}{\text{Apparent depth}} = \text{Refractive index}$

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

$$\text{Normal shift} = 8 - 5 = 3 \text{ cm}$$