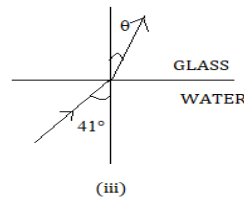
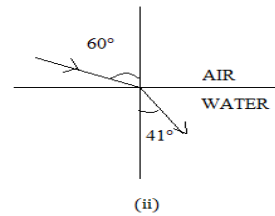
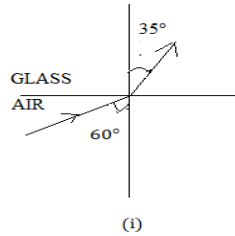


Refraction of light from air to glass and from air to water are shown in figure (i) and figure (ii) below. The value of the angle θ in the case of refraction as shown in figure (iii) will be



- A. 30°
- B. 35°
- C. 60°
- D. 41°

Sol-

From the given figure (i)

$${}_a\mu^g = \frac{\sin i}{\sin r} = \frac{\mu_g}{\mu_a} = \frac{\sin 60^\circ}{\sin 35^\circ} \dots\dots\dots (i)$$

From the given figure (ii)

$${}_a\mu^w = \frac{\sin i}{\sin r} = \frac{\mu_w}{\mu_a} = \frac{\sin 60^\circ}{\sin 41^\circ} \dots\dots\dots (ii)$$

From the given figure (iii)

$${}_w\mu^g = \frac{\sin i}{\sin r} = \frac{\mu_g}{\mu_w} = \frac{\sin 41^\circ}{\sin \theta^\circ} \dots\dots\dots (iii)$$

where, $\sin i = \sin$ of angle of incidence and $\sin r = \sin$ of angle of refraction of light

Now, let us divide equation (i) by (ii) and then the whole by (iii) i.e., Equation (i) / (ii) / (iii) we get,

$$\frac{\sin 60^\circ}{\sin 35^\circ} \times \frac{\sin 41^\circ}{\sin 60^\circ} \times \frac{\sin \theta^\circ}{\sin 41^\circ} = \frac{\mu_g}{\mu_a} \times \frac{\mu_a}{\mu_w} \times \frac{\mu_w}{\mu_g}$$

$$\frac{\sin \theta^\circ}{\sin 35^\circ} = 1$$

$$\theta^\circ = 35^\circ$$

Therefore, the answer is 35° which is option B.