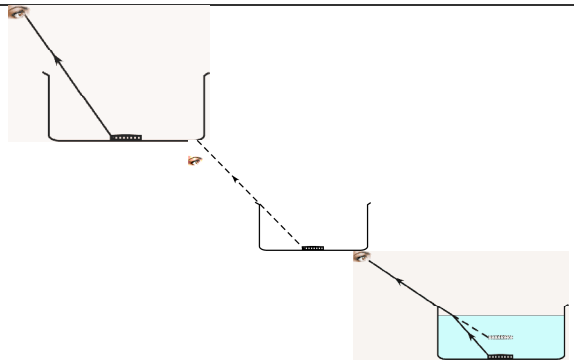
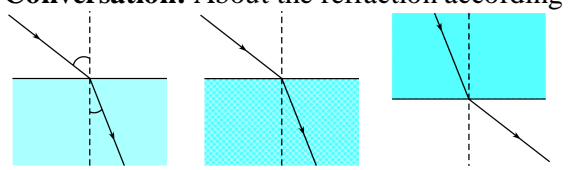


CLASS-10 PHYSICAL SCIENCES
NEW TEXT BOOK
2014 - 2015

CHAPTER: 05 – REFRACTION OF LIGHT AT PLANE SURFACES

PERIOD PLAN-01 : Refraction of light - Refraction – explanation
Fermat’s formula
Angle of incidence – angle of refraction

Content Analysis	Class Room Environment	Teaching Learning Material
<p><u>Refraction of light:</u> When light travels from one medium to another medium, its direction changes at the interface. This phenomenon is called refraction. nagamurthy.weebly.com</p>	<p>Activity-1: Take some water in a glass tumbler. Keep a pencil in it. Look at the pencil from one side of the glass and also from the top of the glass. What do you observe? Observation: The pencil seems to be bent in the water.</p>	<p>glass tumbler</p> <p>water pencil</p>
<p><u>Refraction – explanation:</u> the light ray changes its direction at the interface separating the two media i.e, water and air. This path is chosen by the light ray so as to minimize time of travel between coin and eye. This is possible only if the speed of the light changes at interface of two media.</p>	<p>Activity-2: Take a shallow vessel with opaque walls such as a mug. Place a coin at the bottom of the vessel. Move away from the vessel until you cannot see the coin. Ask your friend to fill the vessel with water. What happens? Observation: When the vessel is filled with water the coin comes back into view.</p>	<p>shallow vessel</p> <p>a coin</p> <p>water</p>
<p><u>Fermat’s formula:</u> Fermat principle: Light selects the path which takes the least time to travel. When the light gets reflected from a surface, it selects the paths which takes the least time. This principle is very useful to prepare ray diagrams for the formation of images. draw a ray diagram from the coin to the eye. Keep in mind that the light ray travelling in a medium takes a straight line path. Fermat’s principle, which states that the light ray always travels between two points in a path which needs the shortest possible time to cover.</p>		<p>Chart</p>
<p><u>Angle of incidence – angle of refraction:</u> If light travels from rarer medium to denser medium, it bends towards the normal and if light travels from denser medium to rarer medium, it bends away from the normal. If light travels from rarer medium to denser medium, it bends towards the normal ($i > r$) and if light travels from denser medium to rarer medium, it bends away to the normal ($i < r$).</p>	<p>Conversation: About the refraction according</p> 	<p>Chart</p>