

H/W  
12/11/2021

CH-5  
LIGHT ENERGY

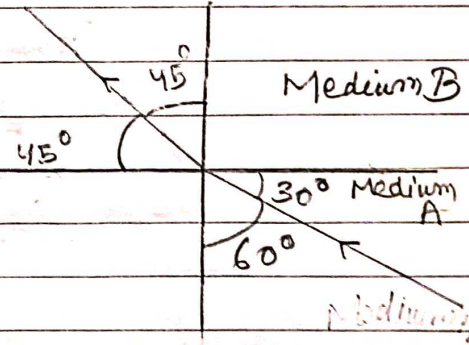
classmate

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HOME ASSIGNMENT

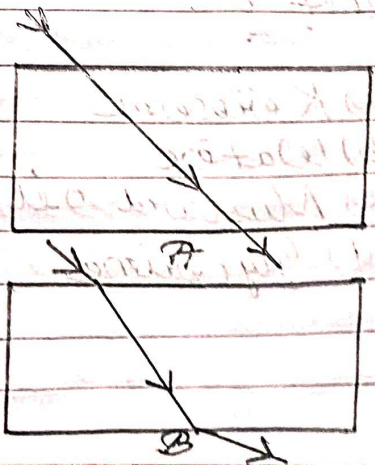
① Figure shows a ray of light as it travels from medium A to medium B. Refractive index of the medium B relative to medium A is -

- (a)  $5/2$
- (b)  $2/3$
- (c)  $1/2$
- (d)  $2$

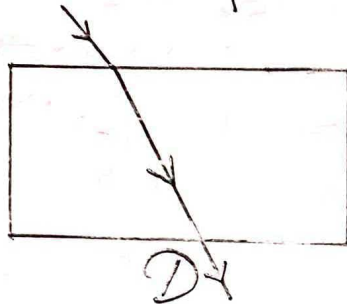
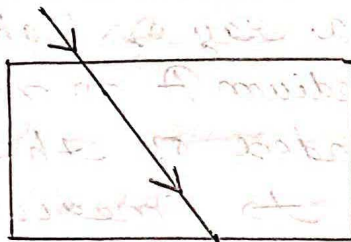


② The path of a ray of light coming from air passing through a rectangular glass slab traced by four students are shown as A, B, C and D in Figure. Which one of them is correct.

- (a) A
- (b)  B
- (c) C
- (d) D



HOME ASSIGNMENT



③ You are given water, mustard oil, glycerine and kerosene. In which of these media a ray of light incident obliquely at same angle would bend the most?

- (a) Kerosene
- (b) Water
- (c) Mustard oil
- ✓ (d) Glycerine

Q) A pencil when dipped in water in a glass tumbler appears to be bent at the interface of air and water. Will the pencil appear to be bent to the same extent, if instead of water of water we use liquids like, kerosene or turpentine. Support your answer with reason.

Ans) The pencil appear to be bent when it is kept in a glass tumbler with water due to refraction of light; which occurs when speed of light changes when it travels from one optically transparent medium to another.

\* But when the pencil is dipped in kerosene or turpentine, the pencil will bend be appear to be bent but not in same extent as if water. As kerosene or turpentine is more optic-

-ally denser than water.

⑤ How is the refractive index of a medium related to the speed of light? Obtain an expression for refractive index of a medium with respect to another ~~in~~ terms of light in these two media?

Ans

Relative Refractive index of a medium related to the speed of light. More is the speed of light <sup>in a medium</sup>, less is the refractive index of the medium.

\* ~~Rel~~ Refractive index of one medium in relative relation to a second medium is given by the ratio of the speed of light in the second medium to speed of light in the first medium.

\* Expression for refractive index of a medium with w.r.t. another in terms of light in the two media -

$$\mu = \frac{c}{v} = \frac{\text{speed of light in air or vacuum}}{\text{speed of light in a medium}}$$

↓  
(Absolute Refractive Index).