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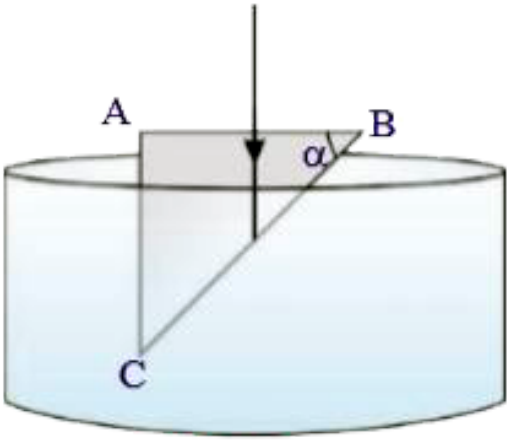
PHYSICS

NCERT - NCERT PHYSICS(BENGALI ENGLISH)

REFRACTION OF LIGHT AT PLANE SURFACES

Example

1. A rectangle glass wedge (prism) is immersed in water as shown in figure E-a. For what value of angle α, will the beam of light, which is normally incident on AB, reach AC entirely as shown in figure E-b. Take the refractive index of water as $\frac{4}{3}$ and the refractive index of glass as $\frac{3}{2}$.



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I Reflections On Concepts

1. The speed of the light in a diamond is 1, 24,000 km/s. Find the refractive index of diamond if the speed of light in air is 3,00,000 km/s. (AS_1)

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2. Refractive index of glass relative to water is 9/8. What is the refractive index of water

relative to glass? (AS_1)

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3. The absolute refractive index of water is 4/3. What is the critical angle? (AS_1)

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4. Determine the refractive index of benzene if the critical angle of benzene with respect to air is 42°. (AS_1)

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5. Explain the formation of mirage? (AS_1)

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6. Explain the refraction of light through a glass slab with a neat ray diagram (AS_5)

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7. Why do stars appear twinkling? (AS_7)

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Ii Application Of Concepts

1. A light ray is incident on air-liquid interface at 45° and is refracted at 30°. What is the refractive index of the liquud? For what angle of incidence will the angle between reflected ray and refracted ray be 90° ? (AS_7)

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2. In what cases does a light ray not deviate at the interface of two media? (AS_7)

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3. Why does a diamond shine more than a glass piece cut to the same shape? $(AS_7$

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Multiple Choice Questions

1. Which of the following is Snell's law.

A. $n_1 \sin i = \sin r / n_2$

B. $n_1 / n_2 = \sin r / \sin i$

C. $n_2 / n_1 = \sin r / \sin i$

D. $n_2 \sin i = \text{constant}$

Answer:

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2. The refractive index of glass with respect to air is 2. Then the critical angle of glass-air

A. 0°

B. 45°

C. 30°

D. 60°

Answer:

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3. Total internal reflection takes place when the light ray travels from....

A. rarer to denser medium

B. rarer to rarer medium

C. denser to rarer medium

D. denser to denser medium

Answer:

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4. If the angle of incidence is equal to critical angle, then the angle of refraction is

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5. Mirage is a best example for the phenomenon of

A. Reflection

B. Refraction

C. Total internal reflection

D. Shift

Answer:

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6. Refractive indices of Ice, Benzene, Ruby and Kerosene are 1.31, 1.50, 1.71 and 1.44 respectively. In which of the above media, light travels slowly ?

A. Ice

B. Benzene

C. Ruby

D. Kerosene

Answer:

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7. The relative refractive index of water with respect to air is $\frac{4}{3}$. Then relative refractive index of air with respect to water is

A. 4

B. 3

C. $\frac{4}{3}$

D. $\frac{3}{4}$

Answer:

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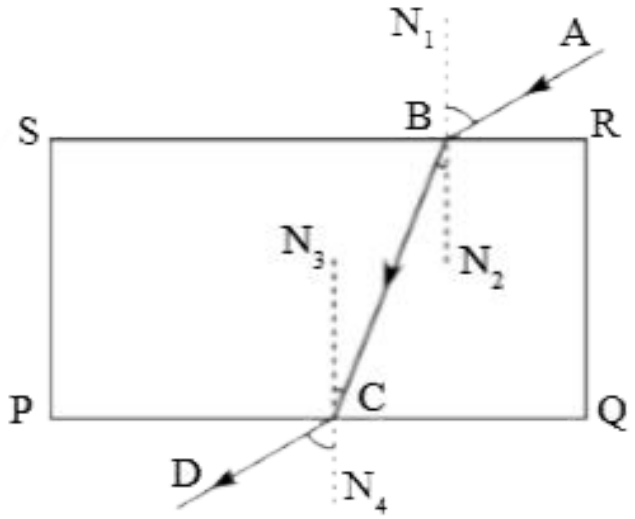
8. In an experiment to trace the path of ray through a glass slab, Shiva traced as shown in the figure. The teacher asked to identify the

emergent ray. Which of the following would Shiva identify.



A. AB

B. BC

C. CD

D. N_1N_2

Answer:

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Think And Discuss

1. Why should you see a mirage as a flowing water?

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2. Can you take a photo of a mirage

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