PHYSICS

NCERT - NCERT PHYSICS(GUJRATI 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 diamong 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 twinkle ?

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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. 3 Place an object on the table. Look at the object through the transparent glass slab. You will observe that it will appear closer to you. Draw a ray diagram to show the passage of light ray in this situation. (AS_5)

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

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Iii Higher Order Thinking Questions

1. Why is it difficult to shoot a fish swimming in water? (AS_1)

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2. Explain why a test tube immersed at a certain angle in a tumbler of water appears to have a mirror sluface for a certain viewing position? (AS_7)

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3. When we sit at a camp fire, objects beyond the fire are seen swaying. Give the reason for it. (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 showly ?

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 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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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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