Reflection of light at plane surfaces

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. (AS1) (Ans: 2.42)

2. Refractive index of glass relative to water is 9/8. What is the refractive index of water relative to glass? (AS1) (Ans: 8/9)

3. The absolute refractive index of water is 4/3. What is the critical angle? (AS1) (Ans: 48.50)

4. Determine the refractive index of benzene if the critical angle of benzene with respect to air is 420.(AS1) (Ans: 1.51)

5. Explain the formation of mirage? (AS1)

6. Explain the refraction of light through a glass slab with a neat ray diagram. (AS5)

7. Why do stars appear twinkling? (AS7)

8. A light ray is incident on air-liquid interface at 450and is refracted at 300. What is the refractive index of the liquid? For what angle of incidence will the angle between reflected ray and refracted ray be 900? (AS7) (Ans: 1.414, 54.70)

9. In what cases does a light ray not deviate at the interface of two media?(AS7)

10. 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. (AS5)

11. Why does a diamond shine more than a glass piece cut to the same shape? (AS7)

12. Why is it difficult to shoot a fish swimming in water? (AS1)

13. Explain why a test tube immersed at a certain angle in a tumbler of water appears to have a mirror surface for a certain viewing position? (AS7)

14. When we sit at a camp fire, objects beyond the fire are seen swaying. Give the reason for it. (AS7)

1. Which of the following is Snell's law. [ ]
a) n1 sin i = sin r/ n2 b) n1/n2 = sin r / sin i
c) n2 / n1 = sin r / sin i d) n2 sin i = constant

2. The refractive index of glass with respect to air is 2. Then the critical angle of glass-air interface is ..... [ ]
a) 0o b) 45o c) 30o d) 60o

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
Multiple choice questions

4. If the angle of incidence is equal to critical angle, then the angle of refraction is [ ]
a) 0o b) 20o c) 90o d) 180o

5. Mirage is a best example for the phenomenon of [ ]
a) Reflection b) Refraction c) Total internal reflection d) Shift

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

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) $\frac{3}{4}$

8. In an experiment to trace the path of ray through a glass slab, Shiva traced as shown in the figure. The teacher asked idenfity the emergy ray. Which of the following would Shiva indentify. [ ]
a) AB b) BC
c) CD d) N1, N2