St. Lawrence High School

A Jesuit Christian Minority Institution

Term : 2nd

Solution of Work Sheet – 9

Class – X | Subject – Physical Science | Date – 01.05.20

Chapter – Light | Topic – Refraction of light through parallel glass slab

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Choose the correct option for the following questions. **$1 \times 15 = 15$**

1. Refractive index of any medium depends on –
   a. Velocity of light in that medium
   b. Colour of light
   c. Temperature of the medium
   d. All of the above.
   Ans: d. All of the above
2. The absolute refractive index of any medium can never be less than 1. But the refractive index of any medium with respect to any other medium (except air or vacuum) –
   a. Can be less than 1
   b. Can never be less than 1
   c. Equal to 1 always
   d. Can't be determined.
   e. Ans: a. Can be less than 1
3. The parameter that remains uncha nged during refraction of light is –
   a. The velocity
   b. The wave length
   c. The frequency
   d. The angle of incidence
   Ans: c. The frequency
4. The velocity of light for all colours are –
   a. Same in all medium
   b. Same only in air medium but different in any other medium.
   c. Same in any medium except air.
   d. None of these.
   Ans: b. Same only in air medium but different in any other medium.
5. When light is incident on the surface of separation perpendicularly, then the angle of incidence is –
   a. 90° b.45° C. 0° d. 180°
   Ans: c. 0°
6. When light is incident on the surface of separation perpendicularly, then the angle of refraction is –
   a. 90°
   b. 45°
   c. 0°
   d. 60°
   Ans: c. 0°
7. For normal incidence of incident ray on the interface, the angle of deviation is –
   a. 0°
   b. 45°
   c. 90°

d. None of these

Ans: a. 0°

8. The refractive index of a particular medium (except air or vacuum) is –
   a. Same for all colours of light
   b. Maximum for red light and minimum for violet light
   c. Maximum for violet light and minimum for red light
   d. Depends on the angle of incidence

   Ans: c. Maximum for violet light and minimum for red light
9. The absolute refractive index of water and glass are 1.33 and 1.5 respectively. What is the refractive index of glass with respect to water?

   a. $\frac{133}{150}$ b. $\frac{150}{133}$ c. $\frac{155\times133}{155+133}$ d. $\frac{155+133}{155\times133}$

   Ans: b. $\frac{150}{133}$
10. When light is incident on the water surface at angle $30°$ with the surface, then the angle of refraction is measured as $45°$. The refractive index of water is then –

    a. $\frac{\sqrt{2}}{2}$ b. it is not possible c. $\sqrt{\frac{2}{3}}$ d. $\sqrt{\frac{3}{2}}$

    Ans: d. $\sqrt{\frac{3}{2}}$
11. The absolute refractive index of a medium is $\sqrt{3}$. If incident angle is $60°$ in air, then the angle of refraction is –
    a. $30°$
    b. $45°$
    c. $60°$
    d. $90°$

    Ans: a. $30°$
12. The angular deviation of light rays in case of a parallel glass slab is –
    a. $0°$
    b. $90°$
    c. $180°$
    d. Depends on the width of the slab

    Ans: a. $0°$
13. The lateral displacement of a light ray in case of a parallel glass slab is –
    a. The distance travelled by the ray through the slab
    b. Zero for normal incidence
    c. The perpendicular distance between the incident direction and emergent ray.
    d. Both b. and c.

    Ans: d. Both b. and c.
14. The lateral displacement of light rays in case of a parallel glass slab depends on –
    a. Angle of incidence
    b. Refractive index of glass slab
    c. Width of the glass slab
    d. All of the above

    Ans: d All of the above
15. For parallel glass slab, angle of incidence (i) and angle of emergence (i') are –
    a. Always equal
    b. Equal only for a particular angle of incidence
    c. Equal only for normal incidence
    d. Never equal

    Ans: a. Always equal