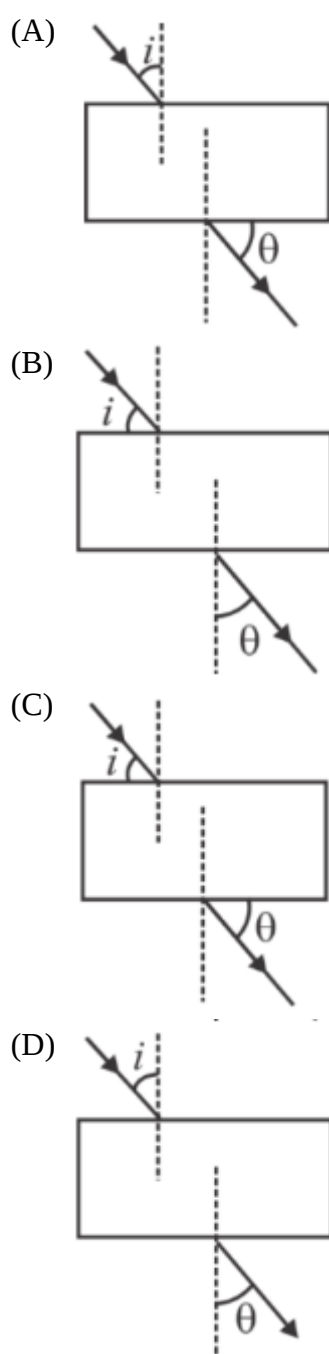# Udaan 2025
Physics
## Light - Reflection & Refraction

DHA: 3

Q 1 A student does the experiment on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. He can get a correct measure of the angles of incidence and the angle of emergence by following the labelling indicated in figure.

(A)

(B)

(C)

(D)

Q 2 A student does the experiment on tracing the path of a ray of light passing through a rectangular glass slab, measured the three angles marked as θ_1, θ_2 and θ_3 in figure. His measurements could be correct if he were to find:
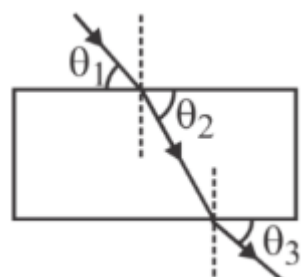

(A) $\theta_1 = \theta_2 < \theta_3$

(B) $\theta_1 < \theta_2$, but $\theta_1 = \theta_3$

(C) $\theta_1 > \theta_2 > \theta_3$

(D) $\theta_1 > \theta_2$, but $\theta_2 = \theta_3$

Q 3 Light travels with speed of $2 \times 10^8 ms^{-1}$ in crown glass of refractive index 1.5. The speed of light in

dense flint glass having a refractive index 1.8 is

(A) $1.33 \times 10^8 ms^{-1}$

(B) $1.67 \times 10^8 ms^{-1}$

(C) $2.0 \times 10^8 ms^{-1}$

(D) $3 \times 10^8 ms^{-1}$

Q 4 Four students showed the following traces of the path of a ray of light passing through a rectangular glass slab. Which one of these is correct?

(A)

(B)

(C)

(D)
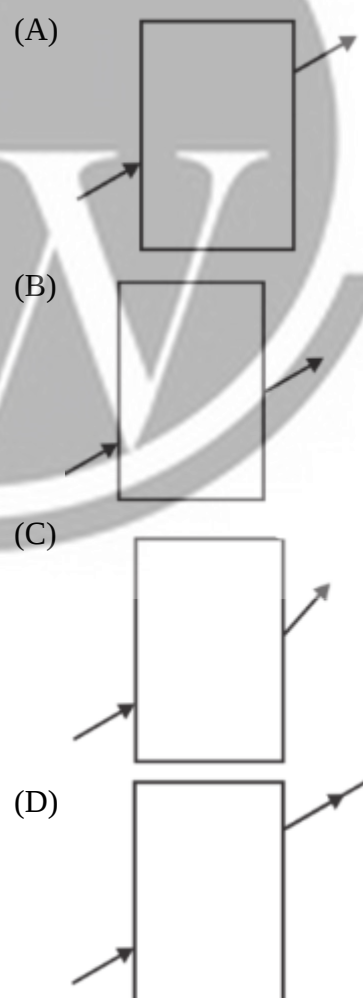
Q 5 Two thin lenses are in contact and the focal length of the combination is 80 cm. If the focal length of one of the lenses be 20 cm, the power of the other lens is

(A) + 1.66 dioptres

(B) + 4.00 dioptres

(C) – 1.00 dioptres

(D) – 3.75 dioptres

Q 6 The focal length of a lens is 50 cm. Its power would be

(A) 50 dioptres   (B) 2 dioptres

(C) 20 dioptres   (D) none of these

Q 7 The power of a lens being + 4 dioptres suggests that it is a

(A) convex lens

(B) plano-convex lens

(C) concave lens

(D) none of these

Q 8 Which of the following quantity does not have any unit?

(A) Velocity of light

(B) Light year

(C) Magnification

(D) Power of a lens

Q 9 A monochromatic beam of light passes from a denser medium to rarer medium as a result

(A) its velocity increases

(B) its velocity decreases

(C) its frequency decreases

(D) its wavelength decreases

Answer Key

Q1	D		Q6	B
Q2	B		Q7	A
Q3	B		Q8	C
Q4	B		Q9	A
Q5	D			

Hints & Solutions

Q 1 **Text Solution:**

(A) The Angle between normal and incident ray is called Angle of Incidence. (B) The angle between normal and emergent Ray is known as angle of emergence.

Video Solution:

Q 2 **Text Solution:**

When a light ray enters the rectangular glass slab, which is a denser medium than air, it bends towards the normal. When it emerges back to the rarer medium(air), it bends away from the normal and becomes parallel to the incident ray.

Video Solution:

Q 3 **Text Solution:**

Refractive index and speed of light in medium

$$\text{Refractive index} \propto \frac{1}{\text{Speed of Light in Selected medium}}$$

Video Solution:

Q 4 **Text Solution:**

Due to refraction of light inside the glass slab, the incident ray of light turns inwards of the slab and then again refracts at the other surface to obtain a beam of light parallel to the incident light.

Video Solution:

Q 5 **Text Solution:**

Power = 1/focal length (P = P1 + P2)

Video Solution:

Q 6 **Text Solution:**

$$\text{Power in dioptre} = \frac{1}{\text{focal length in meter}}$$

Video Solution:

Q 7 **Text Solution:**

The power of convex lens is positive.

Video Solution:

Q 8 **Text Solution:**

The ratio of two same quality is dimensionless/unitless.

Video Solution:

Q 9 **Text Solution:**

When a monochromatic beam of light passes from a denser to a rarer medium, velocity and wave-length increases with constant frequency.

Video Solution: