

Chapter - 10
Light: Reflection & Refraction
(1 Mark Questions)

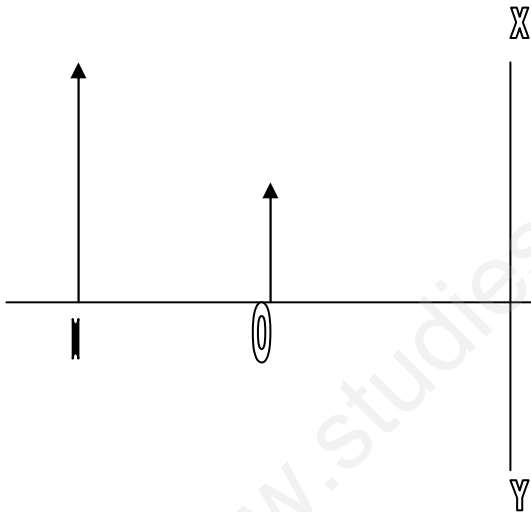
Q 1. How does image change when the face is slowly moved away from inner face of a shining spoon?

Ans. As the face is moved away then after a particular time image becomes inverted.

Q.2. Due to which property of light, sharp shadow of an object is obtained?

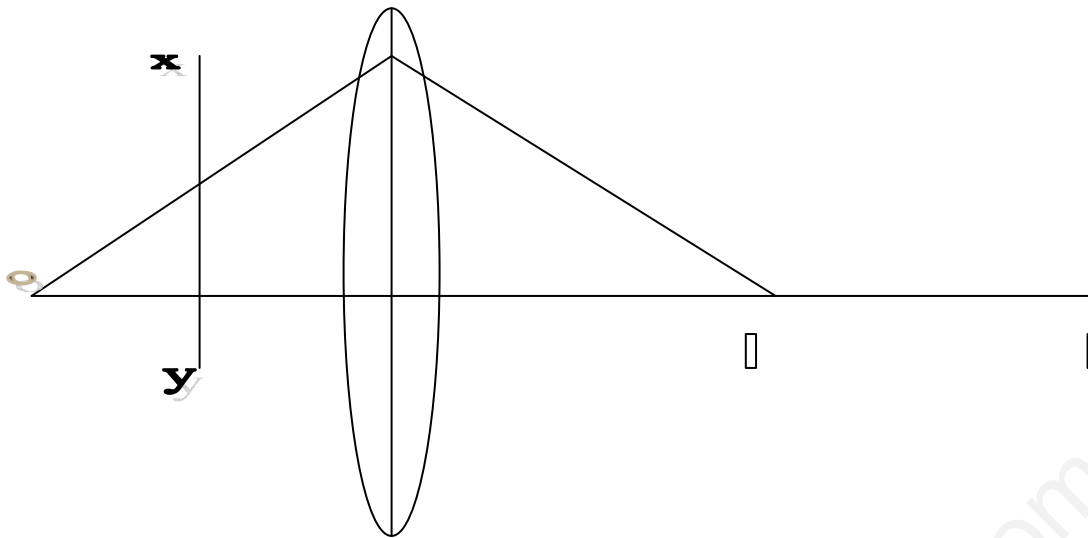
Ans. straight line property of the light.

Q.3. Identify the type of lens or mirror placed at XY where O is object and I is image.



Ans Convex lens (when object is placed between pole and focus)

Q.4.What type of lens must be placed at XY so that image I shifts to I'



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Ans. concave lens

Q.5. A ray AFB is incident on a spherical mirror whose centre of curvature is 2 F. In which direction will it reflect?

Ans It will reflect towards the object side parallel to principal axis.

Q 6. A ray of light is incident at angle of 35° to a plane surface. What will the angle of reflection?

Ans. 55°

Q 7. A fish under water is viewing obliquely a fisherman standing on the bank of lake. Does the man look taller or shorter?

Ans. As light travels from rarer to denser medium, it bends towards normal and appears to come from greater height.. Therefore to fish under water man looks taller.

(Two marks Questions)

Q 1. An Object is placed 15 cm in front of a lens 'A' and lens gives real, inverted , magnified image and formed at large distance. Lens 'A' is replaced by Lens 'B' and a real, inverted image of the same size as of object is formed.

i) What is the nature of Lens A&B?

ii) What is the focal length of A&B?

Ans i) A=Convex lens ,B=Convex Lens

ii) $f_A=15\text{cm}$, $f_B=7.5\text{cm}$

Q 2 Two lenses 1&2 are placed in contact .Focal length of lens 1 is 20 cm and of 2 is - 10 cm. Calculate

i) Total Power of combination

ii) What is the nature of combination..

Ans (i) $P = -5 \text{ D}$,(ii)Concave Lens

Q 3. For the same angle of incidence the angle of refraction in three different media A, B and C are 30° , 45° and 60° respectively. In which medium will the velocity of light be minimum?

Ans) $\mu_A = \sin i / \sin 30$, $\mu_B = \sin i / \sin 45$, $\mu_C = \sin i / \sin 60$

$\mu_A > \mu_B > \mu_C$, $\mu = c/v$ as $\mu_A = \text{max.}$, $v_A = \text{min.}$

Q 4. You are given three lenses.

i) a concave lens of focal length 25 cm.

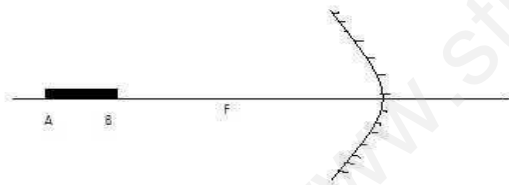
ii) a convex lens of focal length $\frac{1}{4} \text{ m}$ and

iii) a convex lens of focal length 100 cm.

Which combination out of these three lenses will form a lens of zero power?

Ans) Combination of concave lens of focal length of 25 cm and a convex lens of focal length of $\frac{1}{4} \text{ m}$

(Three Marks Questions)



Q1. A rod of length 10 cm lies along the principal axis of a concave mirror of $f = 10 \text{ cm}$ in such a way that the end closer to the pole is 20cm away from it. Find the length of image?

Ans. $R = 2f = 20 \text{ cm}$. Thus the nearer end B of the rod AB is at C and hence its image will be formed at B itself

For end A $u = -30 \text{ cm}$, $f = -10 \text{ cm}$, $v = -15 \text{ cm}$

Length of image will be at 5 cm

Q 2. Absolute refractive Index of some of material is tabulated below

Material	Rock salt	Kerosene	Water	diamond
Refractive index	1.54	1.44	1.33	2.42

i) In which of these does light travel fastest and why? 2

ii) arrange these materials in ascending order of their optical densities. 1

Ans i) Water due to least refractive index.

ii) Water ,Kerosene, Rock salt ,diamond

Q 3. A object is placed on the axis of a convex lens. Draw the neat ray diagrams for formation of image when

i) Object is placed at a distance more than double of its focal length.

ii) The object is at a distance equal to double of its focal length and

iii)The object is at a distance more than focal length but less than double of its focal length.

Ans NCERT Book Pg. 180-181