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NEET RAY OPTICS AND OPTICAL INSTRUMENTS — PYQS

Max. Marks: 312 **Questions:** 78

Section A (MCQ) — 78 questions

Q.1 In a concave lens, a ray of light emanating from the object parallel to the principal axis of the lens, after refraction : [NEET (UG) 2026]

(1) passes through the second principal focus.

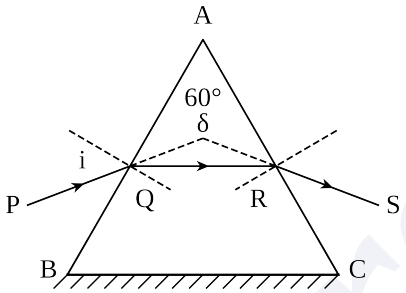
(2) appears to diverge from the first principal focus.

(3) passes through 2F, which is the radius of curvature of the lens.

(4) emerges parallel to the principal axis.

Scan or tap for the full solution

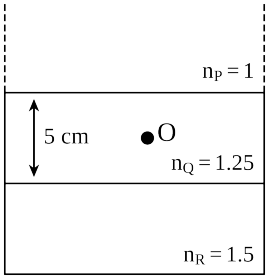
Q.2 A ray of monochromatic light is passing through an equilateral prism (ABC) as shown in the figure. The refracted ray (QR) is parallel to its base (BC) and the angle of incidence (i) is 50°. Then the angle of deviation (δ) is : [NEET (UG) 2026]



(1) 45° (2) 55° (3) 35° (4) 40°

Scan or tap for the full solution

Q.3 Consider three media P, Q and R with refractive indices 1, 1.25, and 1.5 respectively. The medium Q having a thickness of 5 cm is placed between extended media P and R as shown in the figure. An object O is placed at the centre of medium Q. If viewed from medium P near the normal direction, the apparent depth of O is h_1. For similar observation from medium R, the apparent depth is h_2. The value of $|h_1 - h_2|$, in cm, is: [RE-NEET (UG) 2026]



(1) 3 (2) 0 (3) 1 (4) 2

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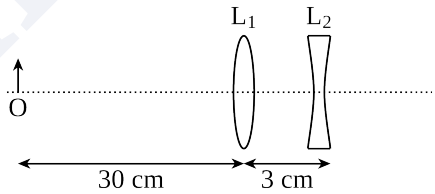
Q.4 The lens combination as shown in the figure, consists of two lenses, L_1 and L_2, of the focal lengths +10 cm and −10 cm, respectively. The position of the image formed is: [RE-NEET (UG) 2026]



(1) 60 cm to the right of the concave lens

(2) 20 cm to the left of the concave lens

(3) 60 cm to the left of the concave lens

(4) 30 cm to the right of the concave lens

Scan or tap for the full solution

Q.5 A microscope has an objective of focal length 2 cm, eyepiece of focal length 4 cm and the tube length of 40 cm. If the distance of distinct vision of eye is 25 cm, the magnification in the microscope is [NEET (UG) 2025]

(1) 150 (2) 250 (3) 100 (4) 125

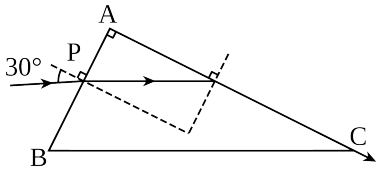
Scan or tap for the full solution

Q.6 In a certain camera, a combination of four similar thin convex lenses are arranged axially in contact. Then the power of the combination and the total magnification in comparison to the power (p) and magnification (m) for each lens will be, respectively [NEET (UG) 2025]

(1) 4p and m^4 (2) p^4 and m^4
(3) 4p and 4m (4) p^4 and 4m

Scan or tap for the full solution

Q.7 A light ray enters through a right angled prism at point P with the angle of incidence 30° as shown in figure. It travels through the prism parallel to its base BC and emerges along the face AC. The refractive index of the prism is: [NEET (UG) 2024]



(1) $\frac{\sqrt{5}}{4}$ (2) $\frac{\sqrt{5}}{2}$ (3) $\frac{\sqrt{3}}{4}$ (4) $\frac{\sqrt{3}}{2}$

Scan or tap for the full solution

Q.8 A small telescope has an objective of focal length 140 cm and an eye piece of focal length 5.0 cm. The magnifying power of telescope for viewing a distant object is: [NEET (UG) 2024]

(1) 34 (2) 28 (3) 17 (4) 32

Scan or tap for the full solution

Q.9 Given below are two statements:

Statement-I: Image formation needs regular reflection and/or refraction.

Statement-II: The variety in colour of objects we see around us is due to the constituent colours of the light incident on them.

In the light of the above statements, choose the most appropriate answer from the options given below : [RE-NEET (UG) 2024]

(1) Statement-I is correct but statement II is incorrect
(2) Statement-I is incorrect but Statement-II is correct
(3) Both Statement-I and Statement-II are correct
(4) Both Statement-I and Statement-II are incorrect

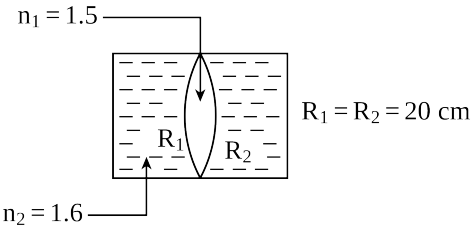
Scan or tap for the full solution

Q.10 Light travels a distance x in time t_1 in air and 10x in time t_2 in another denser medium. What is the critical angle for this medium? [NEET (UG) 2023]

(1) $\sin^{-1}\left(\frac{10t_2}{t_1}\right)$ (2) $\sin^{-1}\left(\frac{t_1}{10t_2}\right)$
(3) $\sin^{-1}\left(\frac{10t_1}{t_2}\right)$ (4) $\sin^{-1}\left(\frac{t_2}{t_1}\right)$

Scan or tap for the full solution

Q.11 In the figure shown here, what is the equivalent focal length of the combination of lenses (Assume that all layers are thin) ? [NEET (UG) 2023]



(1) −40 cm (2) −100 cm
(3) −50 cm (4) 40 cm

Scan or tap for the full solution

Q.12 Two thin lenses are of same focal lengths (f), but one is convex and the other one is concave. When they are placed in contact with each other, the equivalent focal length of the combination will be : [NEET (UG) 2023]

(1) f/4 (2) f/2 (3) Infinite (4) Zero

Scan or tap for the full solution

Q.13 A biconvex lens has radii of curvature, 20 cm each. If the refractive index of the material of the lens is 1.5, the power of the lens is [NEET (UG) 2022]

(1) +2 D (2) +20 D (3) +5 D (4) Infinity

Scan or tap for the full solution

Q.14 Two transparent media A and B are separated by a plane boundary. The speed of light in those media are 1.5×10^8 m/s and 2.0×10^8 m/s, respectively. The critical angle for a ray of light for these two media is [NEET (UG) 2022]

(1) $\sin^{-1}(0.500)$ (2) $\sin^{-1}(0.750)$
(3) $\tan^{-1}(0.500)$ (4) $\tan^{-1}(0.750)$

Scan or tap for the full solution

Q.15 During a cloudy day, a primary and a secondary rainbow may be created, then the : [NEET (UG) 2022 (Phase 2)]

(1) secondary rainbow is due to single internal reflection and is formed above the primary one.
(2) primary rainbow is due to double internal reflection and is formed above the secondary one.
(3) primary rainbow is due to double internal reflection and is formed below the secondary one.
(4) secondary rainbow is due to double internal reflection and is formed above the primary one.

Scan or tap for the full solution

Q.16 An astronomical refracting telescope is being used by an observer to observe planets in normal adjustment. The focal lengths of the objective and eye piece used in the construction of the telescope are 20 m and 2 cm respectively. Consider the following statements about the telescope :

The correct statements are :

A. The distance between the objective and eye piece is 20.02 m

B. The magnification of the telescope is (−) 1000

C. The image of the planet is erect and diminished

D. The aperture of eye piece is smaller than that of objective [NEET (UG) 2022 (Phase 2)]

(1) A, B and D only (2) A, B and C only

(3) B, C and D only (4) C, D and A only

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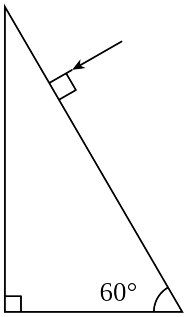
Q.17 Find the value of the angle of emergence from the prism. Refractive index of the glass is $\sqrt{3}$

[NEET (UG) 2021]



(1) 90° (2) 60° (3) 30° (4) 45°

Scan or tap for the full solution

Q.18 A convex lens 'A' of focal length 20 cm and a concave lens 'B' of focal length 5 cm are kept along the same axis with a distance 'd' between them. If a parallel beam of light falling on 'A' leaves 'B' as a parallel beam, then the distance 'd' in cm will be :

[NEET (UG) 2021]

(1) 30 (2) 25 (3) 15 (4) 50

Scan or tap for the full solution

Q.19 A lens of large focal length and large aperture is best suited as an objective of an astronomical telescope since : [NEET (UG) 2021]

(1) a large aperture contributes to the quality and visibility of the images.

(2) a large area of the objective ensures better light gathering power.

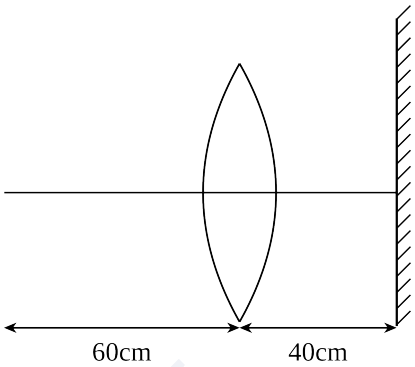
(3) a large aperture provides a better resolution.

(4) All the above.

Scan or tap for the full solution

Q.20 A point object is placed at a distance of 60 cm from a convex lens of focal length 30 cm. If a plane mirror were put perpendicular to the principal axis of the lens and at a distance of 40 cm from it, the final image would be formed at a distance of -

[NEET (UG) 2021]



(1) 20 cm from the plane mirror, it would be a virtual image.

(2) 20 cm from the lens, it would be a real image.

(3) 30 cm from the lens, it would be a real image.

(4) 30 cm from the plane mirror, it would be a virtual image.

Scan or tap for the full solution

Q.21 A ray is incident at an angle of incidence i on one surface of a small angle prism (with angle of prism A) and emerges normally from the opposite surface. If the refractive index of the material of the prism is μ, then the angle of incidence is nearly equal to :

[NEET (UG) 2020]

(1) $\frac{2A}{\mu}$ (2) μA (3) $\frac{\mu A}{2}$ (4) $\frac{A}{2\mu}$

Scan or tap for the full solution

Q.22 In total internal reflection when the angle of incidence is equal to the critical angle for the pair of media in contact, what will be angle of refraction?

[NEET (UG) 2019]

(1) equal to angle of incidence

(2) 90°

(3) 180°

(4) 0°

Solution

Q.23 Pick the **wrong** answer in the context with rainbow.

[NEET (UG) 2019]

(1) An observer can see a rainbow when his front is towards the sun.

(2) Rainbow is a combined effect of dispersion, refraction and reflection of sunlight.

(3) When the light rays undergo two internal reflections in a water drop, a secondary rainbow is formed.

(4) The order of colours is reversed in the secondary rainbow.

Scan or tap for the full solution

Q.24 Two similar thin equi-convex lenses, of focal length f each, are kept coaxially in contact with each other such that the focal length of the combination is F_1. When the space between the two lenses is filled with glycerin (which has the same refractive index (μ = 1.5) as that of glass) then the equivalent focal length is F_2. The ratio $F_1:F_2$ will be : [NEET (UG) 2019]

(1) 1:2 (2) 2:3 (3) 3:4 (4) 2:1

Scan or tap for the full solution

Q.25 The refractive index of the material of a prism is $\sqrt{2}$ and the angle of the prism is 30°. One of the two refracting surfaces of the prism is made a mirror inwards, by silver coating. A beam of monochromatic light entering the prism from the other face will retrace its path (after reflection from the silvered surface) if its angle of incidence on the prism is [NEET 2018]

(1) 60° (2) 45° (3) 30° (4) zero

Scan or tap for the full solution

Q.26 An object is placed at a distance of 40 cm from a concave mirror of focal length 15 cm. If the object is displaced through a distance of 20 cm towards the mirror, the displacement of the image will be [NEET 2018]

(1) 30 cm away from the mirror
(2) 36 cm away from the mirror
(3) 30 cm towards the mirror
(4) 36 cm towards the mirror

Solution

Q.27 An astronomical refracting telescope will have large angular magnification and high angular resolution, when it has an objective lens of [NEET 2018]

(1) small focal length and large diameter
(2) large focal length and small diameter
(3) large focal length and large diameter
(4) small focal length and small diameter

Scan or tap for the full solution

Q.28 A beam of light from a source L is incident normally on a plane mirror fixed at a certain distance x from the source. The beam is reflected back as a spot on a scale placed just above the source L. When the mirror is rotated through a small angle θ, the spot of the light is found to move through a distance y on the scale. The angle θ is given by [NEET 2017]

(1) $\frac{y}{x}$ (2) $\frac{x}{2y}$ (3) $\frac{x}{y}$ (4) $\frac{y}{2x}$

Scan or tap for the full solution

Q.29 A thin prism having refracting angle 10° is made of glass of refractive index 1.42. This prism is combined with another thin prism of glass of refractive index 1.7. This combination produces dispersion without deviation. The refracting angle of second prism should be [NEET 2017]

(1) 6° (2) 8° (3) 10° (4) 4°

Scan or tap for the full solution

Q.30 Match the corresponding entries of **column 1** with **column 2**. [Where m is the magnification produced by the mirror] [NEET 2016 (Phase 1)]

Column 1		Column 2	
a.	m = −2	p.	Convex mirror
b.	$m = -\frac{1}{2}$	q.	Concave mirror
c.	m = +2	r.	Real image
d.	$m = +\frac{1}{2}$	s.	Virtual image

(1) (a)-(p) and (s); (b)-(q) and (r); (c)-(q) and (s); (d)-(q) and (r)
(2) (a)-(r) and (s); (b)-(q) and (s); (c)-(q) and (r); (d)-(p) and (s)
(3) (a)-(q) and (r); (b)-(q) and (r); (c)-(q) and (s); (d)-(p) and (s)
(4) (a)-(p) and (r); (b)-(p) and (s); (c)-(p) and (q); (d)-(r) and (s)

Scan or tap for the full solution

Q.31 An astronomical telescope has objective and eyepiece of focal lengths 40 cm and 4 cm respectively. To view an object 200 cm away from the objective, the lenses must be separated by a distance [NEET 2016 (Phase 1)]

(1) 50.0 cm (2) 54.0 cm
(3) 37.3 cm (4) 46.0 cm

Scan or tap for the full solution

Q.32 The angle of incidence for a ray of light at a refracting surface of a prism is 45°. The angle of prism is 60°. If the ray suffers minimum deviation through the prism, the angle of minimum deviation and refractive index of the material of the prism respectively, are [NEET 2016 (Phase 1)]

(1) 45°; $\sqrt{2}$ (2) 30°; $\frac{1}{\sqrt{2}}$

(3) 45°; $\frac{1}{\sqrt{2}}$ (4) 30°; $\sqrt{2}$

Scan or tap for the full solution

Q.33 Two identical glass ($\mu_g = 3/2$) equiconvex lenses of focal length f each are kept in contact. The space between the two lenses is filled with water ($\mu_w = 4/3$). The focal length of the combination is [NEET 2016 (Phase 2)]

(1) f/3 (2) f (3) 4f/3 (4) 3f/4

Scan or tap for the full solution

Q.34 An air bubble in a glass slab with refractive index 1.5 (near normal incidence) is 5 cm deep when viewed from one surface and 3 cm deep when viewed from the opposite face. The thickness (in cm) of the slab is [NEET 2016 (Phase 2)]

(1) 8 (2) 10 (3) 12 (4) 16

Scan or tap for the full solution

Q.35 A person can see clearly objects only when they lie between 50 cm and 400 cm from his eyes. In order to increase the maximum distance of distinct vision to infinity, the type and power of the correcting lens, the person has to use, will be [NEET 2016 (Phase 2)]

(1) convex, +2.25 diopter

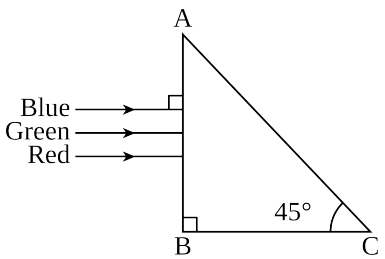
(2) concave, −0.25 diopter

(3) concave, −0.2 diopter

(4) convex, +0.15 diopter

Solution

Q.36 A beam of light consisting of red, green and blue colours is incident on a right angled prism. The refractive index of the material of the prism for the above red, green and blue wavelengths are 1.39, 1.44 and 1.47 respectively.



The prism will [AIPMT 2015]

(1) not separate the three colours at all

(2) separate the red colour part from the green and blue colours

(3) separate the blue colour part from the red and green colours

(4) separate all the three colours from one another

Scan or tap for the full solution

Q.37 In an astronomical telescope in normal adjustment a straight black line of length L is drawn on inside part of objective lens. The eye-piece forms a real image of this line. The length of this image is I. The magnification of the telescope is [AIPMT 2015]

(1) $\frac{L+I}{L-I}$ (2) $\frac{L}{I}$ (3) $\frac{L}{I}+1$ (4) $\frac{L}{I}-1$

Scan or tap for the full solution

Q.38 Two identical thin plano-convex glass lenses (refractive index 1.5) each having radius of curvature of 20 cm are placed with their convex surfaces in contact at the centre. The intervening space is filled with oil of refractive index 1.7. The focal length of the combination is [AIPMT 2015 (Cancelled)]

(1) −50 cm (2) 50 cm (3) −20 cm (4) −25 cm

Scan or tap for the full solution

Q.39 The refracting angle of a prism is A, and refractive index of the material of the prism is cot(A/2). The angle of minimum deviation is [AIPMT 2015 (Cancelled)]

(1) 90° − A (2) 180° + 2A

(3) 180° − 3A (4) 180° − 2A

Scan or tap for the full solution

Q.40 If the focal length of objective lens is increased then magnifying power of [AIPMT 2014]

(1) microscope will increase but that of telescope decrease.

(2) microscope and telescope both will increase.

(3) microscope and telescope both will decrease.

(4) microscope will decrease but that of telescope will increase.

Scan or tap for the full solution

Q.41 The angle of a prism is A. One of its refracting surfaces is silvered. Light rays falling at an angle of incidence 2A on the first surface return back through the same path after suffering reflection at the silvered surface. The refractive index μ, of the prism is [AIPMT 2014]

(1) 2sinA (2) 2cosA

(3) $\frac{1}{2}$ cosA (4) tanA

Solution

Q.42 A plano convex lens fits exactly into a plano concave lens. Their plane surfaces are parallel to each other. If lenses are made of different materials of refractive indices μ_1 and μ_2 and R is the radius of curvature of the curved surface of the lenses, then the focal length of the combination is [NEET 2013]

(1) $\frac{R}{(\mu_1 - \mu_2)}$ (2) $\frac{2R}{(\mu_2 - \mu_1)}$

(3) $\frac{R}{2(\mu_1 + \mu_2)}$ (4) $\frac{R}{2(\mu_1 - \mu_2)}$

Scan or tap for the full solution

Q.43 For a normal eye, the cornea of eye provides a converging power of 40 D and the least converging power of the eye lens behind the cornea is 20 D. Using this information, the distance between the retina and the cornea-eye lens can be estimated to be [NEET 2013]

(1) 1.67 cm (2) 1.5 cm

(3) 5 cm (4) 2.5 cm

Solution

Q.44 The reddish appearance of the sun at sunrise and sunset is due to [NEET 2013 (Karnataka)]

(1) the scattering of light

(2) the polarisation of light

(3) the colour of the sun

(4) the colour of the sky

Solution

Q.45 Two plane mirrors are inclined at 70°. A ray incident on one mirror at angle θ, after reflection falls on second mirror and is reflected from there parallel to first mirror. The value of θ is [NEET 2013 (Karnataka)]

(1) 45° (2) 30° (3) 55° (4) 50°

Scan or tap for the full solution

Q.46 For the angle of minimum deviation of a prism to be equal to its refracting angle, the prism must be made of a material whose refractive index [AIPMT 2012 (Mains)]

(1) lies between $\sqrt{2}$ and 1

(2) lies between 2 and $\sqrt{2}$

(3) is less than 1

(4) is greater than 2

Solution

Q.47 A rod of length 10 cm lies along the principal axis of a concave mirror of focal length 10 cm in such a way that its end closer to the pole is 20 cm away from the mirror. The length of the image is [AIPMT 2012 (Mains)]

(1) 10 cm (2) 15 cm (3) 2.5 cm (4) 5 cm

Scan or tap for the full solution

Q.48 When a biconvex lens of glass having refractive index 1.47 is dipped in a liquid, it acts as a plane sheet of glass. This implies that the liquid must have refractive index [AIPMT 2012 (Prelims)]

(1) equal to that of glass

(2) less than one

(3) greater than that of glass

(4) less than that of glass

Solution

Q.49 A ray of light is incident at an angle of incidence i, on one face of a prism of angle A (assumed to be small) and emerges normally from the opposite face. If the refractive index of the prism is μ, the angle of incidence i, is nearly equal to [AIPMT 2012 (Prelims)]

(1) μA (2) $\frac{\mu A}{2}$ (3) $\frac{A}{\mu}$ (4) $\frac{A}{2\mu}$

Scan or tap for the full solution

Q.50 A concave mirror of focal length f_1 is placed at a distance of d from a convex lens of focal length f_2. A beam of light coming from infinity and falling on this convex lens – concave mirror combination returns to infinity. The distance d must equal [AIPMT 2012 (Prelims)]

(1) $f_1 + f_2$ (2) $-f_1 + f_2$ (3) $2f_1 + f_2$ (4) $-2f_1 + f_2$

Scan or tap for the full solution

Q.51 The magnifying power of a telescope is 9. When it is adjusted for parallel rays the distance between the objective and eyepiece is 20 cm. The focal length of lenses are [AIPMT 2012 (Prelims)]

(1) 10 cm, 10 cm (2) 15 cm, 5 cm

(3) 18 cm, 2 cm (4) 11 cm, 9 cm

Scan or tap for the full solution

Q.52 A thin prism of angle 15° made of glass of refractive index μ_1 = 1.5 is combined with another prism of glass of refractive index μ_2 = 1.75. The combination of the prisms produces dispersion without deviation. The angle of the second prism should be [AIPMT 2011 (Mains)]

(1) 5° (2) 7° (3) 10° (4) 12°

Scan or tap for the full solution

Q.53 A converging beam of rays is incident on a diverging lens. Having passed through the lens the rays intersect at a point 15 cm from the lens on the opposite side. If the lens is removed the point where the rays meet will move 5 cm closer to the lens. The focal length of the lens is [AIPMT 2011 (Mains)]

(1) 5 cm (2) −10 cm (3) 20 cm (4) −30 cm

Scan or tap for the full solution

Q.54 Which of the following is not due to total internal reflection ? [AIPMT 2011 (Prelims)]

(1) Working of optical fibre

(2) Difference between apparent and real depth of a pond

(3) Mirage on hot summer days

(4) Brilliance of diamond

Scan or tap for the full solution

Q.55 A biconvex lens has a radius of curvature of magnitude 20 cm. Which one of the following options best describes the image formed of an object of height 2 cm placed 30 cm from the lens ? [AIPMT 2011 (Prelims)]

(1) Virtual, upright, height = 1 cm

(2) Virtual, upright, height = 0.5 cm

(3) Real, inverted, height = 4 cm

(4) Real, inverted, height = 1 cm

Solution

Q.56 The speed of light in media M_1 and M_2 are 1.5×10^8 m/s and 2.0×10^8 m/s respectively. A ray of light enters from medium M_1 to M_2 at an incidence angle i. If the ray suffers total internal reflection, the value of i is [AIPMT 2010 (Mains)]

(1) Equal to $\sin^{-1}\left(\frac{2}{3}\right)$

(2) Equal to or less than $\sin^{-1}\left(\frac{3}{5}\right)$

(3) Equal to or greater than $\sin^{-1}\left(\frac{3}{4}\right)$

(4) Less than $\sin^{-1}\left(\frac{2}{3}\right)$

Scan or tap for the full solution

Q.57 A ray of light is incident on a 60° prism at the minimum deviation position. The angle of refraction at the first face (i.e., incident face) of the prism is [AIPMT 2010 (Mains)]

(1) zero (2) 30° (3) 45° (4) 60°

Scan or tap for the full solution

Q.58 A ray of light travelling in a transparent medium of refractive index μ, falls on a surface separating the medium from air at an angle of incidence of 45°. For which of the following value of μ the ray can undergo total internal reflection? [AIPMT 2010 (Prelims)]

(1) μ = 1.33 (2) μ = 1.40

(3) μ = 1.50 (4) μ = 1.25

Scan or tap for the full solution

Q.59 A lens having focal length f and aperture of diameter d forms an image of intensity I. Aperture of diameter $\frac{d}{2}$ in central region of lens is covered by a black paper. Focal length of lens and intensity of image now will be respectively [AIPMT 2010 (Prelims)]

(1) f and $\frac{I}{4}$ (2) $\frac{3f}{4}$ and $\frac{I}{2}$

(3) f and $\frac{3I}{4}$ (4) $\frac{f}{2}$ and $\frac{I}{2}$

Scan or tap for the full solution

Q.60 Two thin lenses of focal lengths f_1 and f_2 are in contact and coaxial. The power of the combination is [AIPMT 2008]

(1) $\frac{f_1 + f_2}{2}$ (2) $\frac{f_1 + f_2}{f_1 f_2}$ (3) $\sqrt{\frac{f_1}{f_2}}$ (4) $\sqrt{\frac{f_2}{f_1}}$

Scan or tap for the full solution

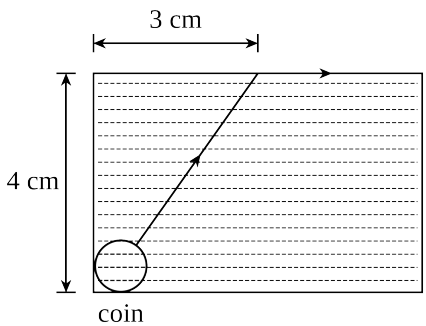
Q.61 A boy is trying to start a fire by focusing sunlight on a piece of paper using an equiconvex lens of focal length 10 cm. The diameter of the sun is 1.39×10^9 m and its mean distance from the earth is 1.5×10^{11} m. What is the diameter of the sun's image on the paper ? [AIPMT 2008]

(1) 6.5×10^{-5} m (2) 12.4×10^{-4} m

(3) 9.2×10^{-4} m (4) 6.5×10^{-4} m

Scan or tap for the full solution

Q.62 A small coin is resting on the bottom of a beaker filled with liquid. A ray of light from the coin travels up to the surface of the liquid and moves along its surface. How fast is the light travelling in the liquid? [AIPMT 2007]



(1) 2.4×10^8 m/s (2) 3.0×10^8 m/s
(3) 1.2×10^8 m/s (4) 1.8×10^8 m/s

Scan or tap for the full solution

Q.63 The frequency of a light wave in a material is 2×10^{14} Hz and wavelength is 5000 Å. The refractive index of material will be [AIPMT 2007]
(1) 1.50 (2) 3.00 (3) 1.33 (4) 1.40

Scan or tap for the full solution

Q.64 A microscope is focussed on a mark on a piece of paper and then a slab of glass of thickness 3 cm and refractive index 1.5 is placed over the mark. How should the microscope be moved to get the mark in focus again ? [AIPMT 2006]
(1) 2 cm upward (2) 1 cm upward
(3) 4.5 cm downward (4) 1 cm downward

Scan or tap for the full solution

Q.65 A convex lens and a concave lens, each having same focal length of 25 cm, are put in contact to form a combination of lenses. The power in diopters of the combination is [AIPMT 2006]
(1) zero (2) 25 (3) 50 (4) infinite.

Scan or tap for the full solution

Q.66 The refractive index of the material of a prism is $\sqrt{2}$ and its refracting angle is 30°. One of the refracting surfaces of the prism is made a mirror inwards. A beam of monochromatic light entering the prism from the other face will retrace its path after reflection from the mirrored surface if its angle of incidence on the prism is [AIPMT 2004]
(1) 45° (2) 60° (3) 0° (4) 30°

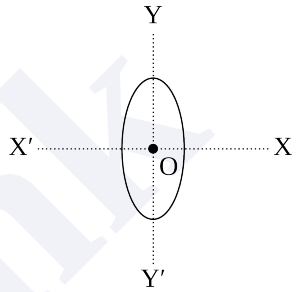
Scan or tap for the full solution

Q.67 A beam of light composed of red and green rays is incident obliquely at a point on the face of a rectangular glass slab. When coming out on the opposite parallel face, the red and green rays emerge from [AIPMT 2004]
(1) two points propagating in two different non-parallel directions
(2) two points propagating in two different parallel directions
(3) one point propagating in two different directions
(4) one point propagating in the same directions

Scan or tap for the full solution

Q.68 An equiconvex lens is cut into two halves along (i) XOX′ and (ii) YOY′ as shown in the figure. Let f, f', f" be the focal lengths of the complete lens, of each half in case (i), and of each half in case (ii), respectively.

Choose the correct statement from the following [AIPMT 2003]



(1) f' = f, f" = 2f (2) f' = 2f, f" = f
(3) f' = f, f" = f (4) f' = 2f, f" = 2f

Scan or tap for the full solution

Q.69 A convex lens is dipped in a liquid whose refractive index is equal to the refractive index of the lens. Then its focal length will [AIPMT 2003]
(1) become zero
(2) become infinite
(3) become small, but non-zero
(4) remain unchanged

Solution

Q.70 A bulb is located on a wall. Its image of the same size is to be obtained on a parallel wall with the help of a convex lens. The lens is placed at a distance d ahead of the second wall, then the required focal length will be [AIPMT 2002]

(1) only $\frac{d}{4}$

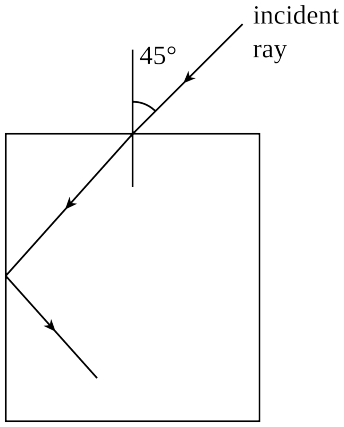
(2) only $\frac{d}{2}$

(3) more than $\frac{d}{4}$ but less than $\frac{d}{2}$

(4) less than $\frac{d}{4}$

Solution

Q.71 For the given incident ray as shown in the figure, for total internal reflection of this ray, the required refractive index of the prism will be [AIPMT 2002]



(1) $\frac{\sqrt{3}+1}{2}$ (2) $\frac{\sqrt{2}+1}{2}$

(3) $\sqrt{\frac{3}{2}}$ (4) $\sqrt{\frac{7}{6}}$

Scan or tap for the full solution

Q.72 Optical fibres are based on [AIPMT 2001]

(1) total internal reflection

(2) less scattering

(3) refraction

(4) less absorption coefficient

Solution

Q.73 A ray of light travelling in air has wavelength λ, frequency n, velocity v and intensity I. If this ray enters into water then these parameters are λ', n', v' and I' respectively. Which relation is correct from following? [AIPMT 2001]

(1) λ = λ' (2) n = n' (3) v = v' (4) I = I'

Scan or tap for the full solution

Q.74 A disc is placed on a surface of pond which has refractive index 5/3. A source of light is placed 4 m below the surface of liquid. The minimum radius of disc needed so that light is not coming out is [AIPMT 2001]

(1) ∞ (2) 3 m (3) 6 m (4) 4 m

Scan or tap for the full solution

Q.75 A bubble in glass slab (μ = 1.5) when viewed from one side appears at 5 cm and 2 cm from other side, then thickness of slab is [AIPMT 2000]

(1) 3.75 cm (2) 3 cm

(3) 10.5 cm (4) 2.5 cm.

Solution

Q.76 A tall man of height 6 feet, wants to see his full image. Then required minimum length of the mirror will be [AIPMT 2000]

(1) 12 feet (2) 3 feet

(3) 6 feet (4) any length

Scan or tap for the full solution

Q.77 A plano-convex lens (μ = 1.5) has radius of curvature 10 cm. It is silvered on its plane surface. Find focal length after silvering [AIPMT 2000]

(1) 10 cm (2) 20 cm (3) 15 cm (4) 25 cm

Scan or tap for the full solution

Q.78 Rainbow is formed due to [AIPMT 2000]

(1) scattering and refraction

(2) internal reflection and dispersion

(3) reflection only

(4) diffraction and dispersion.

Scan or tap for the full solution

ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	2	4	3	3	4	1	2	2	3	3	2
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	3	3	2	4	1	2	3	4	1	2	2
Ques.	23	24	25	26	27	28	29	30	31	32	33
Ans.	1	1	2	2	3	4	1	3	2	4	4
Ques.	34	35	36	37	38	39	40	41	42	43	44
Ans.	3	2	2	2	1	4	4	2	1	1	1
Ques.	45	46	47	48	49	50	51	52	53	54	55
Ans.	4	2	4	1	1	3	3	3	4	2	3
Ques.	56	57	58	59	60	61	62	63	64	65	66
Ans.	3	2	3	3	2	3	4	2	2	1	1
Ques.	67	68	69	70	71	72	73	74	75	76	77
Ans.	2	1	2	2	3	1	2	2	3	2	1
Ques.	78										
Ans.	2										